

PATENT SPECIFICATION (11)

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(54) ELECTRICAL CONNECTOR

(71) We, AMP INCORPORATED, a corporation organised and existing under the laws of the State of New Jersey, United States of America, of Eisenhower Boulevard, Harrisburg, Pennsylvania, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to an electrical connector.

According to this invention there is provided an electrical connector comprising a housing carrying a plurality of electrical terminals at least one of which carries a tubular filter device, the connector including a ground conductor in the form of a plate through an individual aperture in which the or each of the filter devices passes with an electrode of the or each filter device electrically connected to the ground plate, in which the ground plate comprises a rigid metal plate with a metal foil sheet superposed on one face of the rigid metal plate, the or each filter device passing through an individual aperture in the rigid metal plate and an aligned aperture in the metal foil sheet, the or each aperture in the metal foil sheet being defined by a plurality of circumferentially spaced inwardly directed tines which are compressively sandwiched between the associated filter device and the wall of the aligned aperture in the rigid metal plate.

A connector according to this invention will now be described by way of example with reference to the drawings in which:—

Figure 1 is an exploded perspective view of the connector;

Figure 2 is a side elevational view of the assembled connector;

Figure 3 is a plan view of part of the ground plate of the connector; and

Figure 4 is a cross-sectional view through part of the connector showing a filter device.

The connector shown in Figures 1 and 2 comprises a housing 1 carrying a plurality of electrical terminals 2 in the form of posts.

The exact form of the housing 1 and the unseen ends of the terminals 2 are of no significance to this invention, and will not therefore be described in detail herein.

One or more of the terminals 2 is to carry a tubular filter device 3 as described in U.S. Patent Specification No. 3743978, the filter device 3 being mounted on the terminal 2 by means of a contact spring 4 which is received within the filter device 3 and over the terminal 2, and provides an electrical connection between an inner electrode of the filter device 3 and the terminal 2.

The connector also includes a composite ground plate 5 (Figures 3 and 4) formed of a rigid metal plate 6 and a metal foil sheet 7 superposed on one face of the rigid metal plate 6.

The metal plate 6 has a plurality of apertures 8 therein, and the metal foil sheet 7 also has a plurality of apertures 9 therein each aligned with an individual aperture 8 in the metal plate 6 and defined by a plurality of circumferentially spaced inwardly directed tines 10.

The composite ground plate 5 is secured to the housing 1 by bolts 11 (Figure 2) with each of the terminals 2 passing through a pair of aligned apertures 8 and 9 in the ground plate 5.

As best seen in Figure 4, when a filter device 3 is mounted on a terminal 2, the filter device extends through the ground plate 5 with the tines 10 of the metal foil sheet 7 compressively sandwiched between the filter device 3 and the wall of the aperture 8 in the metal plate 6, the tines 10 thus providing the required electrical connection between the outer electrode of the filter device 3 and the ground plate 5.

The filter devices 3 are electrically isolated from the housing 1 by an insulating spacer plate 12, and thus the housing 1 can be of metal.

In one particular connection as described above the metal plate 6 was of cold rolled steel 0.002 inches in thickness, and the metal foil sheet 7 was ASTM Alloy 24, 0.003 inches in thickness, the metal foil sheet 7 being secured to the metal plate 6 by means

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of an electrically conductive epoxy adhesive material.

As best seen in Figure 4, the tines 10 extend completely through and beyond the lower face of the metal plate 6 whereby their resiliency urges them radially inwardly to grip the outer electrode of the filter device 3.

If a particular terminal 2 is not to carry a filter device 3, then the tines 10 are removed from the associated aperture 9 in the metal foil sheet 7 in order to prevent grounding of that terminal 2 to the ground plate 5.

WHAT WE CLAIM IS:—

1. An electrical connector comprising a housing carrying a plurality of electrical terminals at least one of which carries a tubular filter device, the connector including a ground conductor in the form of a plate through an individual aperture in which the or each of the filter devices passes with an electrode of the or each filter device electrically connected to the ground plate, in

which the ground plate comprises a rigid metal plate with a metal foil sheet superposed on one face of the rigid metal plate, the or each filter device passing through an individual aperture in the rigid metal plate and an aligned aperture in the metal foil sheet, the or each aperture in the metal foil sheet being defined by a plurality of circumferentially spaced inwardly directed tines which are compressively sandwiched between the associated filter device and the wall of the aligned aperture in the rigid metal plate.

2. A connector as claimed in Claim 1, in which the tines contacting a filter device extend completely through and beyond the other face of the rigid metal plate.

3. An electrical connector substantially as hereinbefore described with reference to the drawings.

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