Multipolar connector

Field of the invention

The present invention relates to connectors, in particular electrical connectors.

State of the art

In most cases, the use of a multipole connector requires the two main components (e.g. one component containing male contacts and one component with female contacts) to be fixed to one another according to a specific angular orientation.

The fact of having to align one component relative to the other, prior to connection, constitutes a nuisance. There is therefore a need to be able to eliminate this nuisance.

General description of the invention

According to an aspect of the present invention, there is provided a connector comprising a socket of substantially cylindrical form, and a plug that can be removably connected to the socket, in which there are arranged a plurality of contacts; the socket comprising a conductive face on or in which there is arranged at least one conductive track forming at least one circular arc whose center substantially coincides with the center of the conductive face; said track being also arranged so as to allow a mechanical electrical coupling with one of said contacts, connector in which each contact is mounted to be axially mobile, independently of the other contacts, the contacts being arranged through a flexible membrane, said membrane being seal-tight, the connector comprising a mechanism exerting a return force on each contact and an elastic element inducing a return mechanism toward the socket

making it possible to exert an individual pressure on each contact, said elastic element being formed by the membrane.

There is also disclosed a connector comprising a socket of substantially cylindrical form and a plug, that can be removably connected to the socket, in which there are arranged a plurality of contacts. The socket comprises a conductive face in the form of a disk on or in which there is arranged at least one conductive track forming at least one circular arc whose center substantially coincides with the center of the conductive face, said track being also arranged so as to allow a mechanical electrical coupling with one of said contacts.

In the connector according to embodiments of the invention, the socket and the plug constitute the two main components which form the connector.

In the particular configuration which comprises only a single circular track, the center of the face of the socket is a conductive disk, which is arranged so as to allow an electrical coupling with a contact of the plug

arranged at the center thereof.

Preferably, the connector comprises at least two circular conductive tracks which are arranged concentrically.

Advantageously, each contact of the plug is mounted to be axially mobile, independently of the other contacts. This may ensure a permanent mechanical contact with the conductive tracks of the socket.

A mechanism can be provided to exert a return force on each contact.

According to an embodiment of the invention, the contacts are arranged through a flexible membrane, for example made of rubber, which is preferably seal-tight.

The plug, overall, can be oriented in a single direction. Alternatively, it can be bent.

The plug can be connected to be free to rotate about the socket, or according to a limited number of angular orientations.

Detailed description of the invention

The invention will be better understood from the following description which in particular contains a few illustrated examples.

Brief description of the figures

Figure 1 represents a variant of the invention with a socket designed for a free orientation of the plug.

Figure 2 represents another variant of the invention with a socket designed for limited angular orientations of the plug.

1. A connector comprising a socket of substantially cylindrical form, and a plug that can be removably connected to the socket, in which there are arranged a plurality of contacts; the socket comprising a conductive face on or in which there is arranged at least one conductive track forming at least one circular arc whose center substantially coincides with the center of the conductive face; said track being also arranged so as to allow a mechanical electrical coupling with one of said contacts, connector in which each contact is mounted to be axially mobile, independently of the other contacts, the contacts being arranged through a flexible membrane, said membrane being seal-tight, the connector comprising a mechanism exerting a return force on each contact and an elastic element inducing a return mechanism toward the socket making it possible to exert an individual pressure on each contact, said elastic element being formed by the membrane.

2. The connector as claimed in claim 1, comprising at least two circular conductive tracks arranged concentrically.

3. The connector as claimed in any one of the preceding claims, in which the plug is bent.

4. The connector as claimed in any one of the preceding claims, in which the plug can be connected to be free to rotate about the socket.

5. The connector as claimed in any one of the preceding claims 1 to 7, in which the plug can be connected according to a limited number of orientations about the socket.

6. The connector as claimed in any one of the preceding claims, in which the contacts are distributed asymmetrically on the surface of the conductive face.

7. The connector as claimed in one of the preceding claims, in which the plug comprises a "socket" part allowing a stacking of several plugs/sockets.

8. The connector as claimed in one of the preceding claims, the plug comprising a spring ring producing the locking and/or the acknowledgement of plugging-in of the connector.

9. The connector as claimed in one of the preceding claims, in which the ring bears on balls which are housed in a groove of the socket upon connection.

10. The connector as claimed in one of the preceding claims, in which the socket is fixed to an external device by a fixing element and is connected to the device by contacts interconnecting directly with the device or through an electrical circuit welded to the socket and interfacing with the device.