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ELECTRIC BOARDS, PLUG CONTACTS AND SYSTEM


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ABSTRACT OF THE DISCLOSURE

A selector board system with an electric plug for insertion into spaced co-axial sockets of the selector board, the plug including spaced, resilient contact portions axially spaced one from the other joined by a narrow interconnecting neck and loosely threaded onto a carrier stem. The contact portions are spaced radially from the carrier stem and have independent radial resilience for engaging the respective sockets, which are themselves shown without resilience. The contact portions have a plurality of apaxes extending outwardly further from the stem to ensure effective connection.

The invention relates to electric boards, plug contacts and plug board systems and is concerned with apparatus for making electrical connection between two (or more) co-axial socket contacts in a selector board containing a multiplicity of such sockets. Plug contacts have been used, for example, with selector boards such as that disclosed in British patent specification No. 934,627 in which there are two sets of socket contacts in pairs one above the other, the plug contacts being inserted in selected pairs to effect electrical connections between the two members of each selected pair. It is an advantage of the present invention that, unlike the technique disclosed in British patent specification No. 934,627, the socket contacts shall be without resilience (e.g. in the form of tubular eyelets) and that the resilience necessary to ensure effective connection is provided by the plug contact. In that case a problem which arises is that of ensuring that the plug contact makes proper engagement with both of the socket contacts which may, for example, be slightly out of line or differ slightly in size. The invention seeks to overcome or reduce this problem.

The invention provides an electric plug contact for the above purpose which comprises at least two plug portions integrally connected by a neck, the plug portions having independent radial resilience. In one form of the invention the contact is of generally triangular section to provide a tapered nose for leading the contact into the sockets and the other may provide a finger grip for manipulating the contact.

Among the many advantages of this plug board system it is that it enables the use of strong, rigid socket eyelets having long life, and in the event that the resilient contacts become displaced, it is the individual plug, not the whole selector board, which is replaced.

In a preferred construction the contact is in the form of a tube of generally triangular section split along the edge provided by an apex of the triangle and divided into two (or more) plug portions axially separate from one another except for an interconnecting neck at the side opposite to the said edge.

Two specific constructions of plugs embodying the invention will now be described, by way of example, with reference to the accompanying drawings in which:

FIGURE 1 is a section through one of the plugs,
FIGURE 2 is a perspective view of the plug contact,
FIGURE 3 shows a blank from which the plug contact is formed,
FIGURE 4 is a perspective view of the contact of the second plug,
FIGURE 5 shows a carrier and finger grip for the second plug,
FIGURE 6 shows part of a selector board with which the plugs may be used, and
FIGURE 7 shows a selector board system including a plurality of decks of rigid socket contacts interconnected by insertion of the plugs.

The plug shown in FIGURES 1-3 comprises a metallic tubular plug contact 10 loosely threaded over a carrier stem 11 which may be of metal or insulating material. The stem has a tapered nose 12 and a finger grip 13 which provide enlargements holding the contact 10 in place. The contact may be sprung into place over the head or formed around the stem.

The contact is formed by rolling up a blank of the form shown in FIGURE 3 to the generally triangular section tubular form seen in FIGURE 2. This consists of two independently resilient portions 15, 16 joined by a narrow neck 17 and divided at 18 along an apex of the triangular section. The gap at 18 enables each portion to compress resiliently independently of the other portion.

The plug shown in FIGURES 4 and 5 has a contact (FIGURE 4) formed by bending a blank of sheet or strip resilient metal (e.g. beryllium copper) to tubular form 19 leaving an opening or gap 20, with two pairs of ears 21, 22 reversely bent from the edges of the opening to overlie the outside of the tubular portion but slightly spaced therefrom. The ears extend round to the back of the tube to leave gaps between the ears of a width about equal to that of the gap 20. Each pair of ears provides resilient contact surfaces or plug portions for engagement in a socket and may be compressed without substantial deformation of the tube and independently of the other pair. Form a neck joining the contact portions. The lower end of the tubular portion is domed at 23 to provide a lead in and the upper end is notched at 25 to receive and hold a projection 26 on an insulating stem on a finger grip 27 (FIGURE 5) when the stem is inserted in the tubular portion.

In use of either of the above plug constructions the contact is inserted into one pair of sockets, e.g., the pair seen at 40, 41 in FIGURE 6, of a selector board so that the two portions 15, 16 or 21, 22, make contact with the two sockets 41, 40 respectively and the plug effects electrical connection between the two sockets.

The sockets are provided by rows of rigid eyelets, which are interconnected by connection strips 46 and 47 to form sets of rows, the rows being at right angles, attached to insulating plates 43, 44 to form respective decks of socket contacts which are separated by an insulating plate 45. FIGURE 7 illustrates the operation of the plug board system enabling good electrical connection to be provided between the rigid socket contacts in the respective decks regardless of whether the co-axial socket contacts may be slightly out of line or differ slightly in size.

The invention is not restricted to the details of the above examples. For instance the contact of FIGURE 4 may be fitted over a carrier stem similar to that of FIGURE 1, the domed end 23 being omitted.

I claim:

1. An electric plug adapted to be inserted into a plurality of co-axial sockets, said plug comprising a stem carry-
gaging the respective sockets of the selector board, said contact portions comprising a split tube divided circumferentially to form at least two plug contact portions axially separate from one another except for a narrow interconnecting neck, the tubular contact portions being threaded onto the carrier stem and being radially spaced therefrom whereby the plug contact portions have independent radial resilience, said tube being of generally triangular configuration having rounded apexes as seen in cross section, said tube being split along an edge corresponding to an apex of the triangular section, the neck interconnecting the plug contact portions or adjacent plug contact portions, being at the side of the triangular section opposite to the said split edge.

2. A plug as claimed in claim 1 in which the carrier stem is made of insulating material.

3. A plug as claimed in claim 2 in which the plug contact portions are held on the carrier stem between two enlargements of the stem.

4. A plug as claimed in claim 3 in which one enlargement provides a tapered nose for leading the adjacent plug contact portion into a socket and the other provides a finger grip for manipulating the plug.

5. A selector board system comprising a plurality of decks each containing a multiplicity of rigid socket contacts interconnected in sets of rows, the socket contacts in one of said decks being in co-axial relationship with and being insulated from the socket contacts in another of said decks with the sets of rows on one deck relatively crossing the sets of rows on the other deck, and at least one electric plug inserted into co-axial socket contacts in both of said decks electrically interconnecting the respective sockets, said plug having a finger grip with a carrier stem extending therefrom and carrying at least two spaced resilient plug contact portions, said contact portions comprising having a gap extending axially along side thereof, said tube being divided circumferentially to form at least two plug contact portions axially spaced one from another joined by a narrow interconnecting neck extending in an axial direction between said plug contact portions said plug contact portions having independent radial resilience, and said plug contact portions being threaded loosely onto said carrier stem; said carrier stem having an enlarged tapered nose thereon at the front end thereof providing an enlargement for holding said plug contact portions thereon, said plug contact portions being spaced radially therefrom and having a plurality of apexes extending outwardly further from said stem, whereby said plug contact portions carried by said stem have independent radial resilience for engaging the respective sockets of the selector board ensuring that the plug contact makes proper engagement with the respective socket contacts regardless of whether the socket contacts may be slightly out of line.

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