SOCKET-TYPE ELECTRICAL CONTACT MEMBER

Filed Sept. 22, 1953

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

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This invention relates to electrical connectors and especially those of the pin and socket type.

Where electrical connectors of the pin and socket type are employed the electrical contact therebetween has been subjected to severe damage, by reason of the use of oversized test probes in the servicing of the electrical system. The probes are forced into the socket portion of the contact with the result that the walls of the socket which are slit, for the purpose of providing spring loading against the pin, are deformed and fail to return to their initial position. As a result, pins inserted in the socket thereafter are loosely held and fail to perform properly.

There have been various proposed solutions to this problem such as surrounding the entire socket member with a rigid sleeve, machining the socket member with a one piece entry ring and using garter springs around the contact. However, all of the present methods of correcting the difficulty are expensive and make it difficult to manufacture the socket members on high speed machines, such as screw machines.

Accordingly, it is an object of the present invention to provide a socket member for use with a standard pin contact which will maintain its contact position at all times.

Another object of the present invention is to provide a one piece socket contact which will prevent the insertion therein of oversized pins or probes.

A further object of the present invention is to provide a contact member which will lend itself to high speed production methods.

A feature of the present invention is its rigid pin entry portion despite its slotted structure.

The invention consists of the construction combination and arrangement of parts as hereinafter illustrated and described.

In the accompanying drawings forming part hereof, are illustrated an embodiment of the invention, in which drawings similar reference characters designate corresponding parts and in which Figure 1 is a front elevational view of a socket electrical connector made in accordance with the present invention.

Figure 2 is a longitudinal sectional view taken on line 2—2, in Figure 1 looking in direction of the arrows.

Figure 3 is a longitudinal sectional view taken on line 3—3, looking in direction of the arrows.

Figure 4 is a front elevational view of a socket electrical connector showing the spring finger slot longitudinally offset.

Figure 5 is a plan view of the longitudinal offset slot type connector element shown in Figure 4.

Referring to the drawings 10 indicates a contact body made of some suitable conductive metal at one end of which is provided a lead receiving cavity 11.

The opposite end of the contact body is centrally bored as indicated at 12 to receive therein a standard pin contact member (not shown). The bore 12 may for example be of a size which will exclude the entry of a male contact .005 inch larger than the allowable maximum diameter. However, the bore 12 may be .003 inch larger in diameter than the maximum diameter of the correct male contact. The male contact pin entry 13 to the bore 12 is chamfered to facilitate engagement with the socket contact.

A slot 14 is cut through the body of the contact member 10 from the entry end thereof, and extends longitudinally of the contact. The slot 14 terminates short of the end 15 of the bore 12. The slot 14 is offset from the center line of the contact member so that an uninterrupted arc of continuous metal greater than 180° is retained, as shown in Figure 1. The remaining portion 16 of the contact body 10 best shown in Figures 1 and 3 constitutes a spring finger for the purpose of maintaining contact pressure when the pin contact is inserted.

Thus when the connection is completed the pin contact will force the spring finger 16 outwards into the position indicated in dashed lines in Figure 3, and be held within the socket with a good wiping electrical contact.

By reason of the fact that the slot 14 is offset as previously described, it is not possible to force an oversized pin or probe into the socket member so as to spread it and destroy its efficiency.

As a further means for the prevention of oversized pins or probes being inserted into the socket member, the slot 14 may be offset with respect to the longitudinal axis of the member. Where the offset is of such degree as is shown in Figures 4 and 5, a solid entry ring will be provided in effect to the pin receiving end of the socket member. The spring finger 16 may still be bent inwardly for the purpose of providing a spring loaded contact effect. The offset slot 14 makes it possible to secure the advantages of a solid entry ring type socket member while at the same time providing spring loading and securing the advantages of high speed low cost manufacturing of the socket member.

It is within the purview of the present invention to vary the width, depth, offset from center lines, and angle of the slot 14 for the purpose of securing various desired contact pressures.

Accordingly, it will be seen from the foregoing that there has been provided a socket type electrical connector which will prevent the use of oversized pins or probes and thereby protect and extend the operative life of the socket member.

Having thus fully described the invention, what is claimed as new and desired to be secured by Letters Patent of the United States, is:

A socket type electrical contact member comprising an elongated electrically conductive body member, a lead receiving portion at one end thereof, a pin contact receiving portion at the other end, said contact receiving portion being longitudinally bored and slit from the pin receiving end thereof so as to divide it into a main contact receiving member describing an arc of more than 180° about the bore, said slit being inclined to and offset from the longitudinal axis of the contact member and a spring finger member, said spring finger being inwardly bent and longitudinally tapered by reason of the offset slit to constict the bore.

References Cited in the file of this patent

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