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(54) Electrical test connector.

(57) An electrical test connector (10 or 10') adapted for interconnecting a first (not shown) and second connector (12) includes a housing (14) defining a plurality of terminal receiving cavities (16) with a terminal (18) mounted in each cavity. The terminal has a first end portion (20) for mating engagement with the first connector and a second portion (24) extending out of the housing (14) for electrical connection with the second connector (12). An exposed terminal portion (34) extends between the test connector housing (14) and the second connector (12) providing access for in-use testing. A first insulated alignment member (36) is disposed adjacent the test connector housing (14) and includes a plurality of passages (38) (see Fig. 2) for receiving and for maintaining alignment of the second terminal portions (24) of the terminals (18). A second insulated spacer member (40) is axially spaced from the first insulated member (36) and has a plurality of passages (42) for receiving and holding the second terminal portions (24) to define exposed terminal portions (34).

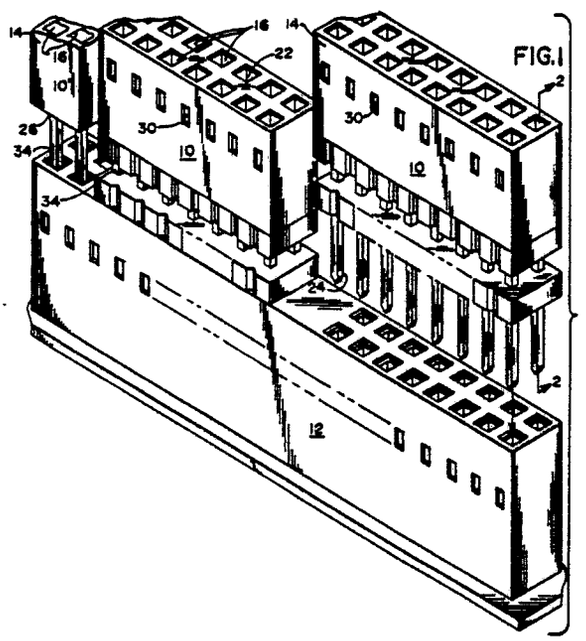


FIG.1

EP 0 255 204 A2

ELECTRICAL TEST CONNECTOR

BACKGROUND OF THE INVENTION

I. Field of the Invention

The present invention relates to electrical test connectors and more particularly to an electrical test connector for interconnecting a first and a second connector for providing testing and monitoring access to circuits connected between the first and second connectors in actual use.

II. Description of the Prior Art

Mating male and female connectors are widely used for interconnecting electrical circuitry. A need exists for providing a test connector for interconnecting such mating connectors to provide access for in use testing. Additionally, it is desirable to provide such a test connector suitable for hands-free or clip-on testing. Moreover, it is desirable to provide such a test connector capable of effective and reliable multiple uses.

SUMMARY OF THE INVENTION

The present invention provides an electrical test connector adapted for interconnecting a first and a second connector. The test connector includes a housing defining a plurality of terminal receiving cavities with a terminal mounted in each of the cavities. The terminal has a first end portion for mating engagement and electrical connection with the first connector and a second portion extending out of the housing for electrical connection with the second connector.

The test connector of the present invention is characterized by having an exposed terminal portion extending btween the test connector housing and the second connector. In one embodiment of the invention, a first insulated member is disposed adjacent the test connector housing and includes a plurality of passages for receiving and for maintaining alignment of the second terminal portions of the terminals. A second insulated member is axially spaced from the first insulated member and has a plurality of passages for receiving the second terminal portions and for defining said exposed terminal portion.

Some ways of carrying out the present invention will now be described in detail by way of example with reference to drawings which show one specific embodiment.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a first and second electrical test connector constructed in accordance with the principles of the present invention;

FIG. 2 is a cross-sectional view taken along the line 2-2 of Fig. 1; and

FIG. 3 is a perspective view of a terminal of the test connectors of Fig. 1.

DETAILED DESCRIPTION OF THE ILLUSTRATED EMBODIMENTS

Referring now to Fig. 1 there is illustrated a first and second electrical test connector generally designated by the reference numerals 10 and 10'. Each connector 10 and 10' is intended for interconnecting a first electrical connector such as a male connector (not shown) with a second electrical connector, such as a female connector 12. In general, test connectors 10 and 10' include an insulated housing 14 defining a plurality of terminal receiving cavities 16 and a plurality of similar electrical terminals 18 each adapted to be mounted in the cavity 16.

Terminal 18 is illustrated in Fig. 3 and includes a first terminal contact portion 20 positioned adjacent an entrance 22 to the cavity 16 (Fig. 1) for electrical connection with the first connector (not shown). A second elongated pin contact portion 24 of the terminal 18 extends outwardly through an opposing housing wall 26 for mating engagement with the electrical connector 12. Terminal 18 further includes a locking lance 28 that engages a locking window 30 formed in the housing 14 for positioning and retaining the terminal within the cavity 16.

An exposed terminal portion or pin length 34 is defined between the housing 14 and the second connector 12 to enable in use testing and monitoring of circuits connected between the mating connectors. The illustrated electrical test connector 10' includes two terminals. These terminals are longer than the maximum insertion distance provided by the female connector 12. This distance is indicated as D in Fig. 3. Thus, even when test connector 10' is fully inserted, exposed portions 34 remain. Test connector 10' is particularly useful for interconnecting selected terminals of the mating connectors or for interconnecting mating connectors having two terminals.

The illustrated test connector 10 includes multiple terminals 18 arranged in a dual row array, although various terminal arrays can be provided corresponding to different mating connectors. Test connector 10 further includes a first insulated member 36 disposed adjacent the housing wall 26. Member 36 includes a plurality of passages 38 for receiving the elongated pin portions 24 to maintain the alignment of the dual row array of pins 24. A second insulated member or spacer 40 is axially spaced from the first insulated member and includes a plurality of passages for receiving the pin portions 24. The passages 42 are dimensionally substantially equal to the pin portions 24 of the terminals 18. The second insulating member receives the terminal portions 24 in press-fit engagement for maintaining the desired exposed terminal length 34 defined between members 36 and 40. Member 40 engages the housing of female connector 12 when pin contact portions 24 are fully inserted into connector 12.

It should be understood that test connectors 10 and 10' constructed in accordance with the principles of the present invention may be used with mating connectors of many different sizes and configurations.

Claims

1. An electrical test connector adapted for interconnecting a first connector and a second female connector, said test connector comprising:
a housing defining a plurality of terminal receiving cavities;
a terminal mounted in each of said terminal receiving cavities, each terminal having a first end portion for mating engagement with the first connector and a pin contact portion at the other end for mating enegagement with the female connector characterized by a testing portion between the first end portion and pin contact portion, each terminal being mounted in the housing such that the first end portion is positioned in the cavity and the testing portion and the pin contact portion extend out of the housing,
whereby when said pin contacts are mateably engaged with the female connector, said testing portions remain exposed extending between the housing and the female connector to provide access to the terminals for testing.

2. A test connector as claimed in claim 1, further comprising a spacer including an insulated member having a plurality of passages for receiving the terminals in press fit engagement therewith and and positioned between the testing portions and the pin contact portions.

3. A test connector as claimed in claim 2, wherein the female connector has a maximum insertion distance and said pin contact portions extend beyond the spacer a distance equal to or less than said maximum insertion distance.

4. A test connector as claimed in any preceding claim further comprising an insulated member including a plurality of passages for receiving the terminals disposed adjacent said housing between the testing portions and the housing.

5. A test connector as claimed in any preceding claim wherein the first end portions comprise a pin receiving portion and the first connector is a male connector.

6. An electrical test connector adapted for interconnecting a first connector and a second female connector, said test connector comprising:
a housing including first and second opposed walls and a plurality of terminal receiving cavities, each cavity including an entrance in said first wall;
a terminal mounted in each of said terminal receiving cavities, each terminal having a first end portion for mating engagement with the first connector, a pin contact portion at the other end for mating engagement with the female connector and a testing portion between the first end portion and the pin contact portion, each terminal being mounted in the housing such that the first end portion is positioned in the cavity and the testing and pin contact portions extend through the housing wall opposite said entrance and outside the housing, whereby, when said pin contact portions are mateably engaged with the female connector, said testing portions remain exposed extending between the housing and the female connector to provide access to the terminals for testing.

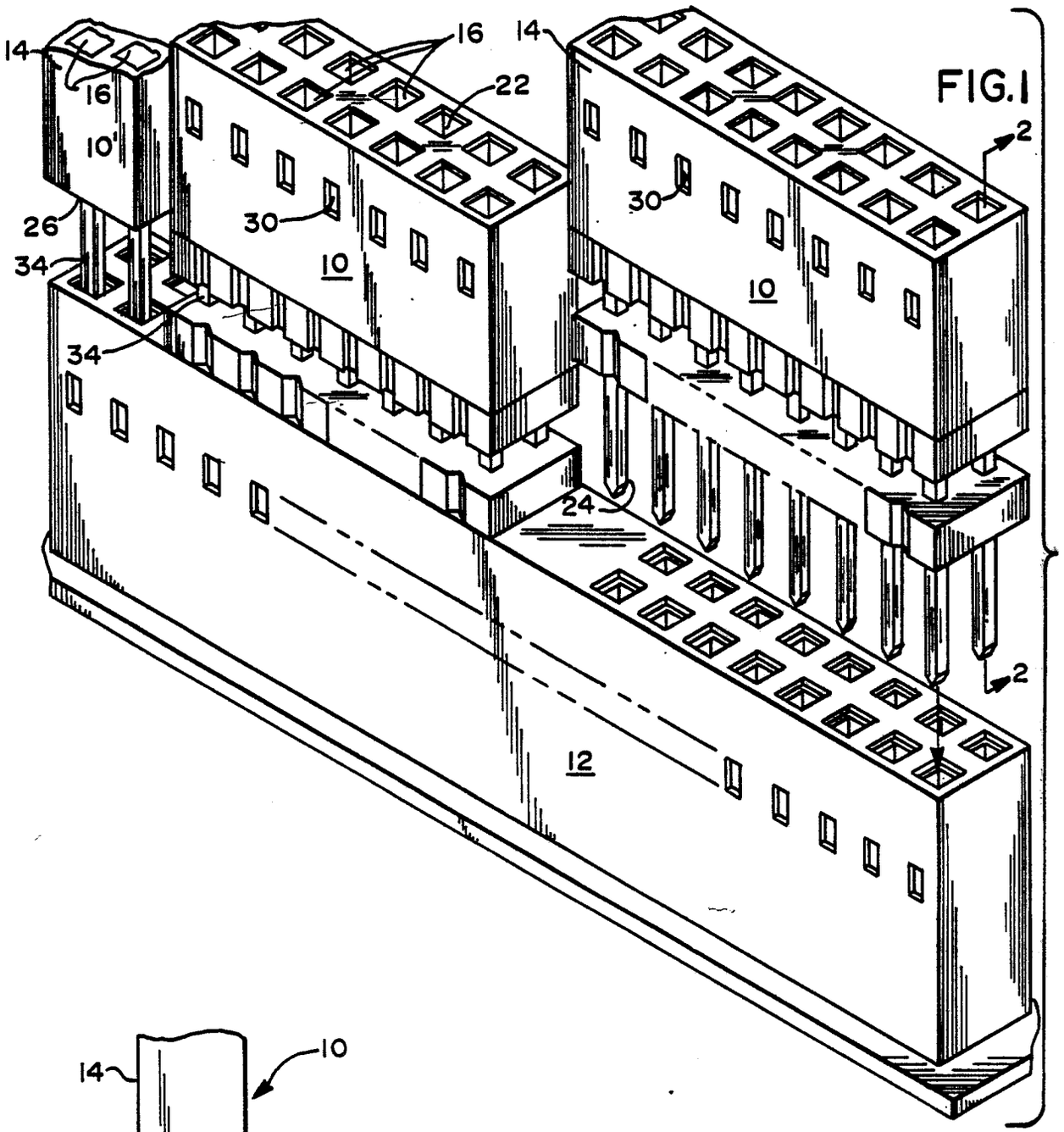


FIG.1

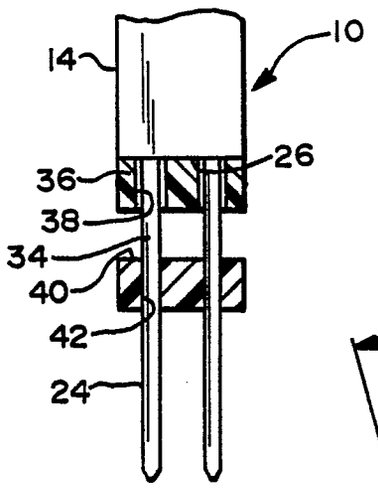


FIG.2

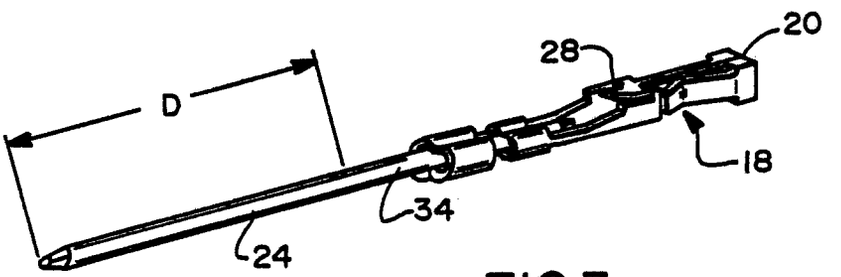


FIG.3