United States Patent

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[54] **CONNECTOR FOR POINT-TO-POINT WIRING SYSTEM**
5 Claims, 3 Drawing Figs.

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[51] Int. Cl. H01r 13/58
[50] Field of Search ..... 339/103 C, 107, 63, 141, 196, 198 J, 206, 208, 210

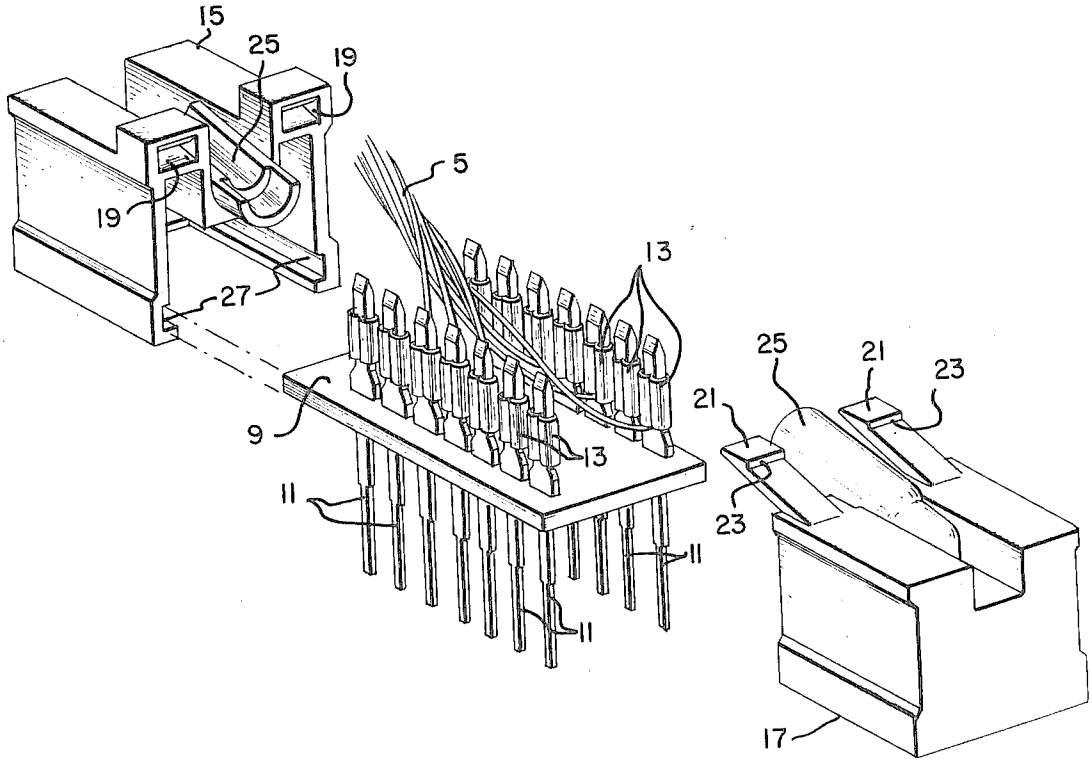
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ABSTRACT: The disclosure relates to an electrical connector which is pluggable into an apertured panel board for point-to-point wiring, the connector including a plurality of wiring posts mounted in an insulating board and having wire clips thereon for retaining wires in contact with each of the posts. The mounting board slidably fits into grooves in a two-piece housing, the housing members being interconnected by means of notched extension in one of the housing members which extends through apertures formed in the other housing member to provide a lock between two housing members with the insulating board and pluggable posts mounted within the housing.



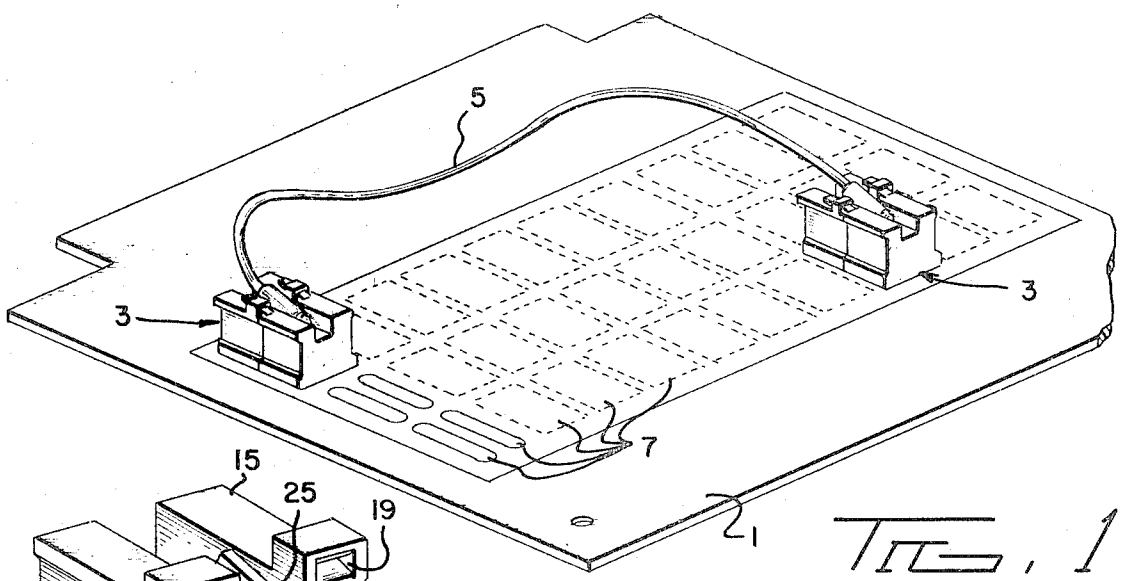


FIG. 1

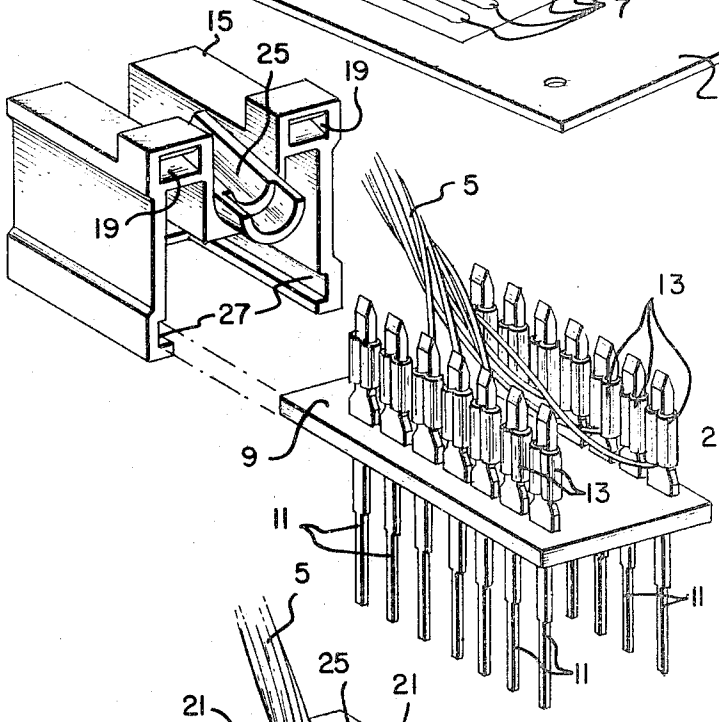
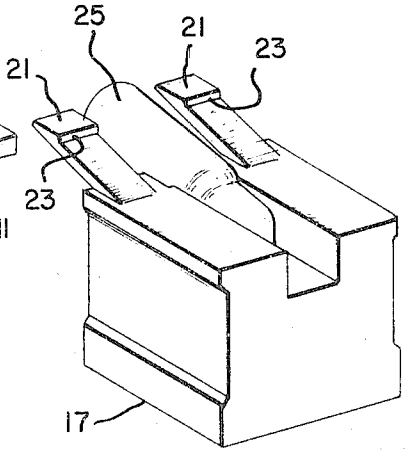


FIG. 2



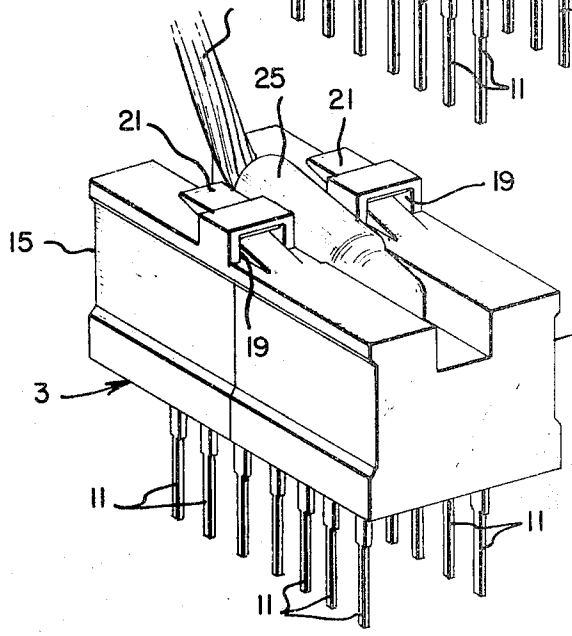


FIG. 3

CONNECTOR FOR POINT-TO-POINT WIRING SYSTEM

The invention relates to an electrical connector for point-to-point wiring on wiring boards, block and panels, and more particularly, to an easily and readily assemblable electrical connector having a two-piece housing for use in a point to point wiring system.

In the field of miniaturized electrical and electronic circuitry, and particularly in the area of printed circuitry, it is often necessary to interconnect plural electrical circuits. This is often done by means of wiring boards, blocks or panels to which a first group of circuits can be connected, connector then being provided from the first group of circuits to a second group of circuits to which interconnection is to be made, all on the wiring board. Point-to-point installations of this type required a pair of electrical connectors and interconnecting wires. The electrical connectors of the prior art for such application have been relatively expensive to produce and to install.

In accordance with the present invention, there is provided an electrical connector for use in point-to-point wiring which is relatively simple to install, economic to manufacture and relatively easy to assemble. Briefly, the above is provided by mounting a plurality of pluggable posts through an insulating board, the posts extending on both sides of the board and having a thin portion on one side thereof for insertion into a panel board or the like. Wiring clips are then secured to the other ends of the pluggable posts with a wire secured therein. A two-piece housing is provided, the housing having a pair of grooves on opposite sides thereof or receiving the insulating mounting board therein upon securing the housing members together. The housing members are secured to each other by passing a notched extension in one of the housing members through an aperture or apertures in the other housing member, the notch extending entirely through the aperture and locking against the top portion thereof. In this manner, a relatively inexpensive and easily assembled and used electrical connector for point-to-point wiring is provided.

It is therefore an object of this invention to provide an electrical connector for point-to-point wiring which is relatively inexpensive to produce relative to prior art connectors of this type.

It is a further object of this invention to provide an electrical connector for point-to-point wiring having an interlocking two-piece housing for securing an insulating board with wiring posts thereon within the housing.

It is a yet further object of this invention to provide an electrical connector for point-to-point wiring which is relatively simple to assemble relative to prior art systems of this type.

The above objects and still further objects of this invention will immediately become apparent to those skilled in the art after consideration of the following preferred embodiment thereof which is provided by way of example and not by way of limitation wherein:

FIG. 1 is a perspective view showing a pair of electrical connectors in accordance with the present invention as used in point-to-point wiring;

FIG. 2 is a perspective view showing the parts of the electric connector in accordance with the present invention in an exploded form; and

FIG. 3 is a perspective view showing an electrical connector in accordance with the present invention in assembled condition.

Referring first to FIG. 1, there is shown a wiring panel 1 having a plurality of sets of apertures 7 therein for receiving an electrical connector 3 in accordance with the present invention. A pair of electrical connectors 3 is positioned in selected ones of the groups of apertures 7 for interconnection by means of wires or, more specifically, lengths of wiring 5 extending between the connectors 3. In this manner, plural sets of circuits can be interconnected by means of the panel board 1 and the connectors 3.

Referring now to FIG. 2, there is shown an exploded view of the electrical connector 3. The electrical connector includes a pair of housing portions 15 and 17, the housing portion 15 including a pair of grooves 27 at its lower interior region and a pair of apertures 19 at its top surface for receiving extensions 21 from the housing 17 as well be explained hereinbelow. Also formed in the housing portion 15 is a portion of a strain relief tube 25 through which the wires 5 will pass outwardly from the connector.

The housing portion 17 includes a pair of outwardly outwardly extending extensions 21 having a notched portion 23 therein. The 17 also includes a pair of grooves 27 (not shown) which mate with the grooves 27 of the housing 15 for receiving the insulated board 9 as will be explained hereinbelow. The housing 17 also includes a portion of the strain relief tube 25 which, in conjunction with the strain relief tube portion 25 of the housing 15 will form a complete tube through which collective lengths of wiring 5 will pass.

Also included as a portion of the connector 3 is an insulating board 9 into which the secured pluggable posts 11 having bottom portions of a size capable of being received into the aperture 7 of a panel board 1 or the like. The upper portions of the pluggable posts 11 receive the wires 5 thereon which are secured to the posts 11 by means of wiring clips 13 which can be crimped thereon or secured thereto over the wires in well known manner.

Referring now to FIGS. 2 and 3, the electrical connector in accordance with the present invention is assembled by placing the housing portions 15 and 17 over the insulated board 9 by sliding the insulated board 9 along the grooves 27 of each the housings. As the housing portions 15 and 17 come together, the extensions 21 will pass through the apertures 19, and due, to the upward bias of the extension fingers 21, the notched portions 23 of the extensions 21 will pass entirely through the apertures 19 thereby forming a latching means and lock against the far edge of the housing 15 which forms the apertures 19 as shown more clearly in FIG. 3. The strain relief tube portions will come together to form a singular tube 25 through which the wires 5 extend. The upper portions of the pluggable posts 11 along with the wiring clips will be secured within the housing formed from member 15 and 17, the circularly shaped lower portions of the pluggable posts extending downwardly and out of the housing for mating with apertures 7 of a panel board or the like as shown in FIG. 3. Since the housing of the electric connector in accordance with the present invention is formed from an insulating material, it can be seen that the only conductive members which extend to the exterior of the connector are the pluggable post portions 11 which are adapted to be mated with apertures 7 in the panel board 1.

It can be seen that there is provided, in accordance with the present invention, an electrical connector for point to point wiring which can be automatically produced by machinery and which is relatively simple to assemble and install relative to prior art devices used for the same purpose.

Though the invention has been described with respect to a specific preferred embodiment thereof, many variations and modifications thereof will immediately become apparent to those skilled in the art. It is therefore the intention that the appended claims be interpreted as broadly as possible in view of the prior art to include a ll such variations and modifications.

What is claimed is:

1. An electrical connector, comprising:

a planar board-type substrate,

at least two spaced rows of electrically conductive posts mounted on said substrate,

first portions of said posts depending from said substrate and forming pluggable electrical connectors,

second end portions of said posts projecting from said substrate,

a length of wiring associated with each of said second end portions of said posts,

connection means electrically connecting each length of wiring with a corresponding second end portion of said posts,

said lengths of wiring being collectively located between said rows of posts,

a first housing portion of insulating material including first opposed grooved portions adjacent to a first post-receiving opening,

said first housing portion further including a first tube portion,

said substrate being slidably received in said first opposed grooved portions, with said lengths of wiring collectively received in registration with said first tube portion,

a second housing portion of insulating material cooperating with said first housing portion to provide an enclosure for said second post portions,

said second housing portion having second opposed grooved portions slidably receiving said substrate,

said second housing portion further including a second post-receiving opening adjacent to said second grooved portions,

said posts protruding from said first and said second post-receiving openings included in corresponding first and second housing portions,

said second housing portion including a second tube portion receiving said collectively received lengths of wiring and cooperating with said first tube portion to provide a strain relief tube which encircles said lengths of wiring and extends longitudinally between said rows of posts, and

latching means for retaining said first and said second housing portion in said cooperating relationship.

2. The structure as recited in claim 1, wherein, said strain relief tube is in recessed relationship with respect to said enclosure for said second post portions.

3. The structure as recited in claim 1, wherein, said strain relief tube is disposed longitudinally parallel to said spaced rows of posts.

4. The structure as recited in claim 1, wherein said second tube portions and said latching means each project from said second housing portion longitudinally toward said first housing portion.

5. The structure as recited in claim 4, wherein said first tube portion is longitudinally inclined with respect to said first grooved portions, and said second tube portion is inverted with respect to said first tube portion and is longitudinally inclined with respect to said second grooved portions, and said second tube portion overlies said first tube portion with both said first and said second housing portions slidably receiving said substrate.

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