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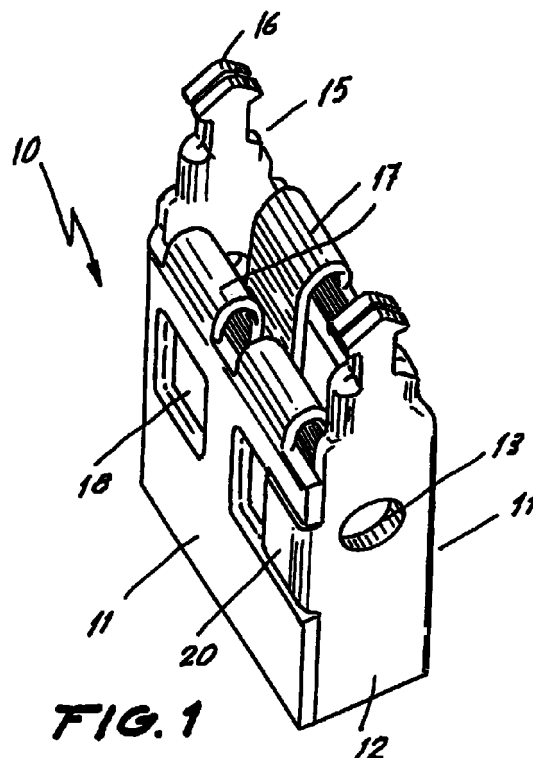
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(54) **INVERTED PLUG FOR PRINTED CIRCUITS**

(57) The female terminals are inserted by a side of the printed circuit board either the upper or the lower one and the contact zone between female terminal and tongue remains at the same side either upper or lower, by which the assembly of the several elements, such as the said reles and fuses occupy a considerable space, since to the height of same it must be added that of the female terminal itself, in order to make coincident all the weldings in a single face for making easier the welding process are distinguished in the printed circuit board the female terminals zone and the tongues zone, both are inserted by the same side of the printed circuit board.



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Description

[0001] The invention relates to a female terminal inserted in a printed circuit board, but by the same side than the tongues and with the exit at the opposite side. Consists in a body in the shape of a closed box in order to avoid the entry of dust and other undesired elements inside the contact zone of the female terminal with the male terminal.

[0002] There exist in the market, and therefore can be considered the state of the art, female terminals specially designed in order to fit on printed circuit boards in such a way that by one of its ends pass through same, whilst at the other end or front portion receive the corresponding elements, such as reels, fuses and other which work in combination in the printed circuit board.

[0003] Said female terminals type are inserted by one side of the printed circuit board either the upper or the lower one and the contact zone female terminal-tongue remains over the same upper or lower side, by which the assembly of the several elements such as the above named reels and fuses occupy a considerable space, since to the height of same it must be added the height of the female terminal itself.

[0004] In order to make coincident all the weldings in a single face for making easier the welding process, in the printed circuit board are differentiated the female terminals zone and the tongues zone, both are inserted by the same side of the circuit board.

[0005] In order to solve the above recited problems has been designed what is the object of the present invention, an inverted female terminal which shows a noticeably prismatic body, formed with two major lateral bases combined with two minor lateral bases, at the upper end of which are formed the insertion pins to the printed circuit board, whilst the major lateral bases extend forming the contact zone. The body shows a single base acting as a rear protection in order to avoid that the male terminal gets out of the rear portion of the female terminal.

[0006] The proposed female terminal configuration allows the insertion on the printed circuit board by the contact pins, since there are provided in said printed circuit board the corresponding holes, as well as other holes allowing the passage of the male terminals for coming in contact with the sheets provided to that effect as an extension of the major lateral bases of the female terminal.

[0007] In the minor lateral bases are provided the corresponding openings allowing checking that the contact has been correctly made, as well as contributing to the ventilation of the system (female terminal + male terminal).

[0008] The insertion pins have been folded in order to increase the section of the power passage and thus avoiding great overheatings as well as reinforcing the insertion operation.

[0009] Other details and characteristics of the

present application for a Patent of Invention will be manifest through the reading of the description given herebelow, in which reference is made to the figures attached to this description where the above details are depicted in a rather schematic way. These details are given as an example, referring to a case of a possible practical embodiment, but is not limited to the details outlined; therefore this description must be considered from an illustrative point of view and with no limitations whatsoever.

[0010] There follows a report of the several elements numbered in the drawings accompanying the present Model of Utility application: (10) female terminal, (11) major lateral faces, (12) minor lateral faces, (13) openings, (14) base, (15) pins, (16) ends, (17) contact tongues, (18) embossings, (19) base, (20) flange.

Figure 1 is a lateral perspective view of the female terminal (10) in which can be seen the main elements of same.

Figure 2 is a perspective view of the female terminal (10) in which can be seen the configuration of the interior portion of same.

[0011] In one of the preferred embodiments of what is the object of the present application and as can be seen in the Figures, the female terminal (10) shows a body of a noticeably prismatic configuration formed by the combination of two minor lateral bases (12) and two major lateral bases (11), produced by mechanizing and folding a flat sheet by conventional methods for adopting said prismatic shape, being provided in said lateral bases (11 and 12) the corresponding openings (13) allowing, by one side, the observation that a good contact has been established between the contact tongues (17) and the male terminals, whilst contributing to the ventilation of the contact female terminal-male terminal as well as to that of the printed circuit board, to which the female terminal has been incorporated.

[0012] From the major lateral bases (11) and by each of its upper base extend contact tongues, divided in two portions in order to reduce the efforts of the male terminal insertion into the female. These bases have provided with embossings (18) the function of which is that of serving as a butt to the flexion of the contact tongues (17) at the introduction of the male terminal.

[0013] The minor lateral bases (12) extend at one of its ends as per pins (15) finishing in ends (16) like arrow points which pass through the corresponding holes provided to that effect in the printed circuit board not shown in the Figures.

[0014] In order to avoid that, once placed the female terminal (10) in the printed circuit board and placed the male terminal in the contact tongues (17) it may arrive to the conductive portion of the corresponding printed circuit board there is provided that one of the major lateral bases (11), the lower portion, is folded as per a base (14) acting in the way of protection, avoiding

the entry of dust in the contact zone and also that the male terminal juts out at the rear portion.

[0015] The placement of the female terminal (10) in the printed circuit board may be made by any of the insertion methods known and at the points provided to such effect in said printed circuit board by making a pressure effected on the base (14) in such a way that the pins (15) cross the printed circuit board. The printed circuit board is provided with other holes, disposed in a totally programmed way, in order that the male terminals of reles, fuses and other elements may cross same, establishing the contact between them and the contact tongues (17) provided to that effect.

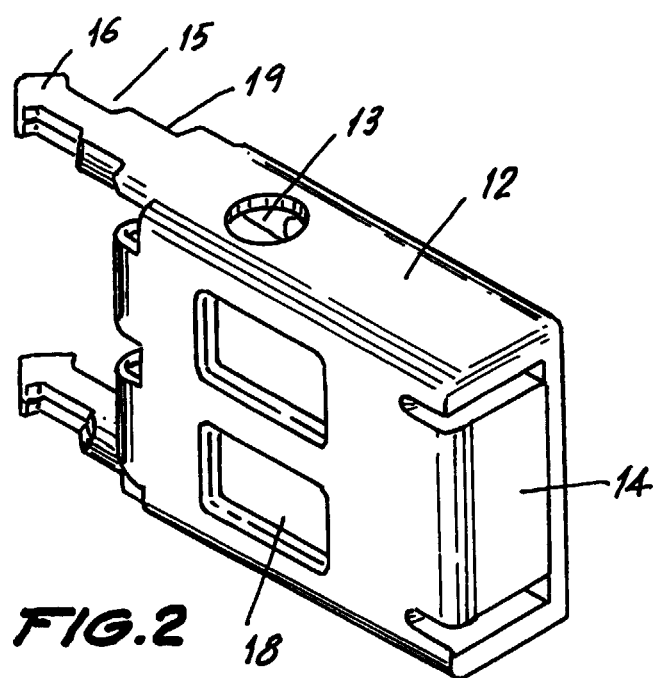
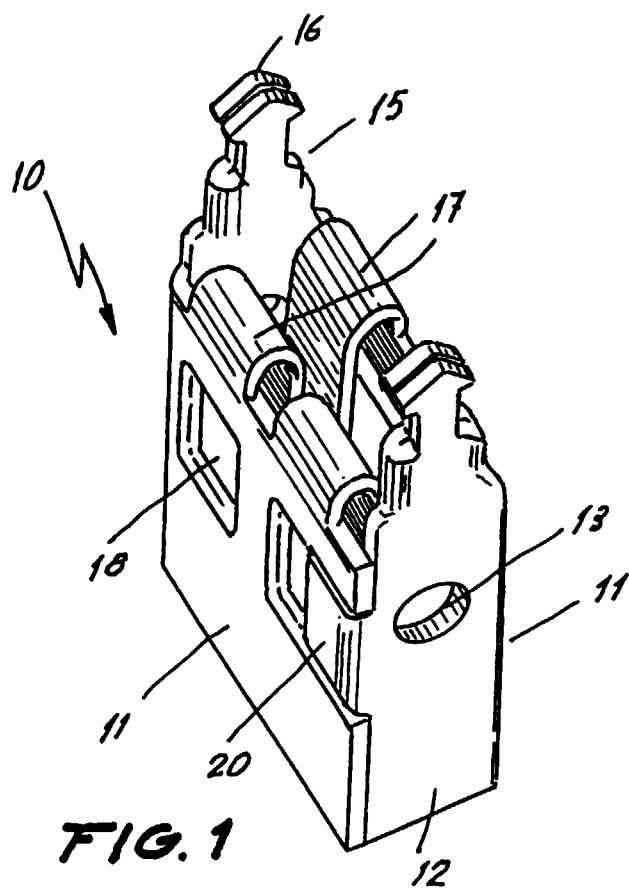
[0016] For the pins construction it s made a folding of the sheet in order to obtain a section enough for the passage of the stipulated current.

[0017] Enough disclosed what the present application for a patent of Invention is in agreement with the attached figures, it s understood that can be introduced in same any detail modifications regarded as convenient, always provided that any the modifications entered do not depart from the essence of the present Patent of Invention as summarized in the following claims.

Claims

1. PRINTED CIRCUIT BOARD REVERSED FEMALE TERMINAL of those formed with insertable bodies in said printed circuit boards being provided in same the corresponding holes, establishing the contact between the female terminals and the printed circuit boards by one of its ends whilst by the opposite one receive the corresponding male terminals, characterized in that the female terminal (10) shows a noticeably prismatic body formed by the combination of two minor lateral bases (12) and two major lateral bases (11), extending the minor lateral bases (12) as per pins (15), whilst the major lateral bases (11) extend by one of the bases as per contact tongues (17), providing in (11) and in (12) the corresponding openings (13) for checking the quality of the contact and for the ventilation of same.
2. PRINTED CIRCUIT BOARD REVERSED FEMALE TERMINAL as per Claim 1 characterized in that one of the major lateral bases (11) extends perpendicularly by one of its ends as per a base (14).
3. PRINTED CIRCUIT BOARD REVERSED FEMALE TERMINAL as per Claim 1 characterized in that the pins (15) emerge from a base (19) and the only free end of which is divided in two.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/ ES 99/ 00204A. CLASSIFICATION OF SUBJECT MATTER⁶:

IPC7 H01R 12/34, 13/15

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6 H01R

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CIBEPAT, EPODOC, WPI, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	FR 2542964 A (MECANISMOS AUX. IND. S.A.) 21 September 1983 (21.09.83); Page 2, Line 36 - Page 3, Line 22; Figures 1-4	1
A	PATENT ABSTRACT OF JAPAN, Japanese Patent Office, Tokyo, JP. JP 03-182067 A (NIPPON DENSO CO. LTD.) 8 August 1991 (08.08.91); Abstract; Figure	1
A	GB 2314468 A (MECANISMOS AUX. IND.) 24 December 1997 (24.12.97); Abstract; Figure 5	1



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

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"P" document published prior to the international filing date but later than the priority date claimed

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
8 October 1999 (08.10.99)Date of mailing of the international search report
21 October 1999 (21.10.99)

Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International Application No

PCT/ ES 99/00204

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FR 2542964 A	21.09.1984	ES 271074 U	01.11.1983
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Form PCT/ISA/210 (patent family annex) (July 1992)