



US 20020192988A1

(19) **United States**

(12) **Patent Application Publication**
Droesbeke et al.

(10) **Pub. No.: US 2002/0192988 A1**
(43) **Pub. Date: Dec. 19, 2002**

(54) **RIGHT-ANGLED CONNECTOR**

Publication Classification

(75) Inventors: **Gert Droesbeke**, Nijlen (BE); **Ivan Joachim Grek**, Katrineholm (SE)

(51) **Int. Cl.⁷** **H05K 1/00**
(52) **U.S. Cl.** **439/79**

Correspondence Address:
HARRINGTON & SMITH, LLP
4 RESEARCH DRIVE
SHELTON, CT 06484-6212 (US)

(57) **ABSTRACT**

A connector comprises a housing of insulating material and a number of right-angled contact elements arranged in rows and columns. A right-angled shielding plate is arranged between all adjacent rows or adjacent groups of rows of contact elements. Further, adjacent columns or adjacent groups of columns of contact elements are separated by a vertical shielding plate. The right-angled and vertical shielding plates are provided with slots receiving the vertical and right-angled shielding plates, respectively. Contact parts are provided for interconnecting the right-angled and vertical shielding plates.

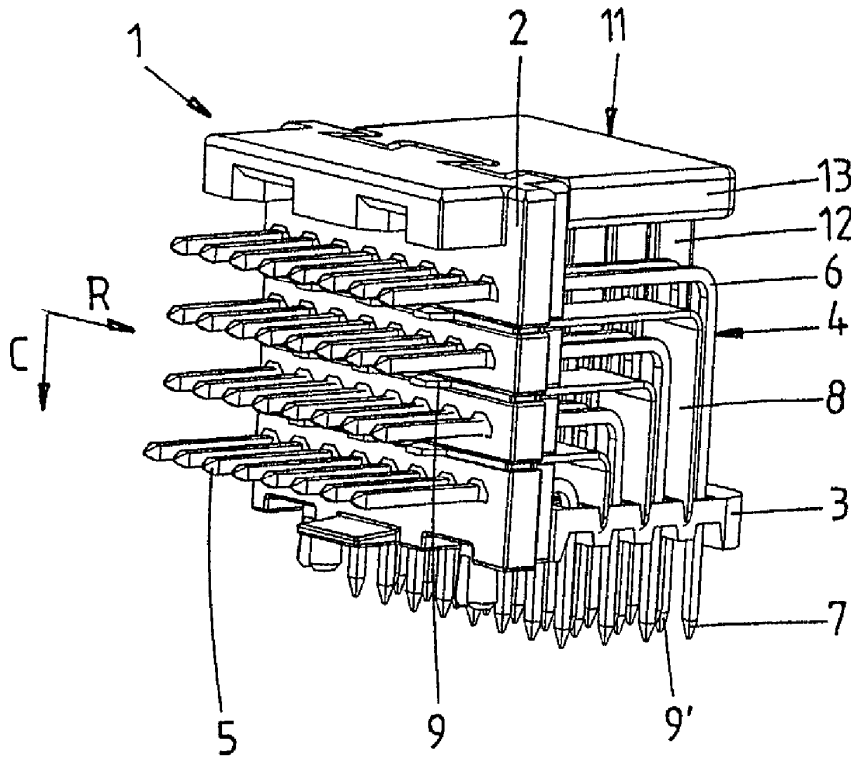
(73) Assignee: **FCI**

(21) Appl. No.: **10/160,316**

(22) Filed: **May 30, 2002**

(30) **Foreign Application Priority Data**

May 30, 2001 (NL)..... 1018176



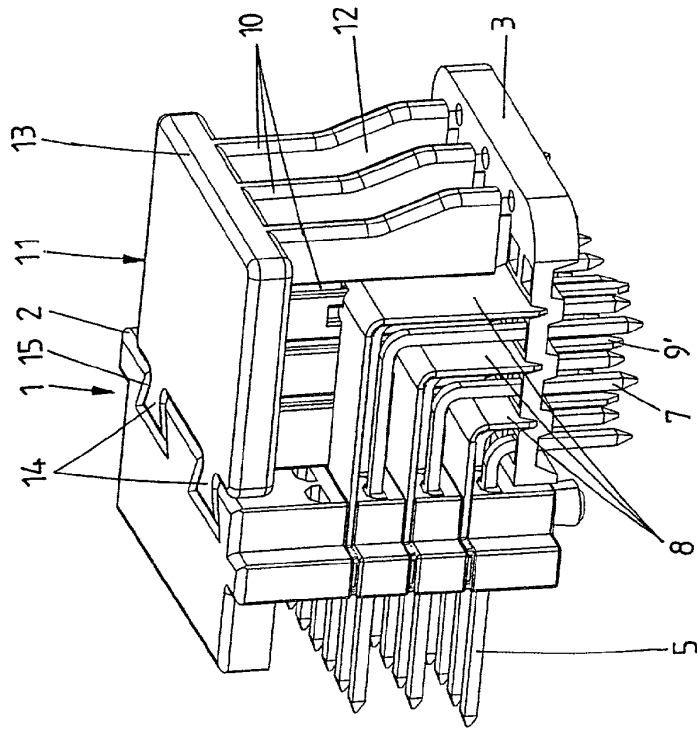


fig.2

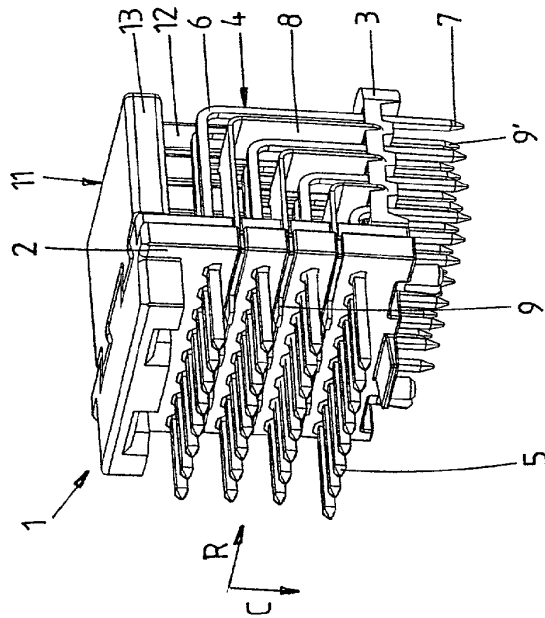


fig.1

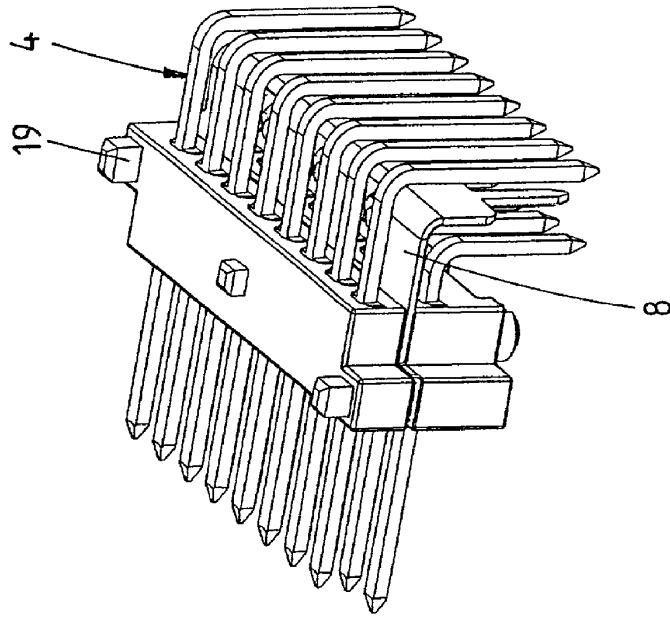


fig.4

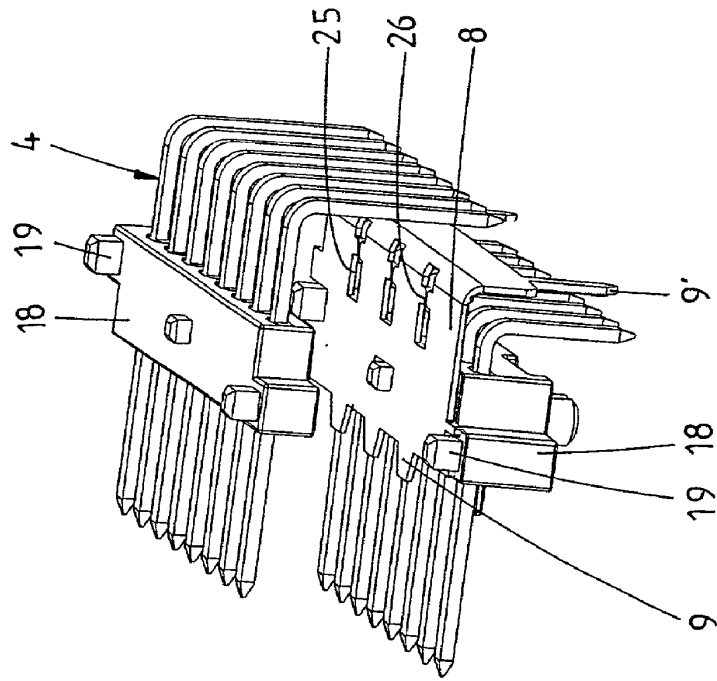


fig.3

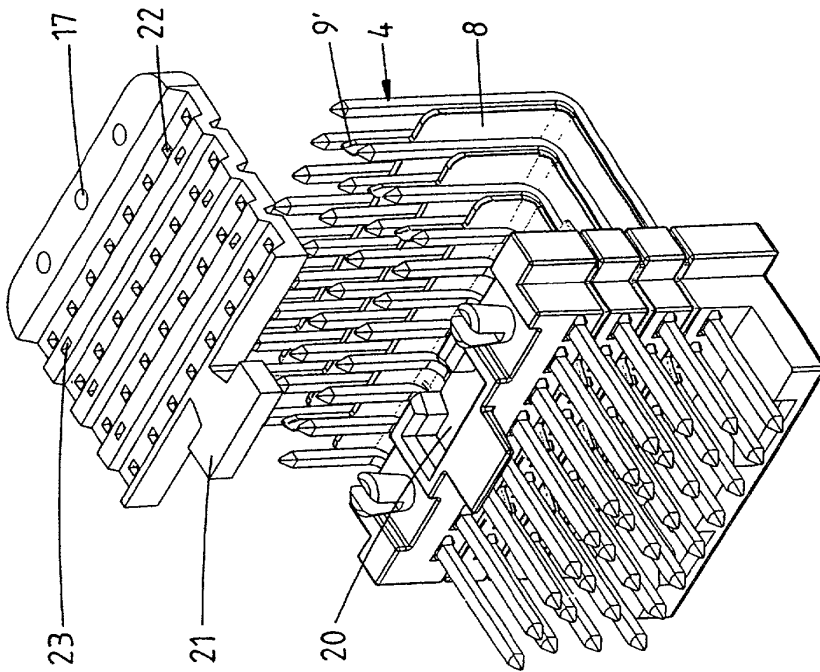


fig.5

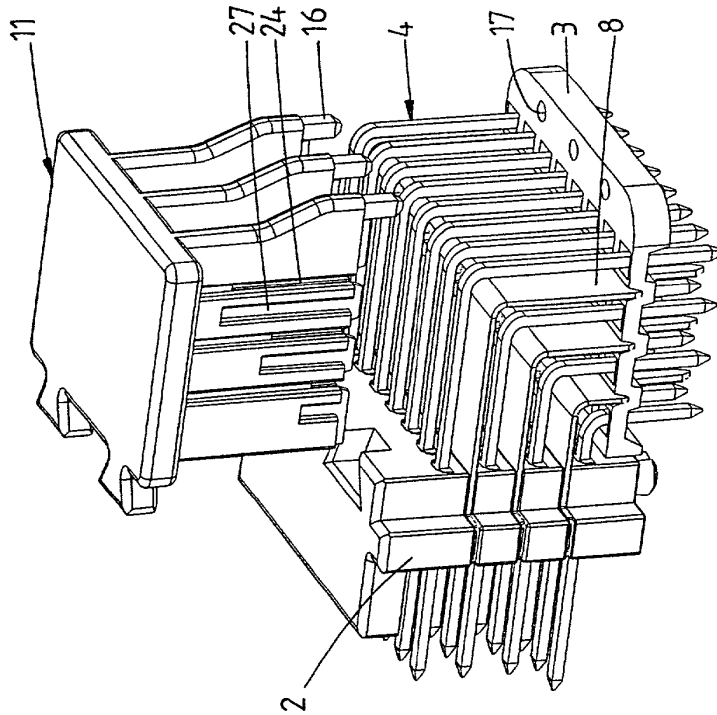


fig.6

RIGHT-ANGLED CONNECTOR

BACKGROUND OF THE INVENTION

[0001] The invention relates to a connector, comprising a housing of insulating material having a front wall and a bottom wall, a number of right-angled contact elements arranged in rows and columns, and at least one right-angled shielding plate arranged between two adjacent rows of contact elements.

[0002] GB-A-2 027 290 discloses a connector of this type, having three rows of right-angled contact elements, wherein the central row is a row of ground contact elements. The right-angled shielding plate is arranged between the central and outer rows of contact elements and interconnects the ground contact elements of the central row. This known connector requires a number of ground contact elements thereby reducing the density of signal contact elements. There is no shielding between columns of contact elements.

[0003] EP-A-0 446 980 discloses a connector, comprising a housing of insulating material, and a number of right-angled contact elements arranged in rows and columns, wherein signal contacts are enclosed by outer conductors and shielding plates are provided to improve shielding. The connector requires a number of ground contact elements for shielding thereby reducing signal contact density.

[0004] U.S. Pat. No. 4,611,867 discloses a connector, comprising a housing of insulating material, a number of straight contact elements arranged in rows and columns and a matrix of shielding plates. The connector is made as a coaxial multicore receptacle. A number of ground contact pins is required to contact the shielding plates.

[0005] U.S. Pat. No. 4,846,727 discloses a connector, comprising a housing of insulating material, a number of right-angled contact elements arranged in rows and columns and a number of shielding plates arranged between adjacent columns of contact elements. There is no shielding between rows of contact elements.

[0006] The invention aims to provide an improved connector of the above-mentioned type.

[0007] To this end the connector according to the invention is characterized in that a right-angled shielding plate is arranged between all adjacent rows or adjacent groups of rows of contact elements, and wherein adjacent columns or adjacent groups of columns of contact elements are separated by a vertical shielding plate, wherein the right-angled and vertical shielding plates are provided with slots receiving the vertical and right-angled shielding plates, respectively, wherein contact parts are provided for interconnecting the right-angled and vertical shielding plates.

[0008] In this manner a right-angled connector with a complete shielding of contact elements both in row and column direction is obtained.

BRIEF DESCRIPTION OF DRAWINGS

[0009] The invention will be further explained by reference to the drawings in which an embodiment of the connector assembly of the invention is shown.

[0010] FIGS. 1 and 2 show perspective views of an embodiment of the connector according to the invention.

[0011] FIGS. 3-6 show perspective views of some steps in a method of the invention for manufacturing the connector of FIGS. 1 and 2.

[0012] Referring to FIGS. 1 and 2 there is shown a right-angled connector or header, comprising a housing 1 of insulating material having a front wall 2 and a bottom wall 3. A number of right-angled contact elements 4 are arranged in rows and columns. Arrows R and C in FIG. 1 schematically show the row or horizontal direction and column or vertical direction. Each contact element 4 comprises a contact end or pin 5 adapted to contact a contact element of a mating connector, an intermediate right-angled section 6, and a terminal end 7 adapted to be inserted into a plated through-hole of a printed circuit board. It will be understood that the configuration of the contact elements 4 is shown by way of example only and different configurations are possible.

[0013] A right-angled shielding plate 8 is arranged between each two adjacent rows of contact elements 4 so that the rows of contact elements 4 are completely shielded with respect to each other. Each right-angled shielding plate is provided with contact lips 9 projecting out of the front wall 2 and with terminal ends 9' projecting out of the bottom wall 3. Further, adjacent pairs of columns of contact elements 4 are separated by a vertical shielding plate 10. As will be described hereinafter, the vertical shielding plates 10 are interconnected with the right-angled shielding plates 8. In this manner a complete shielding of each pair of contact elements 4 is obtained. In the embodiment shown each row comprises eight contact elements and with four rows this results in sixteen completely shielded pairs of contact elements 4. It will be understood that different arrangements of the right-angled and vertical shielding plates are possible. For example, the vertical shielding plates can be provided between each two adjacent columns of contact elements 4 to obtain individually shielded contact elements 4. In a different layout, a right-angled shielding plate 8 could be arranged between adjacent groups of rows of contact elements.

DETAILED DESCRIPTION OF THE INVENTION

[0014] As shown in FIGS. 1 and 2, the vertical shielding plates 10 are part of a vertical shielding element 11 overmoulded with an insulating material 12. This vertical shielding element 11 comprises an upper wall 13 from which the vertical shielding plates 10 extend downwards. If desired, a metal plate interconnected with the vertical shielding plates 10 can be accommodated within the upper wall 13. The upper wall 13 is provided with two locking projections 14 engaging in locking recesses 15 of the front wall 2 of the housing 1. As can be seen in FIG. 6, the overmoulded vertical shielding plates are provided with coupling pins 16 and these coupling pins 16 are received in holes 17 of the bottom wall 3 of the housing 1. In this manner a rigid construction of the connector is obtained. It will be understood that the connector of FIGS. 1 and 2 can be provided with outer shielding plates in a usual manner.

[0015] For a further detailed description of the construction of the connector and the method for manufacturing the connector reference is now made to FIGS. 3-6. The front wall 2 of the housing comprises for front wall parts 18, which are interconnected by projections 19 received in

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.