

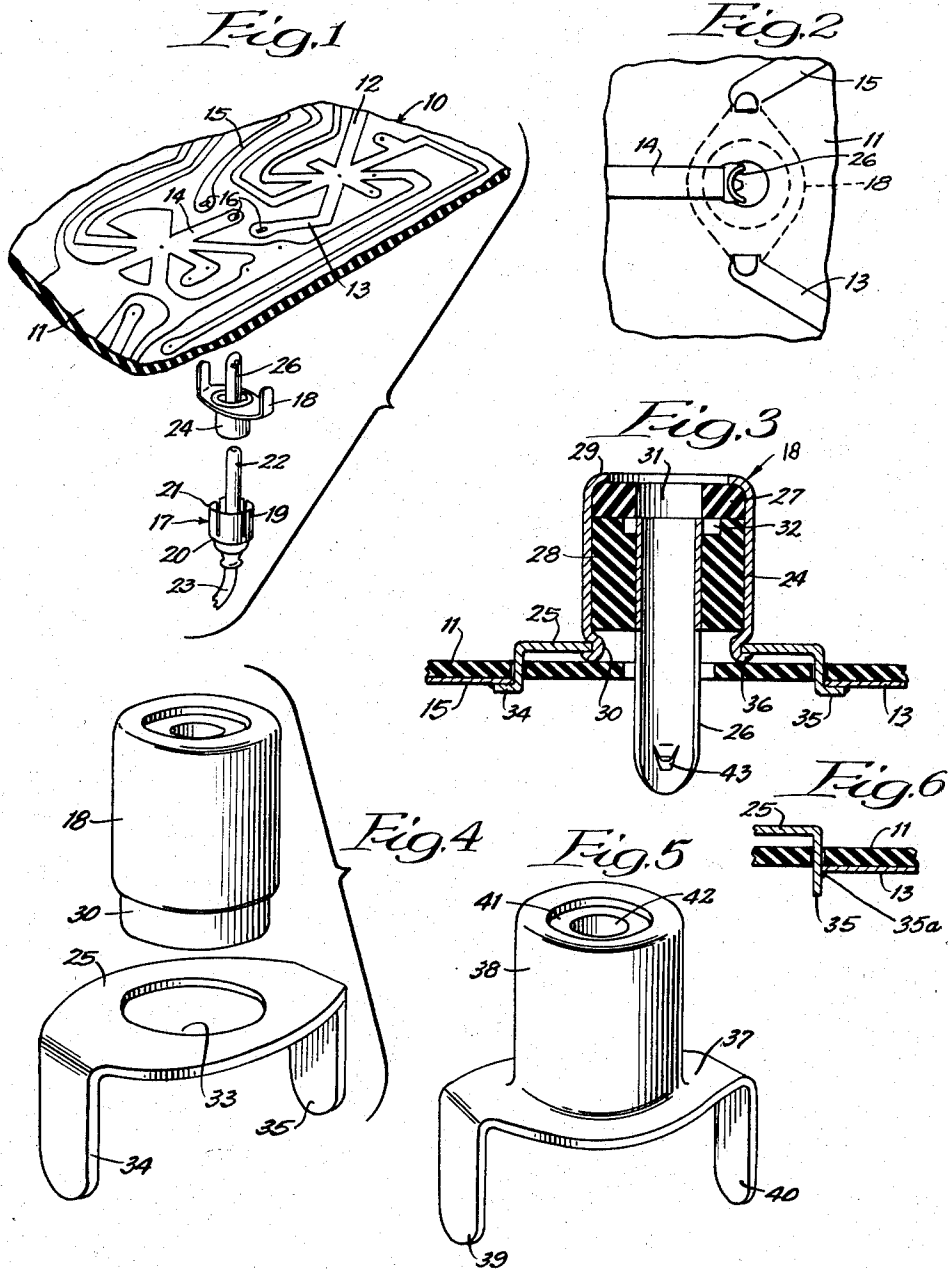
Jan. 13, 1959

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2,869,090

JACK CONNECTOR FOR PRINTED WIRING

Filed June 29, 1955



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JACK CONNECTOR FOR PRINTED WIRING

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Application June 29, 1955, Serial No. 518,821

1 Claim. (Cl. 339-17)

This invention relates to a socket connector for printed wire circuits, and more especially to a connector jack assembly particularly suited for use with printed wire circuits for providing connection thereto of plugs for electric conductors.

An object of the invention is to provide a simple, inexpensive and conveniently used socket assembly for printed wire circuits which permits the connection of conductor-carrying plugs with the wires of a printed circuit. Another object of the invention is in providing a socket connector equipped with a bracket having fingers or tongues that serve to mount the socket assembly on a printed circuit board, and at the same time provide for the connection of the socket with the wires of the printed circuit. Still another is in the provision in a connector jack assembly of a socket adapted to cooperate with a metal plug, and wherein the socket is equipped with a bracket having extended tongues arranged for insertion through openings formed in a support panel or board for a printed wire circuit, the tongues serving the function of a mechanical mounting for the circuit, and also providing the means of connection of the socket to the printed wires of the circuit.

A further object is to provide a socket assembly for use with printed circuits, the socket having a shell and a bracket secured thereto providing fingers that project through the support panel or board for mounting the socket thereon and for connecting it with the printed wires of the circuit. The bracket, which is secured to the shell by means of a turned collar, also functions, when the socket is secured to the circuit board, to positively position the socket in a predetermined relationship with the board whereby the bracket in combination with the turned collar firmly secures the socket to the board and provides an electrical connection between the socket and printed wires of the circuit. Additional objects and advantages will become apparent as the specification develops.

Embodiments of the invention are illustrated in the accompanying drawing, in which—

Figure 1 is a broken perspective view of the connector jack assembly and a portion of a printed wire circuit with the components of the connector jack assembly shown in spaced apart relation; Figure 2 is a broken bottom plan view of a printed wire circuit with the socket assembly fixed in position with respect thereto; Figure 3 is a vertical sectional view of the socket assembly showing it mounted on the printed circuit panel or board; Figure 4 is an exploded perspective view of the shell and bracket components of the socket assembly; Figure 5 is a perspective view of a modified form of socket assembly; and Figure 6 is a broken longitudinal sectional view similar to that of Figure 3, but showing a modification thereof.

Illustrated in Figure 1 is a portion of a printed wire circuit, and for identification it is designated with the numeral 10. The printed wire circuit board arrangement comprises a support panel or board 11 made of suitable

insulating material, and electric conductors or wires 12 that are printed thereon. The conductors 12 may be printed on the board 11 by any of the well known techniques, and since such techniques are commonly understood by those skilled in the art, a discussion thereof will not be presented. It will be noted in Figure 1 that certain of the wires 12, which for identification are numbered 13, 14 and 15, have apertures or openings 16 extending therethrough and that extend also through the panel 11.

The connector jack assembly is designated generally with the numeral 17, and comprises a socket assembly 18 and a plug 19. The plug 19 forms the metal component of the connector jack assembly and is equipped with a shell 20 having a plurality of spring fingers 21 and a pin or prong 22 supported by the shell 20 and connected electrically with at least one of the conductors in an electric lead 23. The lead 23, for example, might have two electrically separated conductors, one of which is connected to the prong 22 and the other to the shell 20. The plug 19 is adapted to be received by the socket assembly 18 as will be more apparent hereinafter.

Referring now to Figure 3 in particular, it is seen that the socket assembly 18 comprises a shielding shell 24, a bracket 25, a contact member or pin receiving socket 26, a washer 27 and a block of insulating material 28. The shell 24 in the embodiment illustrated, is generally cylindrical and snugly receives the block of insulating material 28 therein. The washer 27 is also formed of insulating material and is prevented from moving outwardly from the shell 18 by the inwardly turned flange 29 thereof. The washer 27 abuts the block 28, and the block in turn is prevented from moving axially with respect to the shell by the restricted neck 30 of the shell.

The inwardly turned flange 29 of the shell defines a central opening, and coaxial therewith is a central opening 31 through the washer 27 and a bore 32 extending axially through the center of the block 28. Rigidly secured within the bore 32 is the contact member 26 which is arcuate and conforms in curvature to the curvature of the prong 22 which it is adapted to receive. The member 26 is preferably formed of a good electric conducting material, and for example may be made of spring brass. The block 28 and washer 27 are both formed of a material that provides good electrical insulating properties such as, for example, Bakelite, mica, etc.

The bracket 25, as shown most clearly in Figure 4, has a central opening 33 and is equipped with a pair of downwardly extending tongues or fingers 34 and 35. The opening 33 is dimensioned so that it snugly receives the restricted neck portion 30 of the shell 18 therein, and the outer edge portion of the neck is then rolled or turned laterally, as shown at 36, so as to securely lock the bracket in position on the shell. When the socket assembly is completely assembled, it is adapted to be used in conjunction with the printed circuit arrangement 10; and in such use, the connector member 26 extends outwardly through the opening 16 through the printed wire 14, while the tongues 34 and 35 extend downwardly through the openings in the panel and in the wires 13 and 15 whereby after soldering the conductors are connected through the shell 18.

The embodiment of the invention shown in Figure 5 is quite similar to the embodiment described, and differs therefrom only in that the bracket 37 is formed integrally with the shell 38. The bracket is provided with tongues 39 and 40 that correspond with the tongues 34 and 35 provided by the bracket 25. Interiorly, the shell 38 houses a washer 41 having an opening 42 extending centrally therethrough.

In use of the sockets, the ears 34 and 35 or 39 and 40, as the case may be, are extended through the open-

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ings in the board 11 and in the printed wires provided by the board. The sockets are rigidly secured to the board and, at the same time, the tongues or fingers are connected electrically with the printed wires, as is the central socket member 26, in a dip soldering operation. If desired, the ears may be turned laterally to mechanically secure the socket to the board prior to the dip soldering operation, as is shown in Figure 3, or the tongues may be extended through the openings and in elongated form subjected to a dip soldering operation to establish the electrical connection with the printed wires, as is shown at 35a in Figure 6. In either event, the solder joint between the printed wires and the tongues establishes an electrical connection therebetween and, at the same time, fixedly anchors the socket to the board.

As is seen most clearly in Figure 3, the laterally rolled collar 36 serves as a stop that abuts a face of the board 11, and functions to accurately position the socket with respect to the board. Not only does the collar function to position the socket properly, but it also serves as a bearing point or support when the prong 22 of a plug is inserted into the central socket-receiving section 26 of the socket assembly. As is apparent from Figure 3, the collar 36 and laterally turned tips of the tongues 34 and 35 form a mechanical mounting for the socket that prevents shifting thereof in any direction with respect to the board 11.

In the form of the invention shown in Figure 3, the member 26 is formed with an opening 43 struck therefrom, and the opening 43 may be used to secure a standard wire conductor to the member. It will be apparent that the opening 43 may be eliminated where the only electrical lead connected thereto is a printed wire, for in that case connection may be made to the printed wire by solder that bridges between the printed wire and the member 26.

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While in the foregoing specification an embodiment of the invention has been described in considerable detail, as has a modification thereof, for purposes of providing a complete disclosure, it will be apparent to those skilled in the art, however, that numerous changes may be made in the many details set forth without departing from the spirit and principles of the invention.

I claim:

An assembly comprising an insulating panel having apertures therethrough, printed conductors carried by one surface of said panel and terminating adjacent said apertures, a socket device adapted for use in connector jack apparatus, said socket device having a hollow metal shell, an insulating block mounted within said shell, a metal prong-receiving member mounted in said block and being adapted to receive the prong of a connector plug, said shell being adapted to receive in engagement the metal outer jacket of such a plug, and a metal bracket carried by said shell adjacent one end thereof and being equipped with at least two tongues, said tongues extending through said apertures in said panel and electrically connected to the conductors carried thereby.

References Cited in the file of this patent

UNITED STATES PATENTS

Re. 23,877	Barton	Sept. 28, 1954
1,540,112	Douglas	June 2, 1925
2,613,244	Del Camp	Oct. 7, 1952
2,615,949	Hecking	Oct. 28, 1952
2,638,575	Winkelmeyer et al.	May. 12, 1953

FOREIGN PATENTS

531,947	Great Britain	Jan. 14, 1941
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