

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 0 920 093 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
02.06.1999 Bulletin 1999/22

(51) Int Cl.⁶: **H01R 43/20**

(21) Application number: **98500251.8**

(22) Date of filing: **20.11.1998**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE**
Designated Extension States:
AL LT LV MK RO SI

(72) Inventors:
• **Kroebe, Rodolfo**
43800 Valls (Tarragona) (ES)
• **Mesa Sanz, Alberto**
43800 Valls (Tarragona) (ES)

(30) Priority: **25.11.1997 ES 9703060**

(74) Representative:
Morgades Manonelles, Juan Antonio
Calle Valencia, 300 - entresuelo 1a
08009 Barcelona (ES)

(71) Applicant: **MECANISMOS AUXILIARES
INDUSTRIALES S.A. M.A.I.S.A.**
E-43800 Valls, Tarragona (ES)

(54) Connector for electronic-use pins integrated in printed circuits

(57) The invention refers to a connector box specially designed to permit the block of electronic-use pins into a printed circuit board, it will be basically formed by a flat surface serving as a base on which the body of the connector properly speaking will go, without a top and

bottom base, thereby permitting the block-insertion of a set of pins, mounted on the relevant dielectric support, through the base. This layout will make it possible to line up the whole set of pins on the printed surface and on the top side, in which the corresponding holes will have been made prior to the insertion of the connector.

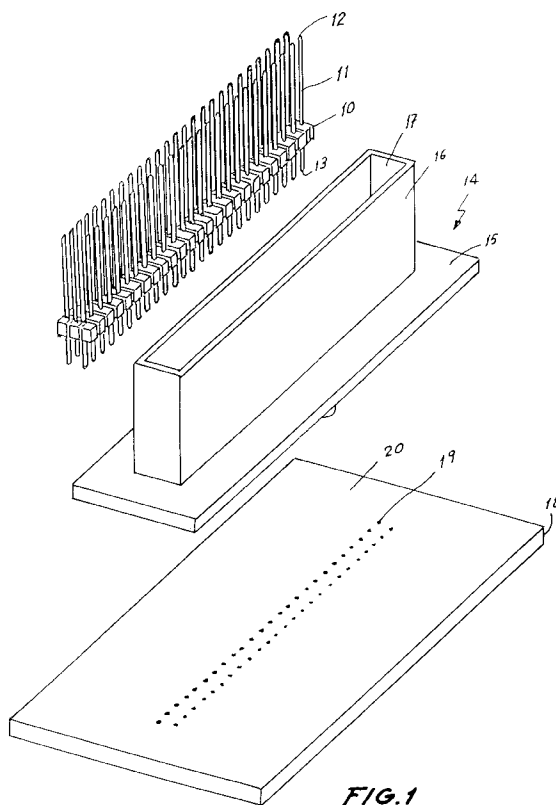


FIG. 1

EP 0 920 093 A1

Description

[0001] This Patent of Invention application, as its name indicates, consists of a "CONNECTOR FOR ELECTRONIC-USE PINS INTEGRATED IN PRINTED CIRCUITS", whose new characteristics of construction, conformation and design comply with the mission for which they have been specifically designed with maximum safety and efficacy.

[0002] More specifically, the invention refers to a connector box specially designed to permit the block of electronic-use pins into a printed circuit board.

[0003] Work in service boxes such as those described and claimed in Utility Model No. 291.764, and in the Invention Patent no. 9602539 of the same holder, does not permit serial insertion, since the pins' own inconsistency would, if they were block-inserted, cause them to become misaligned, and to bend, in some cases, due to the lack of rigidity, if an attempt were made to insert them all into a printed circuit at once.

[0004] Since the technology currently used in the manufacture of printed circuits and service boxes does not permit the insertion of electronic pins, pins for electronics into printed circuits or electronic stages, it became necessary to devise a way of including them as a block, and all at once, without generating the problems mentioned above.

[0005] In order to insert pins into printed circuits, the latter have a small locking-in surface, and when passages are very small, the distance between these surfaces is not large enough to prevent the dielectric from becoming a problem.

[0006] The object of this patent was developed to overcome this problem, consisting of placing an electric connector, normally formed by one or more plastic parts which support a given number of pins on the printed circuit for subsequent one-to-one or serial soldering.

[0007] The external parts of this connector will be made of the moulded plastic of the box itself, as represented in the Utility Model No. 291.764.

[0008] This solution saves time in the manufacturing process, since the moulding of this type of connectors is more economical than for those which are currently available on the market, being direct counter-part elements (male connectors).

[0009] The connector for electronic-use pins will be integrated on the printed circuit in two different, albeit technically equivalent, ways, the difference lying in the form or configuration of the material conforming the box.

[0010] In the first solution, the female connector will be located directly on the suggested electronic connector, i.e., on the material which has just made up the male connector, and there will be no additional surface, whereas in the second solution, equivalent to the first, the female connector will rest on one surface of the box, since there will be a surface containing holes on the plastics of the box next to the walls. This box cover, once assembled on the printed circuit, and the electronic con-

nector will make the pins go through the holes on the surface, thereby ensuring that everything is properly aligned, so that if any pin is wrongly inserted it will not work properly and the assembly will not be completed.

[0011] The suggested connector will be formed basically by a flat surface serving as a base on which the body of the connector properly speaking will go, without a top and bottom base, thereby permitting the block-insertion of a set of pins, mounted on the relevant dielectric support, through the base. This layout will make it possible to line up the whole set of pins on the printed surface and on the top side, in which the corresponding holes will have been made prior to the insertion of the connector.

[0012] Other details and characteristics will be revealed in the course of the description provided hereunder, where reference is made to the drawings attached to this abstract, in which, somewhat schematically, the preferred details are represented. These details are given by way of example, referring to a possible case of a practical embodiment, but are not limited to the details expounded herein; this description may therefore be regarded as an illustrative point of view, with no type of limitation whatsoever.

[0013] The following is a detailed list of the different elements which are mentioned in this Patent application: (10) dielectric support, (11) pin, (12) pin head, (13) bottom end of (11), (14) printed circuit connector, (15) base of connector of (14), (16) body, (17) opening, (18) printed circuit, (19) holes, (20) top side, (21) pins.

[0014] Figure no. 1 is a view of the connector (14) for electronic-use pins, showing its main components.

[0015] Figure no. 2 is a front elevation of the connector (11) connected directly to two printed circuits (20).

[0016] In one of the preferred embodiments of the present application, and as can be seen from figure no. 1, the connector (14) has been specially designed for the insertion and soldering of a set of pins (11) onto a printed circuit (18).

[0017] The suggested connector (14), as can be seen from figure no. 1, will be formed by a prismatic base (15) with a notch into whose perimeter the body (16), eminently prismatic, is fitted, see figure no. 1.

[0018] The electronic-use pins (11) with head (12) and bottom end (13) are grouped tidily and vertically at the distances initially established and planned in the design of the printed circuit on a dielectric support (10), which is then placed on the actual connector (14), which consists of a rectangular base (15) which is duly drilled along the perimeter of the body of the actual connector (16), also prismatic with no bases, and through whose opening (17) the pins (11) are block-inserted and supported by (10), so that they fit in perfectly and go through the holes (19) which have been designed and made on the top side (20) of the printed circuit (18).

[0019] Thanks to the placement of this connector (14) with the pins (13) inside, and as can be seen from figure no. 2, the pins (13) are block-inserted into the printed

circuit (18) and subsequently soldered as can be seen from figure no. 2, where the bottom end (13) of the pins (11) are seen to go through, firstly, the container formed by the walls of the male connector, moulded in the plastics of the bottom of the base (15).

5

[0020] The suggested solution makes for a faster manufacturing process and overcomes the problems posed by the small space between the pins (11) while, and furthermore, joint integration and insertion on the printed circuit (18) will make for better performance in the insertion operation, since the prior alignment on the support (10) will guarantee the proper alignment of the bottom ends (13) of the pins (10) and similarly, that they will lock properly into the holes (19) designed and made on the top side (20) of the printed circuit (18).

10

15

[0021] Now that the Patent of Invention has been properly described, as shown in the attached plans, it may be understood that any detailed modifications deemed necessary may be introduced, provided that any variations introduced do not alter the essence of the Patent of Invention which is summarised in the following Claims.

20

Claims

25

1. "CONNECTOR FOR ELECTRONIC-USE PINS INTEGRATED IN PRINTED CIRCUITS", of the kind that contain a set of pins (11) located at programmed distances on a dielectric support (10) whose bottom end (13) is inserted into one or more printed circuits (20), while its head (12) receives the female terminal, being connected to a joint or other electronic conducting element, characterised in that the aforementioned connector (14) is formed by an eminently rectangular and prismatic flat base (15) whose central part has a hole which has the same shape as the perimeter of the connector body (16), eminently prismatic in configuration, and through whose opening (17) the pins (11) are placed on a dielectric support (10), fitting (11) through the bottom end (13) into the holes (19) made on the top side (20) of a printed circuit (18).

30

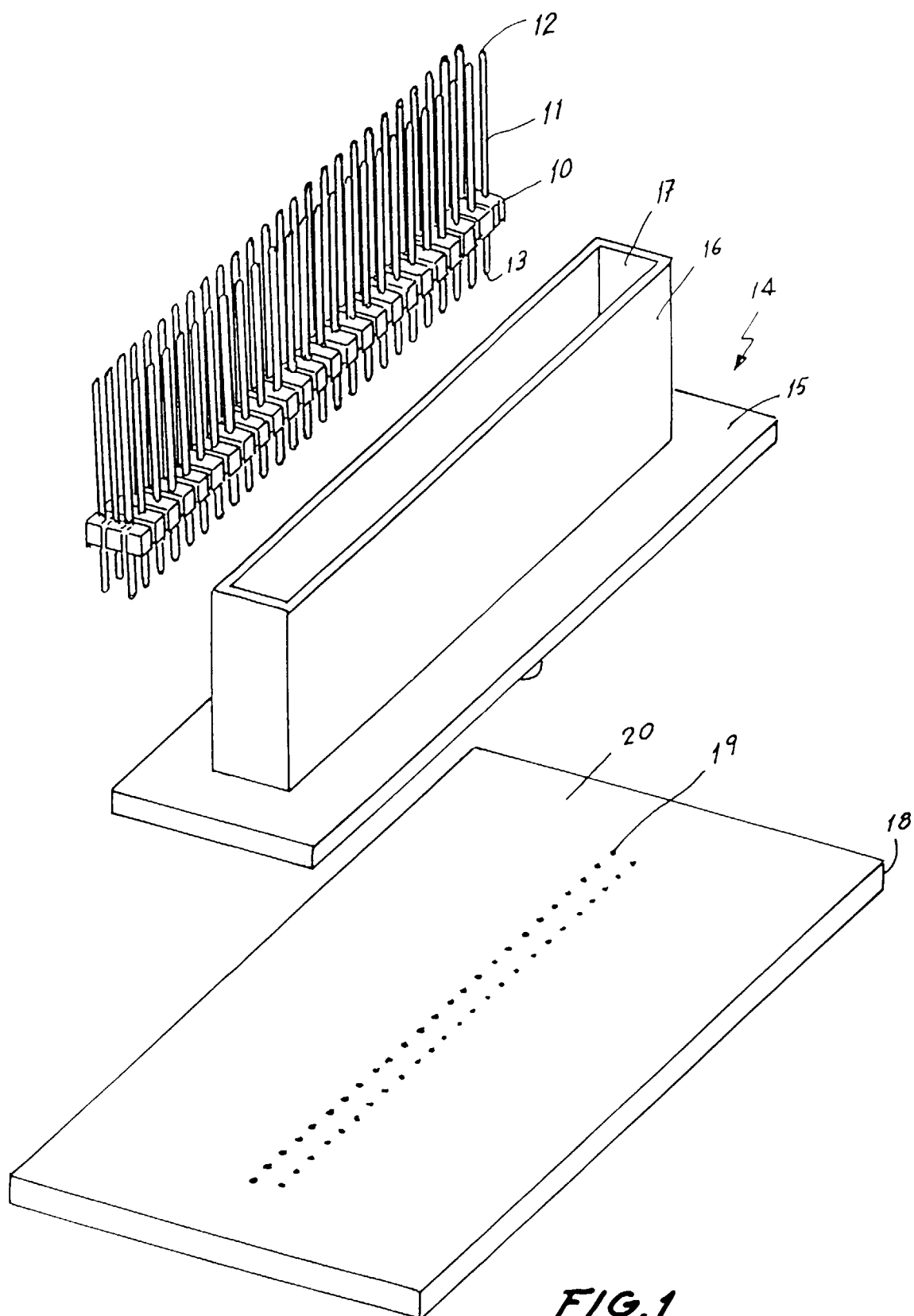
35

40

45

50

55



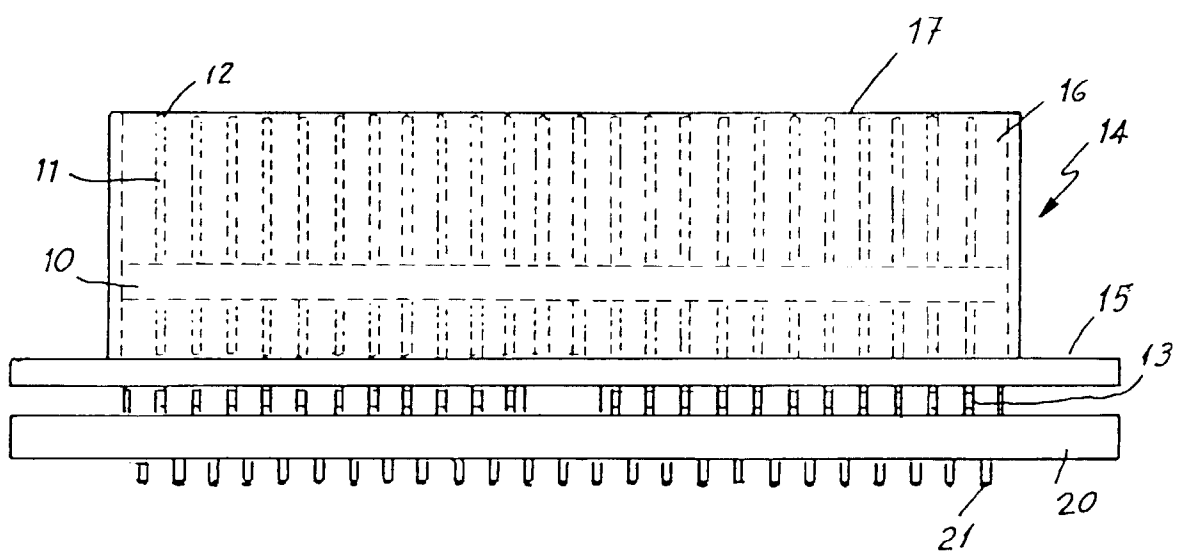


FIG. 2



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 98 50 0251

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	EP 0 541 965 A (MOLEX INC) 19 May 1993 * abstract; figures 1-6 * ---	1	H01R43/20
A	GB 2 284 948 A (WHITAKER CORP) 21 June 1995 * abstract; figures 1-6 * ---	1	
A	US 5 439 400 A (KOZEL CHARLES A ET AL) 8 August 1995 * abstract; figures 1-3 * ---	1	
A	US 5 373 626 A (YOUNGFLEISH FRANK C) 20 December 1994 * abstract; figures 1-6 * -----	1	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			H01R H05K
Place of search	Date of completion of the search	Examiner	
THE HAGUE	18 February 1999	Demol, S	
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 98 50 0251

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

18-02-1999

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0541965 A	19-05-1993	US 5169347 A	08-12-1992
		JP 5217657 A	27-08-1993
		JP 6050662 B	29-06-1994
GB 2284948 A	21-06-1995	JP 7161441 A	23-06-1995
US 5439400 A	08-08-1995	GB 2279897 A,B	18-01-1995
US 5373626 A	20-12-1994	NONE	