



(11) **EP 1 985 931 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention
of the grant of the patent:
05.09.2012 Bulletin 2012/36

(51) Int Cl.:
F24C 15/10 ^(2006.01)

(21) Application number: **07008273.0**

(22) Date of filing: **24.04.2007**

(54) **Cooking hob**

Kochfeld

Plaque de cuisson

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE
SI SK TR**

(43) Date of publication of application:
29.10.2008 Bulletin 2008/44

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Description

[0001] The invention relates to a cooking hob, in particular for an oven, especially for a domestic oven, comprising a panel shaped carrier element with an upper side and a bottom side, wherein at least one electrical heating element is arranged on the upper side of the carrier element, wherein the at least one heating element is connected to at least one wire, wherein the at least one wire is fed to an electrical connector plug for the supply with electrical energy, wherein the at least one wire is arranged at least partially at the bottom side of the carrier element and wherein an electrical connector between the at least one wire and the at least one heating element penetrates at least one opening in the carrier element.

[0002] Cooking hobs of the kind mentioned above are known in the art. Reference is made to FIG 1 where a pre-known domestic oven is depicted. The domestic oven 2 has a hob 1 on its top. The hob 1 has a carrier element 3 with an upper side 4 and a bottom side. On the upper side 4 of the carrier element 3 a plurality of heating elements 6, 7, 8, 9 are located and fixed to the carrier element 3. In the case of the depicted oven 2 the hob 1 further comprises a cover made of glass ceramics.

[0003] In FIG 2 the hob 1 is depicted without the cover of glass ceramics. On the upper side 4 of the carrier element 3 the electrical heating elements 6, 7, 8, 9 are placed. Each heating element 6, 7, 8, 9 has an electrical connection which fixes a wire 10, 11, 12, 13 to the heating element 6, 7, 8, 9 for supply of the heating elements 6, 7, 8, 9 with electrical energy. The wires 10, 11, 12, 13 are fed along the upper side 4 of the carrier element 3 and can be guided through an opening in the carrier element 3. Then, the wires are fed to an electrical connector plug 14.

[0004] Cooking hobs of this kind are disclosed for example in DE 198 49 136 A1 and in EP 0 108 916 B1. Other solutions are disclosed in FR 1 318 639 A and in FR 1 311 445 A.

[0005] The document DE 198 49 136 A1 discloses the preamble of claim 1.

[0006] It has been found detrimental that the wires can become quite hot during use of the hob. Problems can occur with failure of the electrical supply of the heating elements in the case that the wires become too hot during cooking.

[0007] Furthermore, the assembly of the hob is quite complicated and thus expensive when using the pre-known design. One aspect is that an automatisations of the assembly process is only possible with a high effort because it is complicated and thus expensive. Also, wiring of all heating elements can cause errors; this demands correction. Finally, the wire material is quite expensive and an economical use is not ensured.

[0008] Therefore, it is an object of the invention to further develop a cooking hob of the above mentioned kind which eliminates the discussed drawbacks. The cables should thus be better protected against heat during the

use of the oven. Furthermore, the assembly process should be facilitated to save costs and to allow automatisations of it. Finally, the wires for the supply of the heating elements with electrical energy should be used as economical as possible.

[0009] The solution of this object according to the invention is defined by the characterizing part of claim 1.

[0010] The at least one wire is arranged totally at the bottom side of the carrier element, wherein the projected area in vertical direction of the part of the electrical connector which is arranged at the upper side of the carrier element is bigger than the projected area in vertical direction of the opening.

[0011] By the suggested design, it becomes possible to better protect the wires against heat produced by the heating elements during the use of the hob.

[0012] A plurality of heating elements is arranged on the upper side of the carrier element, wherein each heating element is connected with an electrical connector which penetrates the carrier element.

[0013] Normally, more than one heating element is arranged on the carrier element to provide different cooking stations on the hob. Thus, preferably four heating elements are arranged on the upper side of the carrier element.

[0014] As known from prior art domestic ovens, at least two of the heating elements have different sizes for the different cooking applications.

[0015] The heating elements are resistance heating elements.

[0016] Preferably, the at least one opening in the carrier element is produced by punching. Normally, a thin sheet metal panel is used for the carrier element.

[0017] The wires of a plurality of heating elements are bundled at the bottom side of the carrier element to a cable loom. This cable loom is then guided to the electrical connector plug.

[0018] The hob can be a stand-alone or autarkic hob or part of an oven, in particular a domestic oven, and/or built-in or free-standing.

[0019] Preferably, the hob can have a design using a ceramic or glass ceramic hob or stove top.

[0020] By the suggested design it becomes possible to protect the cables from the heat produced by the heating elements. Furthermore, an automatisations process of the assembly becomes quite easy.

[0021] In the drawings an embodiment of the invention is depicted.

FIG 1 shows a perspective view of a domestic oven with a hob on its top side,

FIG 2 shows the hob in perspective view without its glass ceramic cover panel according to the prior art,

FIG 3 shows the same view as FIG 2 according to an embodiment of the invention, where the upper

side of the hob is visible,

FIG 4 shows the hob of FIG 3 in perspective view, where the bottom side of the carrier element is visible and

FIG 5 shows the detail "Z" according to FIG 3.

[0022] FIG 3 shows a cooking hob 1, in particular of an oven (depicted in FIG 1), according to one possible embodiment of the invention. The hob 1 consists of a carrier element 3 which has a panel shape; more specifically the carrier element 3 has a rectangular shape and consists of a thin sheet metal. On the upper side 4 of the carrier element 3 four heating elements 6, 7, 8 and 9 are located and fixed (fixing means not shown) wherein the heating elements are resistance heaters in the depicted embodiment. Also other heating elements can be employed, e. g. induction heating elements.

[0023] As can be further seen from FIG 3 no wires run on the upper side 4 of the carrier element 3. Each heating element 6, 7, 8, 9 is in contact with an electrical connector 15, which is described in more detail later.

[0024] The wiring of the heating elements 6, 7, 8, 9 becomes apparent from FIG 4 where the bottom side 5 of the carrier element 3 is visible. The heating elements 6, 7, 8, 9 are shown in dashed lines as they are not visible. In the synopsis with FIG 5 it can be seen that the electrical connector 15 penetrates an opening 16 which is machined into the carrier element 3. Preferably the opening is produced by punching.

[0025] As can be seen from FIG 5 the electrical connector 15 consists of two parts 17 and 18. The upper part 17 is located - in the mounted state of the hob - beside the heating element 6, 7, 8, 9 and directly connected to it, while the lower part 18 protrudes through the opening 16. The wires 10, 11, 12, 13 are connected to the part 18 on the bottom side 5.

[0026] Of course the electrical connector 15 can also be designed in any other way.

[0027] The wires 10, 11, 12, 13 are collected in a central region of the carrier element 3 and run as a cable loom to an electrical connector plug 14 as in the prior art.

Reference Numerals

[0028]

- 1 Hob
- 2 Oven
- 3 Carrier element
- 4 Upper side
- 5 Bottom side
- 6 Electrical heating element
- 7 Electrical heating element
- 8 Electrical heating element
- 9 Electrical heating element
- 10 Wire

- 11 Wire
- 12 Wire
- 13 Wire
- 14 Electrical connector plug
- 15 Electrical connector
- 16 Opening
- 17 Part of the electrical connector
- 18 Part of the electrical connector

Claims

1. Cooking hob (1), in particular for an oven (2), especially for a domestic oven, comprising a panel shaped carrier element (3) with an upper side (4) and a bottom side (5), wherein a plurality of electrical heating elements (6, 7, 8, 9) is arranged on the upper side (4) of the carrier element (3), wherein each heating element (6, 7, 8, 9) is connected to at least one wire (10, 11, 12, 13), wherein electrical connectors (15) between the at least one wire (10, 11, 12, 13) and the heating elements (6, 7, 8, 9) penetrate openings (16) in the carrier element (3), wherein each heating element (6, 7, 8, 9) is connected with one of the electrical connectors (15) which penetrate the carrier element (3), wherein each electrical connector (15) consists of two parts (17, 18) which are joined, **characterized in that** the at least one wire (10, 11, 12, 13) is fed to an electrical connector plug (14) for the supply with electrical energy, wherein the at least one wire (10, 11, 12, 13) is arranged totally at the bottom side (5) of the carrier element (3), wherein the at least one wire (10, 11, 12, 13) of the plurality of heating elements (6, 7, 8, 9) is bundled at the bottom side (5) of the carrier element (3) to a cable loom, wherein at least two of the heating elements (6, 7, 8, 9) are different in size, wherein the heating elements (6, 7, 8, 9) are resistance heating elements, wherein one upper part (17) of each electrical connector (15) is arranged on the upper side (4) and one lower part (18) is arranged on the bottom side (5), wherein both parts (17, 18) are connected by a snap-on connection, wherein the upper part (17) is located - in the mounted state of the hob - beside one of the heating elements (6, 7, 8, 9) and directly connected to it, while the lower part (18) protrudes through the opening (16) wherein the at least one wire (10, 11, 12, 13) is connected to the lower parts (18) on the bottom side (5).
2. Hob according to claim 1, **characterized in that** four heating elements (6, 7, 8, 9) are arranged on the upper side (4) of the carrier element (3).

3. Hob according to at least one of claims 1 to 2, **characterized in that** at least one opening (16) in the carrier element (3) is produced by punching.
4. Hob according to at least one of claims 1 to 3, **characterized in that** it is designed as a ceramic or glass ceramic hob or stove top.

Patentansprüche

1. Kochfeld (1), namentlich für einen Herd (2), insbesondere für einen Haushaltsherd, umfassend ein plattenförmiges Trägerelement (3) mit einer Oberseite (4) und einer Unterseite (5), wobei eine Mehrzahl elektrischer Heizelemente (6, 7, 8, 9) an der Oberseite (4) des Trägerelements (3) angeordnet ist und jedes Heizelement (6, 7, 8, 9) mit mindestens einem Leiter (10, 11, 12, 13) verbunden ist, wobei elektrische Anschlüsse (15) zwischen dem mindestens einen Leiter (10, 11, 12, 13) und den Heizelementen (6, 7, 8, 9) die Öffnungen (16) im Trägerelement (3) durchdringen, wobei jedes Heizelement (6, 7, 8, 9) mit einem der elektrischen Anschlüsse (15), welche das Trägerelement (3) durchdringen, verbunden ist, wobei jeder elektrische Anschluss (15) aus zwei Teilen (17, 18) zusammengesetzt ist, die miteinander verbunden sind, **dadurch gekennzeichnet, dass** der mindestens eine Leiter (10, 11, 12, 13) in einen elektrischen Verbindungsstecker (14) für die Versorgung mit elektrischer Energie eingeführt ist, wobei der mindestens eine Leiter (10, 11, 12, 13) gänzlich an der Unterseite (5) des Trägerelements (3) angeordnet ist, wobei der mindestens eine Leiter (10, 11, 12, 13) der Mehrzahl von Heizelementen (6, 7, 8, 9) an der Unterseite (5) des Trägerelements (3) zu einem Kabelstrang gebündelt ist, wobei mindestens zwei der Heizelemente (6, 7, 8, 9) unterschiedlicher Größe sind, wobei die Heizelemente (6, 7, 8, 9) Widerstandsheizelemente sind, wobei ein oberer Teil (17) jedes elektrischen Anschlusses (15) an der Oberseite (4) und ein unterer Teil (18) an der Unterseite (5) angeordnet ist, wobei beide Teile (17, 18) mittels einer Schnappverbindung verbunden sind, wobei der obere Teil (17) im montierten Zustand des Kochfeldes neben einem der Heizelemente (6, 7, 8, 9) angeordnet und unmittelbar mit diesem verbunden ist, während der untere Teil (18) durch die Öffnung (16) vorragt, wobei der mindestens eine Leiter (10, 11, 12, 13) mit den unteren Teilen (18) an der Unterseite (5) verbunden ist.
2. Kochfeld gemäß Anspruch 1, **dadurch gekennzeichnet, dass** vier Heizelemente (6, 7, 8, 9) an der

Oberseite (4) des Trägerelements (3) angeordnet sind.

3. Kochfeld gemäß mindestens einem der Ansprüche 1 bis 2, **dadurch gekennzeichnet, dass** mindestens eine Öffnung (16) im Trägerelement (3) durch Stanzen hergestellt wird.
4. Kochfeld gemäß mindestens einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** dieses als Keramik- oder Glaskeramik-Kochfeld oder Herdplatte ausgeführt ist.

Revendications

1. Plaque de cuisson (1), en particulier pour un four (2), spécialement pour un four domestique, comprenant un élément de support (3) en forme de panneau avec un côté supérieur (4) et un côté inférieur (5), où une pluralité d'éléments de chauffage électriques (6, 7, 8, 9) est agencé sur le côté supérieur (4) de l'élément de support (3), où chaque élément chauffant (6, 7, 8, 9) est connecté à au moins un fil (10, 11, 12, 13), où les connecteurs électriques (15) entre le au moins un fil (10, 11, 12, 13) et les éléments chauffants (6, 7, 8, 9) pénètrent dans des ouvertures (16) dans l'élément de support (3), où chaque élément chauffant (6, 7, 8, 9) est connecté à un des connecteurs électriques (15) qui pénètre dans l'élément de support (3), où chaque connecteur électrique (15) est constitué de deux parties (17, 18) qui sont jointes, **caractérisée en ce que** le au moins un fil (10, 11, 12, 13) est amené à une prise de connecteur électrique (14) pour l'alimentation en énergie électrique, où le au moins un fil (10, 11, 12, 13) est agencé totalement au côté inférieur (5) de l'élément de support (3), où le au moins un fil (10, 11, 12, 13) de la pluralité d'éléments chauffants (6, 7, 8, 9) est lié au côté inférieur (5) de l'élément de support (3) à un faisceau de câbles, où au moins deux des éléments chauffants (6, 7, 8, 9) ont une taille différente, où les éléments chauffants (6, 7, 8, 9) sont des éléments chauffants à résistance, où une partie supérieure (17) de chaque connecteur électrique (15) est agencée sur le côté supérieur (4), et une partie inférieure (18) est agencée sur le côté inférieur (5), où les deux parties (17, 18) sont connectées par une connection à enclenchement, où la partie supérieure (17) est située - à l'état installé de la plaque de cuisson - à côté d'un des éléments chauffants (6, 7, 8, 9) et est connectée directement à celui-ci, tandis que la partie inférieure (18) fait saillie à travers l'ouverture (16), où le au moins un fil (10, 11, 12, 13) est connecté aux parties inférieures

res (18) sur le côté inférieur (5).

2. Plaque de cuisson selon la revendication 1, **caractérisée en ce que** quatre éléments chauffants (6, 7, 8, 9) sont agencés sur le côté supérieur (4) de l'élément de support (3). 5
3. Plaque de cuisson selon au moins une des revendications 1 à 2, **caractérisée en ce qu'**au moins une ouverture (16) dans l'élément de support (3) est produite par poinçonnage. 10
4. Plaque de cuisson selon au moins une des revendications 1 à 3, **caractérisée en ce qu'**elle est conçue comme une plaque de cuisson céramique ou vitrocéramique ou un dessus de cuisinière. 15

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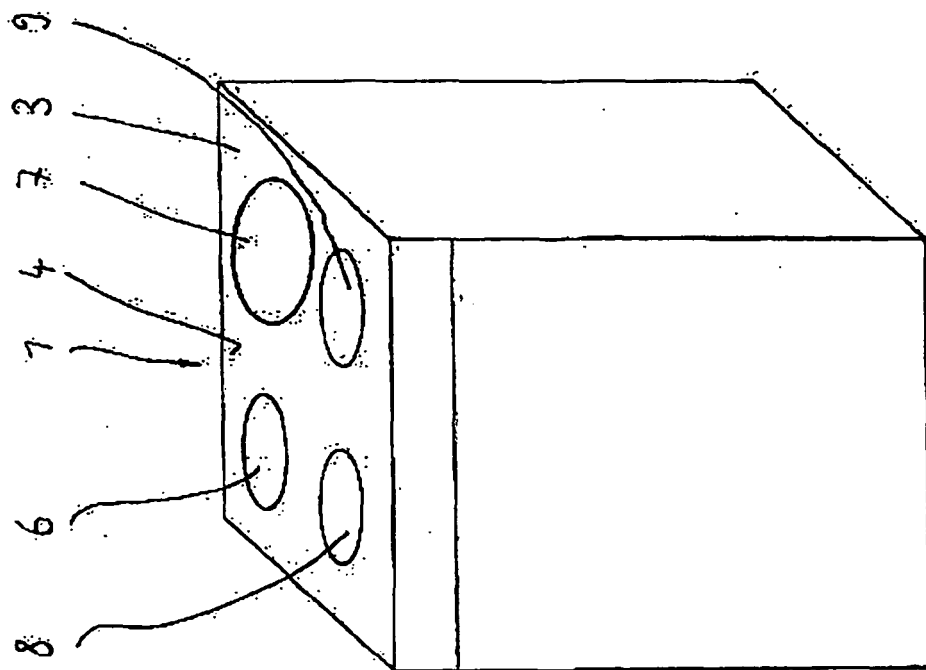


FIG 1

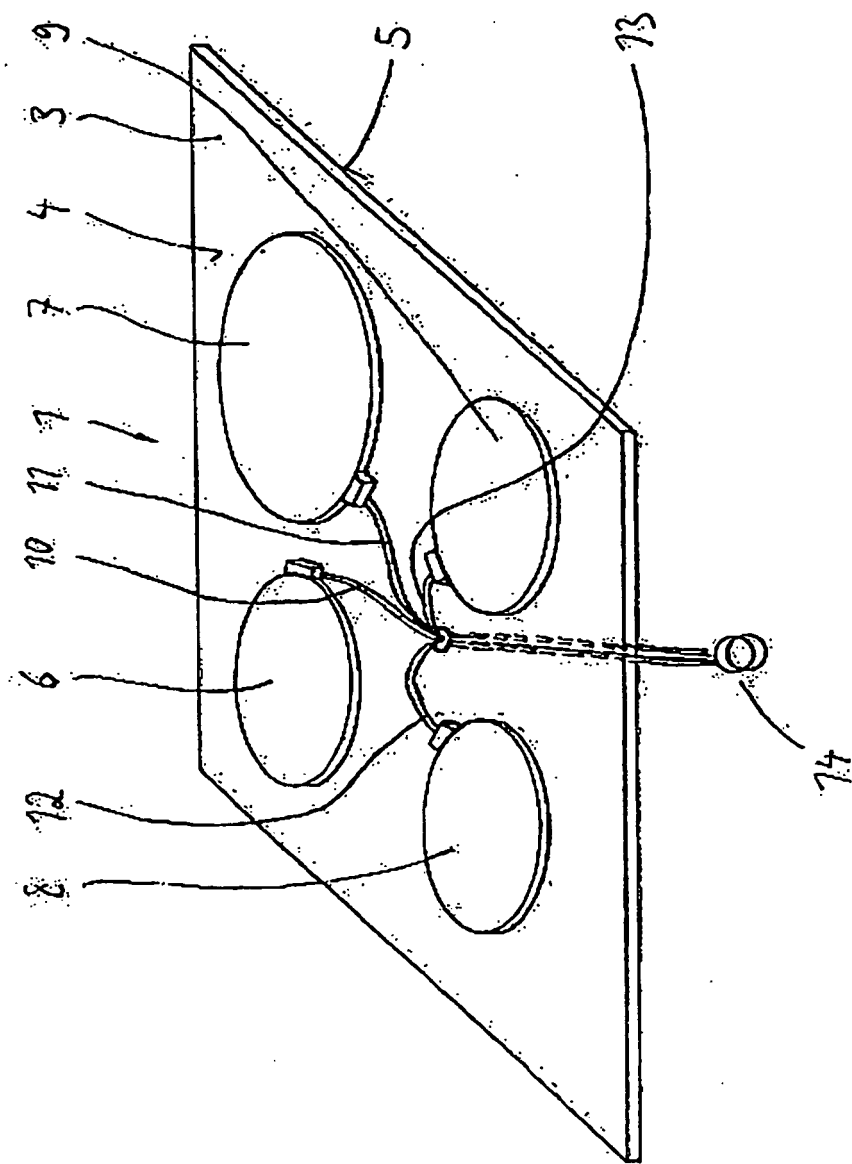


FIG 2
(Prior art)

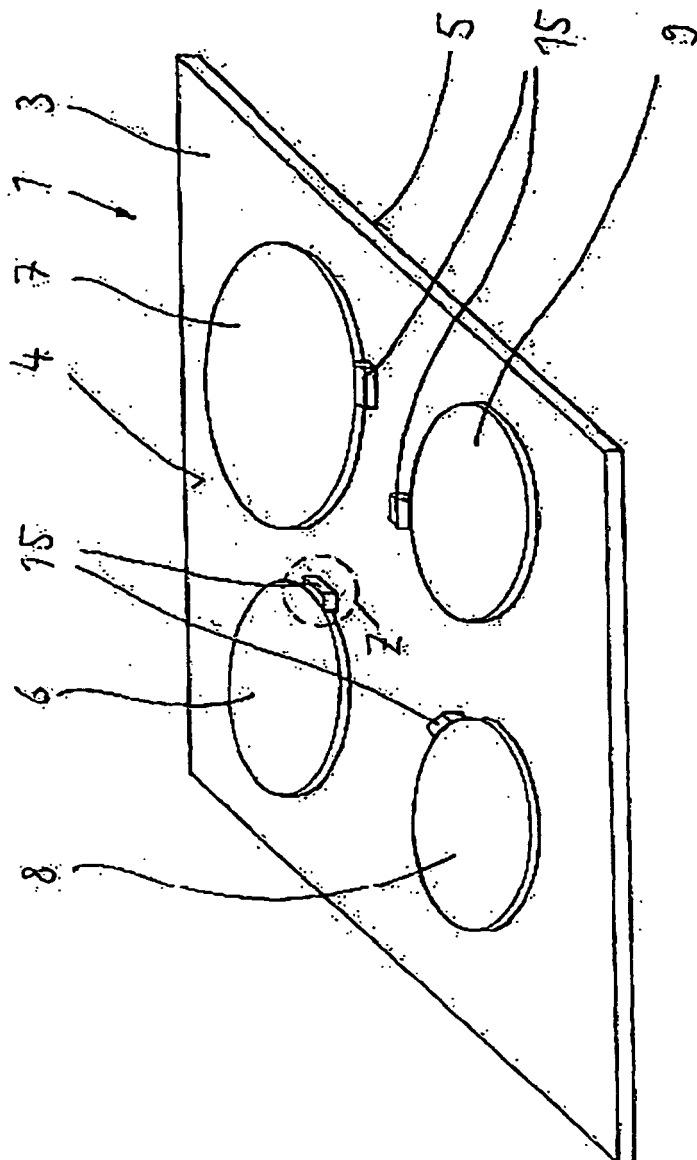


FIG 3

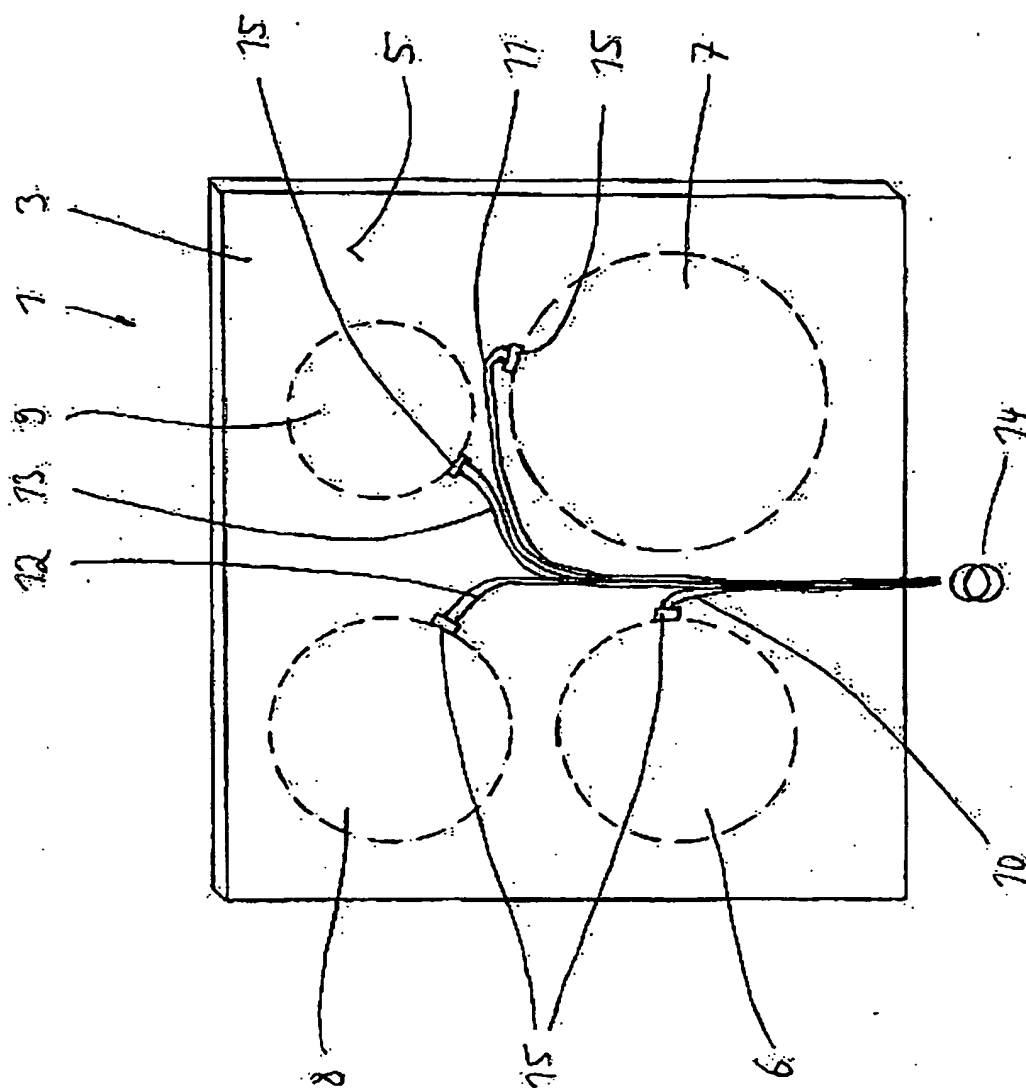


FIG 4

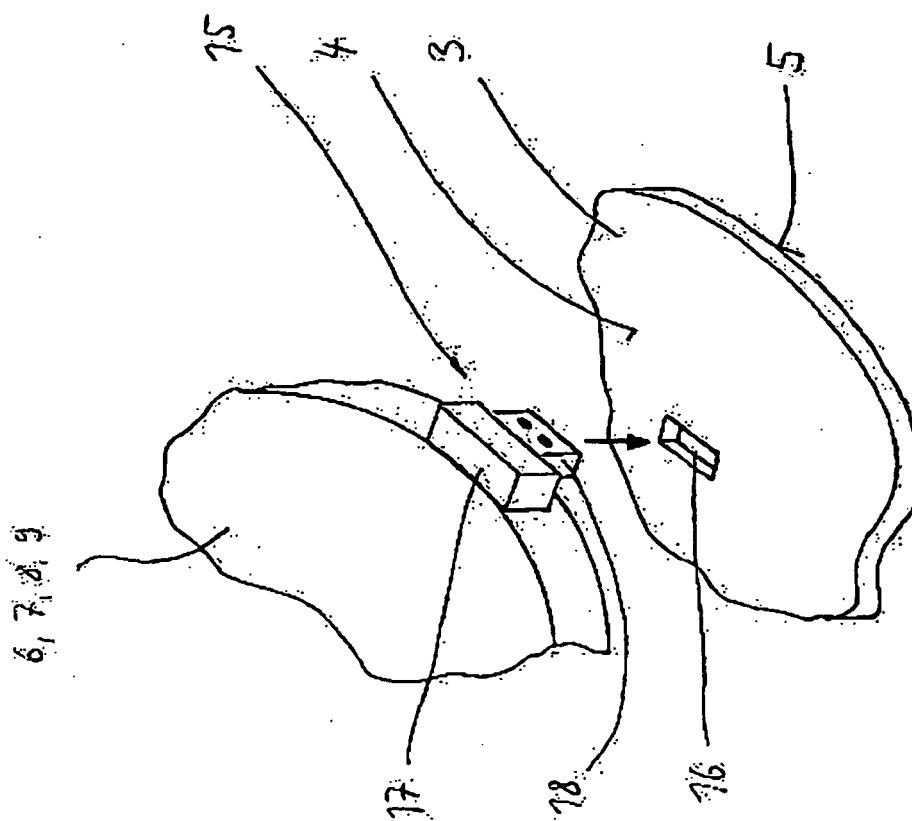


FIG 5

REFERENCES CITED IN THE DESCRIPTION

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