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EUROPEAN PATENT APPLICATION

②① Application number: 79200400.4

⑤① Int. Cl.³: **H 01 R 13/516**
H 05 K 7/12

②② Date of filing: 17.07.79

③① Priority: 01.08.78 GB 3180378

④③ Date of publication of application:
06.02.80 Bulletin 80/3

⑥④ Designated Contracting States:
AT CH DE FR GB NL SE

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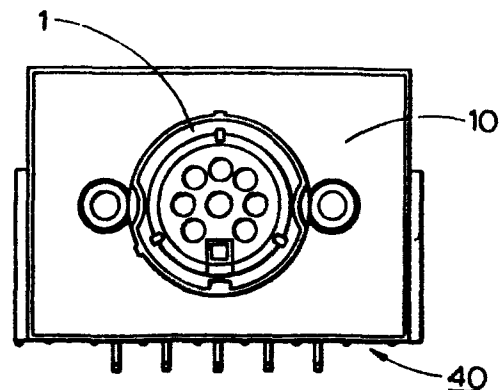
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⑤④ **Electrical connector with mounting device.**

⑤⑦ An electrical connector (40) comprising a connector element (1) having mounting means projecting in a plane perpendicular to the direction of mating of the connector element with a complementary connector element and a mounting device. The mounting device comprises an L-shaped body portion having a slot extending from the free end of one of the limbs of the L towards the junction of the two limbs of the L. The connector element is assembled in the slot and retained in position by a planar member (10) having an aperture through which a portion of the connector projects. This enables the connector element to be assembled in the body portion with pre-formed connection leads projecting through apertures in the other limb of the body portion.

Fig .11



EP 0 007 670 A1

TITLE MODIFIED
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"ELECTRICAL CONNECTOR"

The invention relates to an electrical connector comprising a connector element having mounting means projecting in a plane perpendicular to the direction of mating of the connector element with a complementary connector element and a mounting device for mounting the connector element with the plane of the mounting means perpendicular to a surface on which it is to be mounted, the mounting device comprising an L-shaped body portion.

Electrical connector elements, that is plugs and sockets, have been mounted on surfaces by means of L-shaped mounting members provided with an aperture in the limb perpendicular to the surface. The plug or socket projects through the aperture and is coupled to the perpendicular limb by any convenient fastening device, for example rivets or nuts and bolts. This construction is simple and convenient provided that the leads from the connector are flexible or are not arranged to pass through the other limb of the L. However, if such a connector is to be mounted on a printed circuit board it is convenient to pass the connecting leads from the connector element through the other limb of the L and through corresponding holes in the printed circuit board so that the connections may be flow soldered to the conductors on the printed circuit board. It would be convenient for assembly if the connecting leads were rigid and pre-formed to pass through the apertures in the other limb of the L. This would, however, require that the connector element be inserted into the mounting device in a direction

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which is perpendicular to both limbs of the L. This is clearly impossible and hence simple apertures in both limbs of the L are not satisfactory.

5 It is an object of the invention to provide an electrical connector comprising a connector element and a mounting device comprising an L-shaped body portion in which the connector element may be assembled on the body portion by movement in a direction parallel to the limb of the L on which it is located.

10 The invention provides an electrical connector comprising a connector element having mounting means projecting in a plane perpendicular to the direction of mating of the connector element with a complementary connector element and a mounting device for mounting the connector element with the plane of the mounting means perpendicular to a surface on which it is to be mounted, the
15 mounting device comprising an L-shaped body portion characterised in that the body portion has a slot in which the connector element is located, the slot extending from the free end of one limb of the L towards the junction of the two limbs of the L and the mounting device further comprises a planar member having an aperture through
20 which the connector element projects, the planar member being arranged to cover the one limb and being coupled thereto to retain the connector element within the slot.

By forming a slot rather than an aperture in the limb the connector may be assembled by sliding the connector element in the
25 slot parallel to that limb of the L and hence perpendicular to the other. However, this leaves a comparatively large area cut out of the body portion which both weakens the limb and detracts from its appearance. To overcome these disadvantages a planar member having an aperture which may closely match the dimensions of the project-
30 ing portion of the connector element is provided to cover the limb.

The connector element may be restrained from movement perpendicular to the planar member by the provision of a groove or grooves in a wall or walls of the slot in which the mounting means is located. It may further or alternatively be restrained by the
35 coupling means which may pass through the mounting means and which may comprise two eyelets.

The other limb of the mounting device may be provided with

apertures through which connection to the connector element may be made by one or more leads which project through the apertures. The leads may be rigid and preformed. This enables the connector to be mounted simply on a printed circuit board with the projecting leads on a standard grid pattern.

The L-shaped body portion may be provided on one side with a dovetail shaped recess and on the opposite side with a dovetail shaped projection. In this way a plurality of connectors may be assembled side by side in interlocking fashion.

The invention further provides an assembly of a plurality of such electrical connectors in which the dovetail shaped projection of one connector is located in the dovetail shaped recess of its neighbour, there being a single fastening member passing through an aperture formed by two semicircular recesses one in the dovetail shaped projection and the other in the co-operating dovetail shaped recess.

An embodiment of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:-

Figure 1 is a front elevation of a connector element for use in an electrical connector according to the invention.

Figure 2 is a rear elevation of the connector element shown in Figure 1,

Figure 3 is a side elevation of the connector element shown in Figure 1,

Figure 4 is a front elevation of a planar member for use in an electrical connector according to the invention.

Figure 5 is a cross-sectional view on line A-A of Figure 4,

Figure 6 is a part cross sectional end elevation on line B-B of Figure 4,

Figure 7 is a front elevation of an L-shaped member for use in an electrical connector according to the invention.

Figure 8 is a rear elevation of the L-shaped member shown in Figure 7,

Figure 9 is a plan view of the L-shaped member shown in Figure 7,

Figure 10 is a cross sectional view on line C-C of Figure 9,

Figure 11 is a front elevation of an electrical connector according to the invention,

Figure 12 is an end elevation of the electrical connector shown in Figure 11, and

5 Figure 13 is a plan view of the electrical connector shown in Figure 11.

10 Figures 1 to 3 show a connector element 1 comprising a block 2 of electrically insulating material having a plurality of holes 3 in which contact elements are located. The contact elements may be either male or female depending on whether a plug, socket or combination of both is required. Mounting means extending in a plane perpendicular to the direction of mating of the connector element with a complementary connector element are provided. As shown in Figures 1 to 3 the mounting means comprises a flange 4 provided with two holes 5 and 6. The flange 4 may be integral with a substantially cylindrical member 7 which surrounds the insulating block 2 where the mating connector mates with the connector 1. Leads (not shown) will usually project from the rear, or non mating side, of the connector and may be connected to the equipment in any convenient manner, for example soldering, wire wrapping or crimping.

15 Figures 4 to 6 show a planar member 10 which is substantially rectangular in elevation and is provided with substantially circular aperture 11 which provides a clearance hole through which when the connector is assembled the cylindrical member 7 projects. Two further holes 12 and 13 are provided which are positioned and dimensioned to match the holes 5 and 6 in the flange 4 of the connector 1. The holes 12 and 13 are provided with countersunk portions 14 and 15 to enable an eyelet connection to be sunk below the surface of the member 10.

20 Figures 7 to 10 show an L-shaped member 20 which comprises a first limb 21 and a second limb 22. The limb 21 has a slot 23 extending from its free end towards the junction of the first and second limbs. The slot 23 has a groove 24 in which the flange 4 of the connector 1 may be located. The limb 21 is also provided with two apertures 25 and 26 to enable a fastening member to pass through when the planar member and connector element are assembled

in the limb. The limb 22 is provided with a plurality of counter-sunk holes, one of which is indicated at 28, and two further holes 29 which may be used for mounting the member 20 on the equipment to which the connector element 1 is to be connected. Webs 30 and 31, one at each side of the L-shaped member, are provided to join the two limbs of the L. The web 30 is provided with a dovetail recess 32 while the web 31 has a similarly dimensioned dovetail projection 33 so that the projection 33 will locate and interlock in the recess 32 on a further member, thus enabling a series of connectors to be mounted side by side. The recess 32 and projection 33 are each provided with a countersunk half hole such that when a projection is located in a corresponding recess a full countersunk hole is produced and only one fixing screw per connector is required when locating a plurality of connectors side by side.

Figures 11 to 13 show an electrical connector 40 which is an assembly of the connector element 1, L-shaped member 20, and planar member 10. To assemble the connector 40 the connector element is inserted into the slot 23 so that the flange 4 enters the groove 24. This enables preformed leads 41 to pass through the apertures 28 in limb 22. The planar member 10 is then placed over the cylindrical member 7 in contact with the limb 21 of the member 40. The holes 5 and 6 in the connector element 1 are aligned with the holes 12 and 13 in the planar member 10 and the apertures 25 and 26 in the member 20 and eyelets 42 and 43 are inserted to couple the connector element 1, L-shaped member 20, and planar member 10. In Figure 12 the connector 40 is shown assembled on a printed circuit board 44 with the leads 41 projecting through to enable soldering to conductive track on the board.

The provision of the slot 23 in the L-shaped member 20 enables the connector element 1 to be assembled thereon in a direction parallel to limb 21 thus enabling preformed leads to enter the holes 28 in limb 22 while the planar member prevents movement of the connector element along the slot and may provide a more decorative finish to the connector.

Various modifications may be made to the embodiment described without departing from the scope of the invention. For example, the connector element may be square or rectangular rather than

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circular and may be provided with mounting lugs rather than a flange. The planar member may be an interference fit on the L-shaped member rather than being coupled by a fastener.

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CLAIMS:

1. An electrical connector comprising a connector element having mounting means projecting in a plane perpendicular to the direction of mating of the connector element with a complementary connector element and a mounting device for mounting the connector element with the plane of the mounting means perpendicular to a surface on which it is to be mounted, the mounting device comprising an L-shaped body portion characterised in that the body portion has a slot in which the connector element is located, the slot extending from the free end of one limb of the L towards the junction of the two limbs of the L and the mounting device further comprises a planar member having an aperture through which the connector element projects, the planar member being arranged to cover the one limb and being coupled thereto to retain the connector element within the slot.
2. An electrical connector as claimed in Claim 1 characterised in that the mounting means is located in a groove or grooves in a wall or walls of the slot.
3. An electrical connector as claimed in Claims 1 or 2 characterised in that the means for coupling the L-shaped and planar members passes through the mounting means.
4. An electrical connector as claimed in Claim 3 characterised in that the coupling means comprises two eyelets.
5. An electrical connector as claimed in any preceding claim

characterised in that the other limb of the L is provided with one or more apertures through which connection to the connector element may be made.

5 6. An electrical connector as claimed in Claim 5 characterised in that one or more leads from the connector element project through the apertures in the other limb of the L.

7. An electrical connector as claimed in any preceding claim characterised in that the L-shaped body portion is provided on one side with a dovetail shaped recess and on the opposite side with a
10 dovetail shaped projection.

8. An assembly of a plurality of electrical connectors as claimed in Claim 7 in which the dovetail shaped projection of one connector is located in the dovetail shaped recess of its neighbour, there being a single fastening member passing through a hole formed from
15 two semicircular recesses one in the dovetail shaped projection and the other in the co-operating dovetail shaped recess.

9. An electrical connector substantially as described herein with reference to the accompanying drawings.

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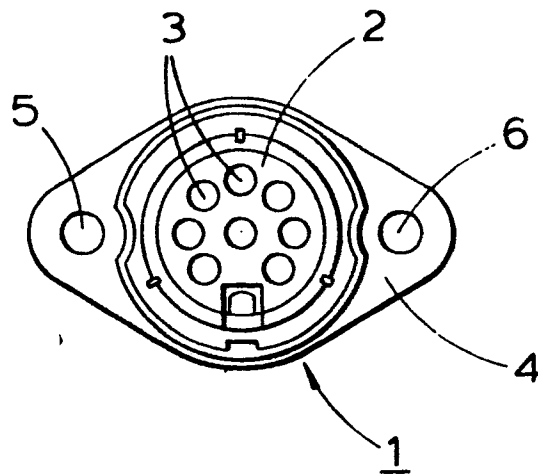


Fig. 1

Fig. 2

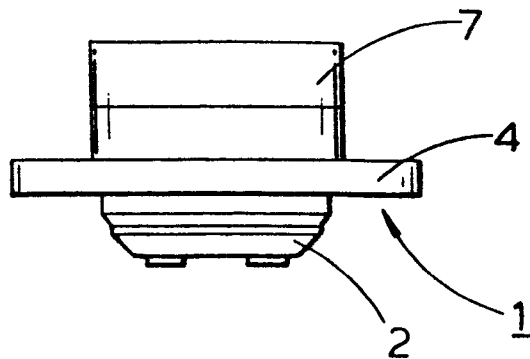
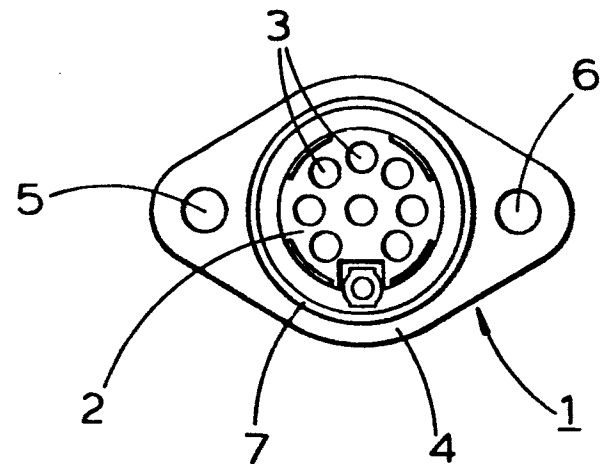


Fig. 3

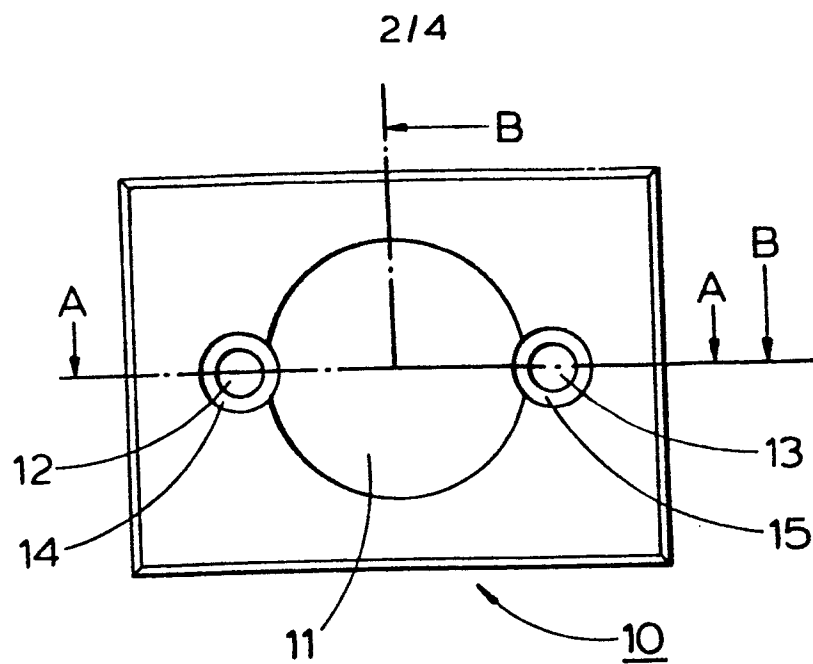


Fig. 4

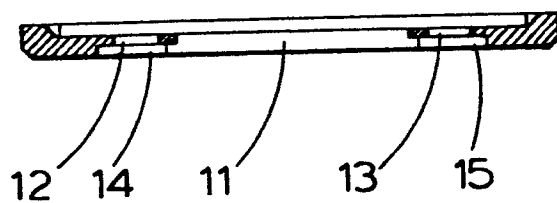


Fig. 5

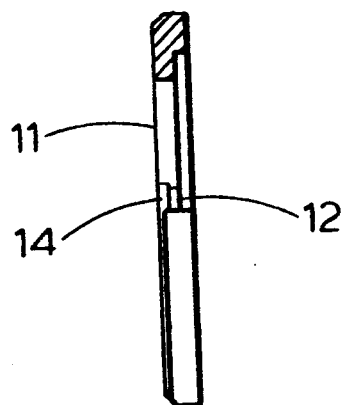


Fig. 6

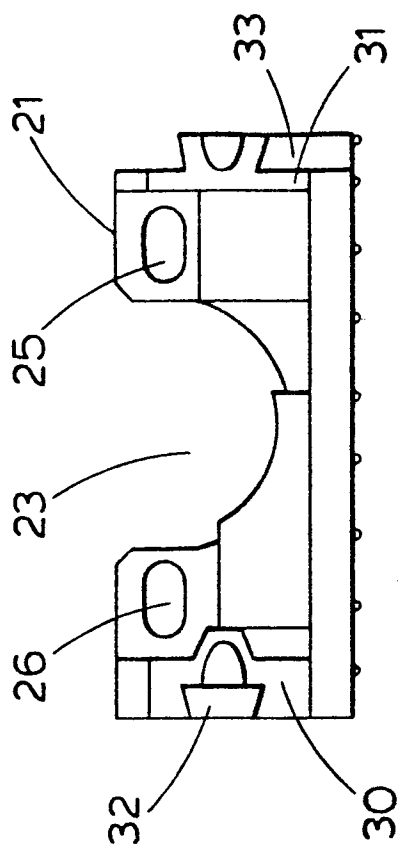


Fig. 8

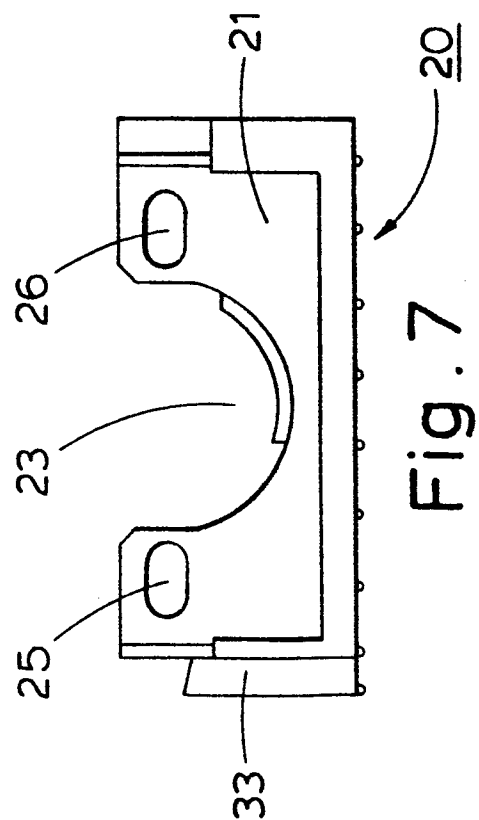


Fig. 7

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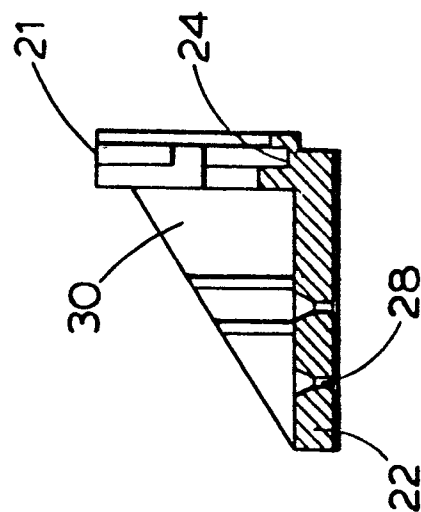


Fig. 10

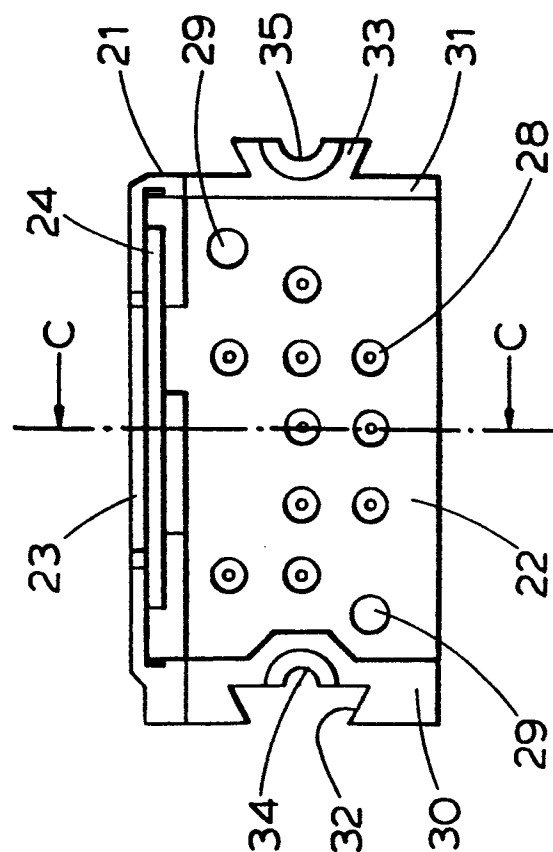


Fig. 9

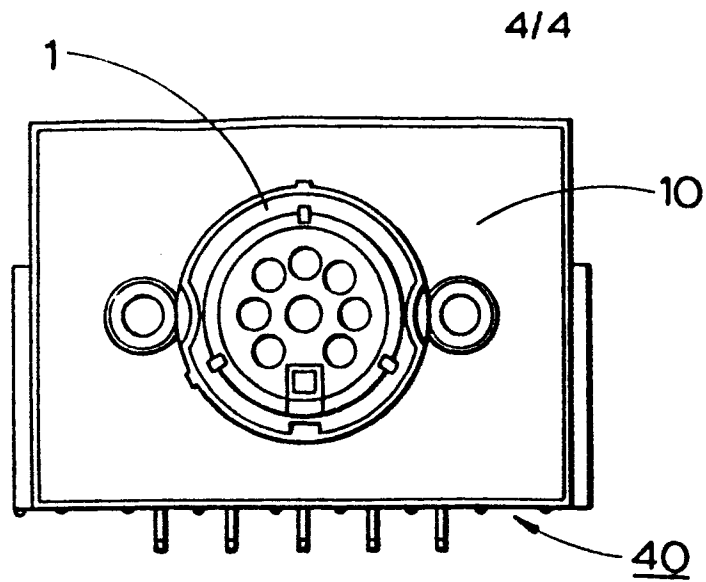


Fig .11

Fig .12

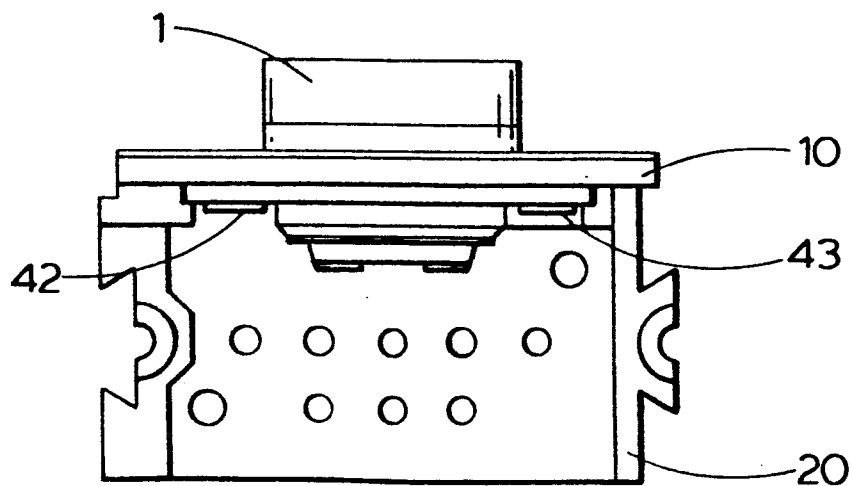
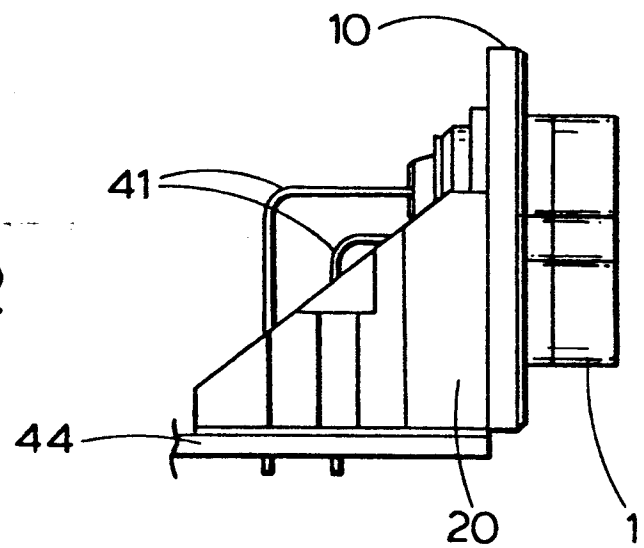


Fig .13



European Patent
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EUROPEAN SEARCH REPORT

Application number
EP 79 20 0400

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
A	FR - A - 2 163 920 (ITT) * Page 5, lines 12-28; figures * --	1,4,5	H 01 R 13/516 H 05 K 7/12
A	FR - A - 2 214 180 (THOMSON CSF) * Figures * --	1,2	
A	FR - A - 2 358 806 (FESTO) * Page 4, lines 7-19; figures * --	1,6	
AE	DE - A - 2 718 442 (S.E. LORENZ) * Page 6, line 22 - page 7, line 9; figures * --	1,6	H 01 R 13/516 H 01 R 13/518 H 01 R 13/512 H 01 R 13/514 H 01 R 13/502 H 01 R 13/46 H 01 R 15/74 H 01 R 23/70
A	US - A - 3 025 490 (G.E.C.) * Column 2, lines 19-66; figures 2-9 * --	1,2	
A	DE - A - 2 300 137 (THOMA, F.) * Figures * ----	7,8	
			TECHNICAL FIELDS SEARCHED (Int. Cl. ³)
			CATEGORY OF CITED DOCUMENTS
			X: particularly relevant A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: conflicting application D: document cited in the application L: citation for other reasons
			&: member of the same patent family, corresponding document
☒ The present search report has been drawn up for all claims Place of search The Hague Date of completion of the search 06-11-1979 Examiner RAMBOER			