

(19)



(11)

EP 2 239 508 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
13.08.2014 Bulletin 2014/33

(51) Int Cl.:
F24C 15/10 ^(2006.01) **F24C 15/34** ^(2006.01)

(21) Application number: **09005094.9**

(22) Date of filing: **07.04.2009**

(54) **Domestic hob**

Kochherd

Plaque de cuisson

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL
PT RO SE SI SK TR**

(43) Date of publication of application:
13.10.2010 Bulletin 2010/41

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Description

[0001] The present invention relates to a domestic hob comprising a housing with a bottom wall, wherein at least one thermally and/or electrically isolating and/or flame resistant protection plate is attached to the hob underneath the bottom wall, and wherein a main plane of the protection plate is spaced apart from the bottom wall by a predetermined distance.

[0002] Domestic hobs of the above-mentioned kind are known in prior art. If such domestic hobs are to be installed in built-in furniture, such as in a floor cupboard, it is to be considered that the temperature within the furniture does not exceed an admissible threshold due to the heat dissipation of the hob in order to prevent a damage of the furniture.

[0003] In this context DE-A-10 2005 053 173 proposes a domestic hob of the above-mentioned kind comprising two temperature sensors. The sensors detect and monitor the temperature of the furniture or rather the heat yielded to the furniture.

[0004] A further domestic hob of the above-mentioned kind is described in DE-U-20 2005 018 776. This domestic hob is installed in a floor cupboard, wherein a drawer is provided directly beneath the hob. In order to provide a space for stowing the cables of the hob, an intermediate plate is arranged between the upper edges of the drawer and the bottom side of the hob. Moreover, the furniture comprises a heat resistant and/or thermally isolating protection plate or protection layer arranged between the intermediate plate and the bottom side of the hob. This intermediate plate or intermediate layer can be provided directly on the intermediate plate.

[0005] The document EP 1 312 868 A1 discloses an arrangement with a cooker hob, which is inserted in a cut-out of a worktop, and an intermediate base, which is arranged below a hob base of the cooker hob and which separates from the cooker hob. The intermediate base is constructed as contact protection against contact with a hob base and has at least one mounting means by which the intermediate base is mounted on a counter-member on the side of the intermediate base remote from the space.

[0006] Further domestic hobs are known from JP-A-06042751, GB-A-2100853 and EP-A-0 567 779

[0007] It is an object of the present invention to provide a domestic hob of the above-mentioned kind giving the user protection against thermal and/or electrical dangers emanating from the bottom side of the hob, which is inexpensive to manufacture and to assemble, and which ensures an effective air circulation.

[0008] In order to solve this object the present invention provides a domestic hob of the above-mentioned kind which is characterized in that the protection plate and the bottom wall of the housing are provided with venting openings for venting the hob, wherein a first protection plate section is provided with at least one venting opening for feeding air and a second protection plate section is

provided with at least one venting opening for removing air, and wherein the protection plate sections are spatially separated from each other in order to ensure an effective air circulation.

[0009] Such a domestic hob is inexpensive to manufacture thanks to its simple construction. Moreover, since the protection plate is attached to the hob its size does not need to be adapted to the dimensions of the furniture in which the hob is to be housed, e.g. to the dimensions of a floor cupboard. Accordingly, the domestic hob according to the present invention is easy and inexpensive to assemble.

[0010] According to one embodiment of the present invention at least one spacer is provided for maintaining the predetermined distance between the main plane of the protection plate and the bottom wall of the housing. The at least one spacer can be made integral with the protection plate and/or the bottom wall. For example, one or more border areas of the protection plate can form upwardly bent sections, which abut against the bottom wall of the hob and thus maintain the predetermined distance between the main plane of the protection plate and the bottom wall of the housing. Due to the integral configuration of the at least one spacer and the protection plate and/or the bottom wall, the number of components is reduced such that in particular the assembly of the domestic hob can be simplified.

[0011] Alternatively, the at least one spacer is provided as a separate component, such as a spacer bushing, a spacer pin or the like extending between the main plane of the protection plate and the bottom wall of the housing. Of course it is also possible to use a combination of separate spacers and spacers, which are made integral with the protection plate and/or the bottom wall.

[0012] According to one embodiment of the present invention the protection plate is screwed and/or riveted and/or bonded to or hooked in the hob.

[0013] Alternatively, snap-fitting means are provided for fixing the protection plate to the hob. Such snap-fitting means are advantageous in that they form a releasable connection between the protection plate and the hob, which is very easy and fast to assemble and to disassemble. Preferably, the snap-fitting means are made integral with the protection plate and/or the housing in order to reduce the number of components and thus to simplify the assembly of the domestic hob.

[0014] According to one embodiment of the present invention the protection plate comprises at least one cable opening for feeding through cables. Accordingly, the cables of the hob can be fed out of the clearance present between the main plain of the protection plate and the bottom wall of the housing in a defined manner. The edges of the cable opening are preferably chamfered and/or provided with a cable protecting means in order to protect the cables from being damaged. As a cable protecting means a plastic rail may be clipped on the edges of the cable opening, only to cite an example.

[0015] For separating the protection plate sections a

separation wall and/or sealing means may be provided.

[0016] Moreover, the present invention provides a protection plate designed to be attached underneath a bottom wall of a housing of a domestic hob such that a main plane of the protection plate is spaced apart from the bottom wall of the housing by a predetermined distance, wherein the protection plate is thermally and/or electrically isolated and/or flame resistant, and wherein a first protection plate section is provided with at least one venting opening for feeding air and a second protection plate section is provided with at least one venting opening for removing air, wherein the protection plate sections are spatially separated from each other.

[0017] According to one embodiment of the present invention the protection plate comprises at least one spacer for defining the predetermined distance.

[0018] The protection plate may be designed to be screwed and/or riveted and/or bonded to or hooked in the hob.

[0019] Alternatively, the protection plate may comprise snap-fitting means for fixing the protection plate to the hob. Preferably, at least one cable opening for feeding through cables is provided whose edges are preferably chamfered and/or provided with a cable protecting means.

BRIEF DESCRIPTION OF THE ACCOMPANYING DRAWINGS

[0020] The detailed configuration, features and advantages of the present invention will become apparent in the course of the following description with reference to the accompanying drawings.

Figure 1 is a perspective, exploded bottom view of a domestic hob according to an embodiment of the present invention.

Figure 2 is an perspective, exploded top view of the hob shown in figure 1.

Figure 3 is an perspective, exploded bottom view of a domestic hob according to a second embodiment of the present invention.

Figure 4 is a perspective, exploded top view of the hob shown in figure 3.

[0021] Figures 1 and 2 show a domestic hob 10 according to a first embodiment of the present invention. The hob 10 comprises a conventional ceramic top plate 12 and a housing 14. In order to accommodate the electronic components of the hob 10 the housing 14 has a box-shape which is defined by a bottom wall 16 and four side walls 18. Along the upper edges of the side walls 18 angle profiles 20 are arranged for receiving the ceramic top plate 12 and for fixing it to the housing 14. The bottom wall 16 of the housing 14 is provided with venting open-

ings 22a, 22b and 22c for cooling the interior of the housing 14 by the circulation of ambient air. The circulation is caused by means of a fan (not shown) received in the housing 14, which sucks in ambient air through the venting openings 22a and 22b and ejects the air through the venting opening 22c.

[0022] Moreover, the hob 10 comprises a protection plate 24 which is made of a thermally and electrically isolating and fire resistant material and which is fixed to the bottom wall 16 of the housing 14 by means of screws 23. The protection plate 24 includes a square main plane 26 extending essentially in parallel to the bottom wall 16 of the housing 14, wherein three border areas of the main plane 26 are bent upwardly towards the housing 14 of the hob 10 in order to form spacers 28. These spacers 28 abut against the bottom wall 16, such that the main plane 26 of the protection plate 24 is spaced apart from the bottom wall 16 by a predetermined distance. Thus, a clearance is created between the main plane 26 of the protection plate 24 and the bottom wall 16 of the housing 14. The clearance is divided by a separation wall 34, which extends between the two opposing spacers 28 and is fixed to the main plane 26 of the protection plate 24, whereby two protection plate sections 36 and 38 are formed. Within the protection plate section 36 a first venting opening 40a is provided underneath the venting openings 22a and 22b of the housing 14 for feeding air, and in the protection plate section 38 two venting openings 40b and 40c are provided underneath the venting opening 22c of the housing 14 for removing air. Accordingly, ambient air is sucked in by means of the fan through the venting opening 40a formed in the protection plate 24, flows through the venting openings 22a and 22b into the housing 14, receives the heat generated by the electric components arranged within the housing 14 and flows out through the venting openings 22c of the housing 14 and the venting openings 40b and 40c of the protection plate 24.

[0023] Moreover, the main plane 26 of the protection plate 24 is formed with a cable opening 42 for feeding through the cables of the hob 10. The edges of the cable opening 42 may be chamfered and/or provided with a cable protection means (not shown), e.g. a plastic protection rail, which can be clipped on the edges of the cable opening 42 in order to protect the user from getting cut.

[0024] Thanks to the thermally isolated protection plate 24 as well as to the distance between the bottom wall 16 of the housing 14 and the main plane 26 of the protection plate 24 created by the spacers 28 it is prevented that a user, who accidentally comes into contact with the bottom side of the hob 10, gets burned. Moreover, the electrical isolation of the protection plate 24 prevents that the user receives an electric shock. Since the protection plate 24 is not fixed to the furniture but to the hob 10 itself there is no need to adapt the size of the protection plate 24 to the dimensions of the furniture, e.g. to the dimensions of floor cupboard. Thus, the assem-

bly of the hob 10 can be performed in an easy, fast and inexpensive manner.

[0025] It should be noted that the spacers 28 can also be provided as separate elements, e.g. in the form of spacer bushings arranged around the screws 23.

[0026] Figures 3 and 4 show a hob 50 according to a second embodiment of the present invention. The structure of the hob 50 is very similar to the one of the hob 10 shown in figures 1 and 2 for which reason corresponding components of the hob 50 are designated with the same reference numerals as used in figures 1 and 2 in order to simplify matters. The hobs 50 and 10 only vary in that the hob 50 comprises snap-fitting means 52 instead of the screws 30 for fixing the protection plate 24 to the housing 14 of the hob 50. The snap-fitting means 52 are provided at the exterior of the spacers 28 and project upwardly towards the housing 14. The snap-fitting means 52 comprise snap-fitting projections 54 which project inwards and latch into corresponding snap-fitting openings 56 formed in the side walls 18 of the housing 14.

[0027] Thanks to the snap-fitting means 52 the fixation of the protection plate 24 to the bottom wall 16 of the housing 14 can be performed in a very fast and comfortable manner.

Claims

1. Domestic hob (10; 50) comprising a housing (14) with a bottom wall (16), the domestic hob (10; 50) further comprising at least one thermically and/or electrically isolating and/or flame resistant protection plate (24) which is attached to the hob (10; 50) underneath the bottom wall (16), and wherein a main plane (26) of the protection plate (24) is spaced apart from the bottom wall (16) by a predetermined distance, **characterized in that** the protection plate (24) and the bottom wall (16) of the housing (14) are provided with venting openings (22a, 22b, 22c; 40a, 40b, 40c), wherein a first protection plate section (36) is provided with at least one venting opening (40a) for feeding air and a second protection plate section (38) is provided with at least one venting opening (40b, 40c) for removing air, and wherein the protection plate sections (36, 38) are spatially separated from each other.
2. Hob (10; 50) according to claim 1, **characterized in that** at least one spacer (28) is provided for maintaining the predetermined distance.
3. Hob (10; 50) according to claim 2, **characterized in that** the at least one spacer is made integral with the protection plate (24) and/or the housing (14).
4. Hob (10; 50) according to claim 2, **characterized in that** the at least one spacer is provided as a separate component.

5. Hob (10; 50) according to one of the foregoing claims, **characterized in that** the protection plate (24) is screwed and/or riveted and/or bonded to or hooked in the hob (10; 50).
6. Hob (50) according to one of the claims 1 to 4, **characterized in that** snap-fitting means (52) are provided for fixing the protection plate (24) to the hob (50), wherein the snap-fitting means (52) are preferably made integral with the protection plate (24) and/or the housing (14).
7. Hob (10; 50) according to one of the foregoing claims, **characterized in that** the protection plate (24) comprises at least one cable opening (42) for feeding through cables.
8. Hob (10; 50) according to claim 7, **characterized in that** the edges of the cable opening (42) are chamfered and/or provided with a cable protecting means.
9. Hob (10; 50) according to one of the foregoing claims, **characterized in that** a separation wall (34) and/or sealing means are provided for separating the protection plate sections (36, 38).

Patentansprüche

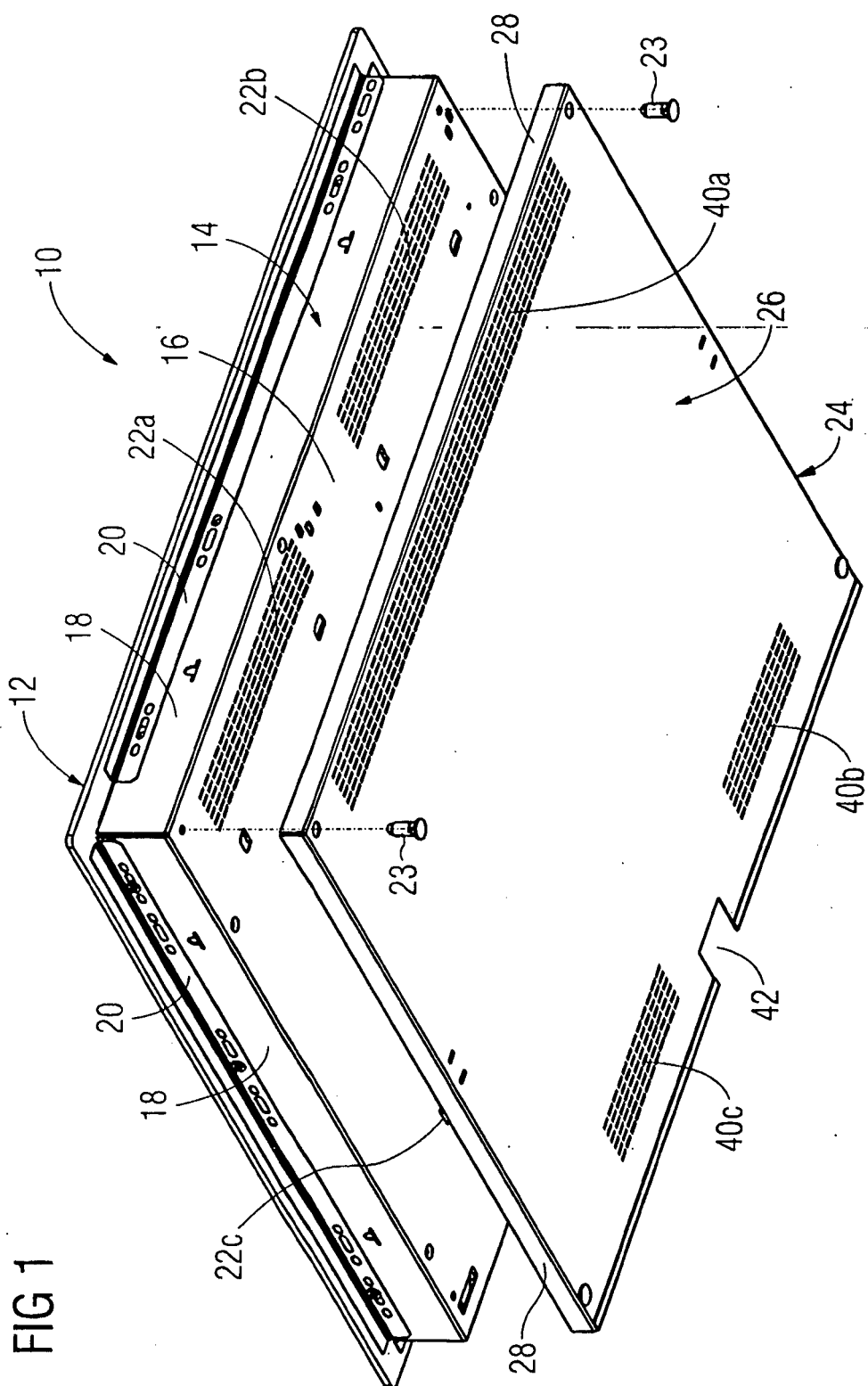
1. Kochfeld (10; 50), der ein Gehäuse (14) mit einer Bodenwand (16) umfasst, wobei der Kochfeld (10; 50) ferner wenigstens eine thermisch und/oder elektrisch isolierende und/oder flammbeständige Schutzplatte (24) umfasst, die am Kochfeld (10; 50) unterhalb der Bodenwand (16) angebracht ist, und wobei eine Hauptfläche (26) der Schutzplatte (24) von der Bodenwand (16) um eine bestimmte Distanz beabstandet ist, **dadurch gekennzeichnet, dass** die Schutzplatte (24) und die Bodenwand (16) des Gehäuses (14) mit Entlüftungsöffnungen (22a, 22b, 22c; 40a, 40b, 40c) versehen sind, wobei ein erster Schutzplattenabschnitt (36) mit wenigstens einer Entlüftungsöffnung (40a) zur Zuführung von Luft versehen ist und ein zweiter Schutzplattenabschnitt (38) mit wenigstens einer Entlüftungsöffnung (40b, 40c) zur Ableitung von Luft versehen ist und wobei die Schutzplattenabschnitte (36, 38) räumlich voneinander beabstandet sind.
2. Kochfeld (10; 50) gemäß Anspruch 1, **dadurch gekennzeichnet, dass** wenigstens ein Abstandhalter (28) zur Aufrechterhaltung der bestimmten Distanz vorgesehen ist.
3. Kochfeld (10; 50) gemäß Anspruch 2, **dadurch gekennzeichnet, dass** der wenigstens eine Abstandhalter in die Schutzplatte (24) und/oder das Gehäuse (14) integriert ausgeführt ist.

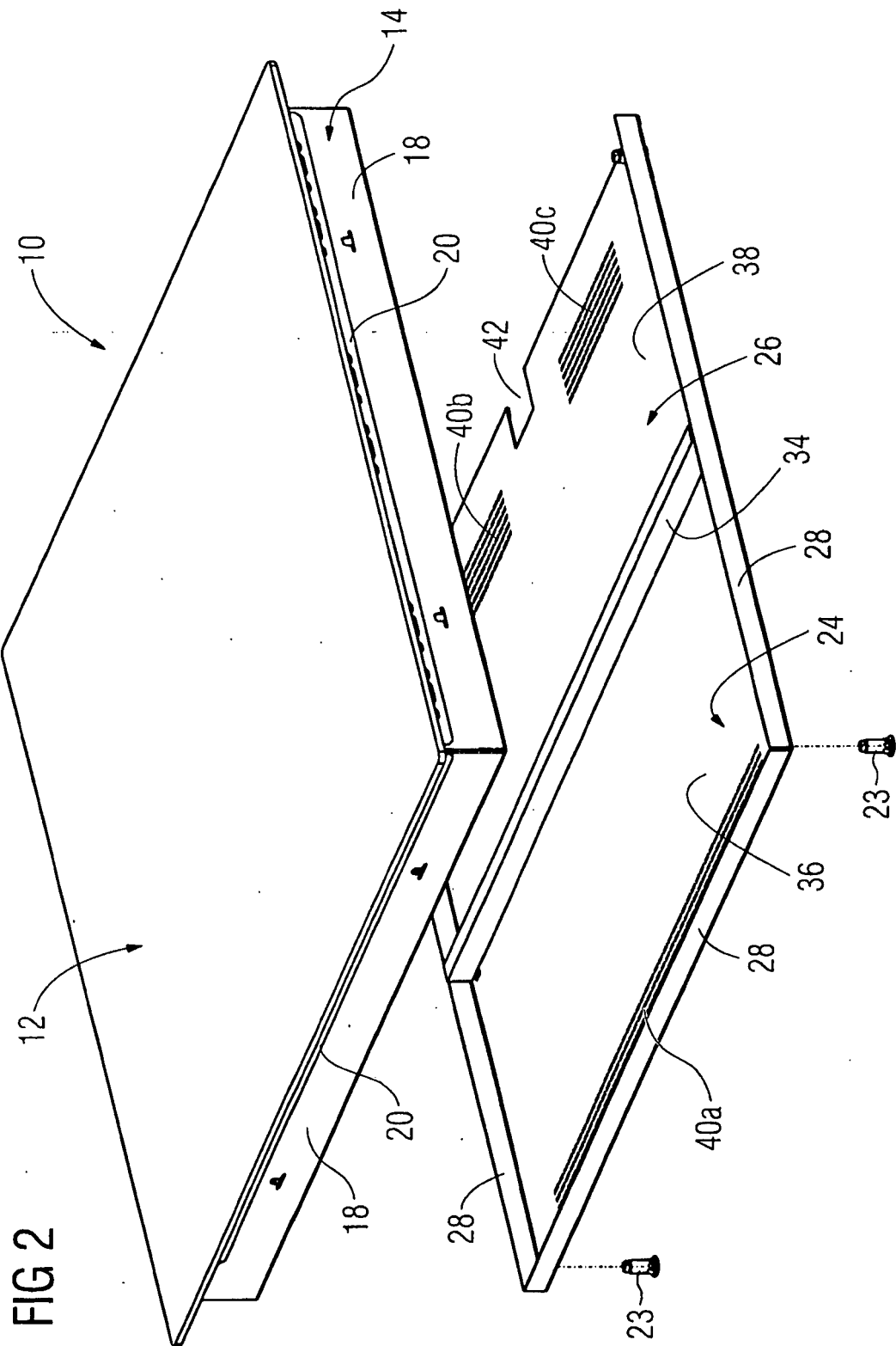
4. Kochfeld (10; 50) gemäß Anspruch 2, **dadurch gekennzeichnet, dass** der wenigstens eine Abstandhalter als eine separate Komponente vorgesehen ist.
5. Kochfeld (10; 50) gemäß einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die Schutzplatte (24) an das Kochfeld (10; 50) geschraubt und/oder genietet und/oder geklebt und/oder in diesen verhakt ist.
6. Kochfeld (50) gemäß einem der Ansprüche 1 bis 4, **dadurch gekennzeichnet, dass** Schnappmontagemittel (52) zum Befestigen der Schutzplatte (24) am Kochfeld (50) vorgesehen sind, wobei die Schnappmontagemittel (52) vorzugsweise integriert in die Schutzplatte (24) und/oder das Gehäuse (14) ausgeführt sind.
7. Kochfeld (10; 50) gemäß einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die Schutzplatte (24) wenigstens eine Kabelöffnung (42) zum Durchführen von Kabeln umfasst.
8. Kochfeld (10; 50) gemäß Anspruch 7, **dadurch gekennzeichnet, dass** die Ränder der Kabelöffnung (42) abgeschrägt und/oder mit einem Kabelschutzmittel versehen sind.
9. Kochfeld (10; 50) gemäß einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** eine Trennwand (34) und/oder Dichtungsmittel zum Trennen der Schutzplattenabschnitte (36, 38) vorgesehen sind.

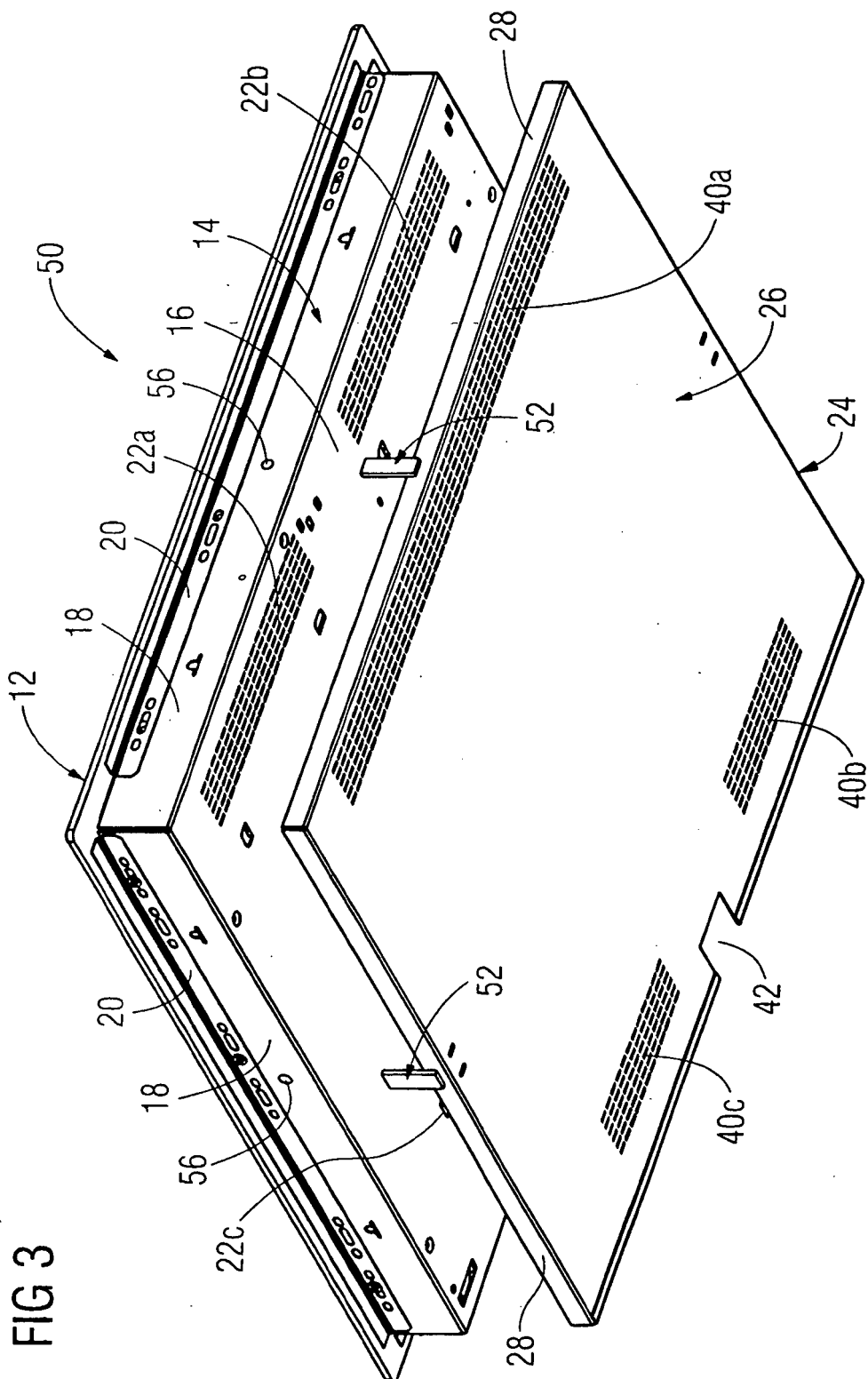
Revendications

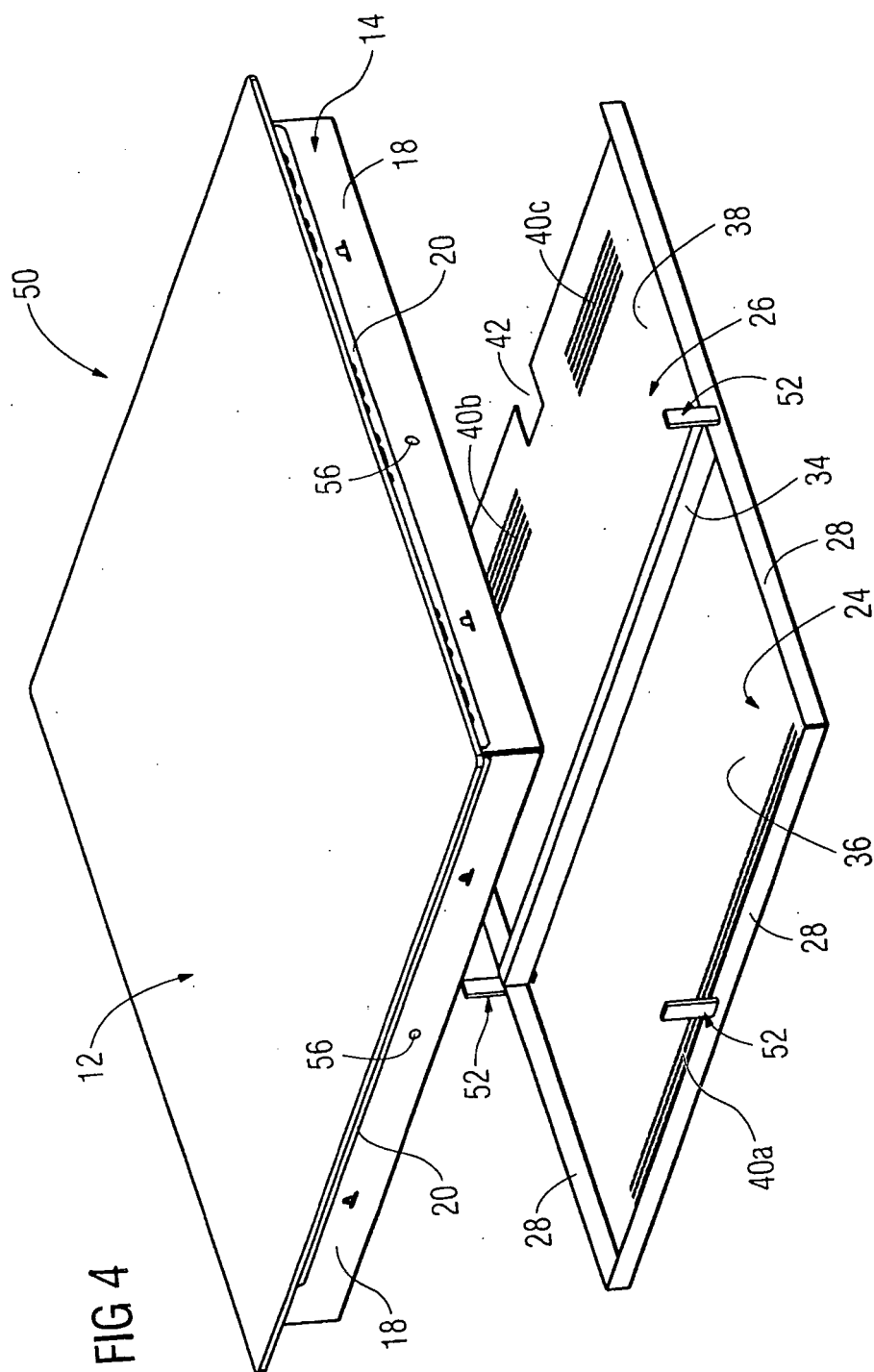
1. Plaque de cuisson domestique (10 ; 50) comprenant un boîtier (14) avec une paroi inférieure (16), la plaque de cuisson domestique (10 ; 50) comprenant en outre au moins une plaque d'isolation thermique et/ou électrique et/ou de protection résistant aux flammes (24) qui est fixée à la plaque de cuisson (10, 50) en dessous de la paroi inférieure (16), et où un plan principal (26) de la plaque de protection (24) est espacé de la paroi inférieure (16) d'une distance prédéterminée, **caractérisée en ce que** la plaque de protection (24) et la paroi inférieure (16) du boîtier (14) sont munies d'ouvertures d'aération (22a, 22b, 22c ; 40a, 40b, 40c), où une première section de plaque de protection (36) est munie d'au moins une ouverture d'aération (40b) pour l'amenée d'air, et une deuxième section de plaque de protection (38) est munie d'au moins une ouverture d'aération (40b, 40c) pour le retrait d'air, et dans laquelle les section de plaque de protection (36, 38) sont spatialement séparées l'une de l'autre.

2. Plaque de cuisson (10 ; 50) selon la revendication 1, **caractérisée en ce qu'**au moins une pièce d'écartement (28) est réalisée pour le maintien de la distance prédéterminée.
3. Plaque de cuisson (10 ; 50) selon la revendication 2, **caractérisée en ce qu'**au moins une pièce d'écartement précitée est réalisée intégralement avec la plaque de protection (24) et/ou le boîtier (14).
4. Plaque de cuisson (10 ; 50) selon la revendication 2, **caractérisée en ce qu'**au moins une pièce d'écartement précitée est réalisée comme un composant séparé.
5. Plaque de cuisson (10 ; 50) selon l'une quelconque des revendications précédentes, **caractérisée en ce que** la plaque de protection (24) est vissée et/ou rivetée et/ou liée à ou accrochée dans la plaque de cuisson (10 ; 50).
6. Plaque de cuisson (50) selon l'une des revendications 1 à 4, **caractérisée en ce que** des moyens d'enclenchement (52) sont réalisés pour fixer la plaque de protection (24) à la plaque de cuisson (50), où les moyens d'enclenchement (52) sont de préférence réalisés intégralement avec la plaque de protection (24) et/ou le boîtier (14).
7. Plaque de cuisson (10 ; 50) selon l'une des revendications précédentes, **caractérisée en ce que** la plaque de protection (24) comprend au moins une ouverture de câble (42) pour l'alimentation par des câbles.
8. Plaque de cuisson (10 ; 50) selon la revendication 7, **caractérisée en ce que** les bords de l'ouverture de câble (42) sont chanfreinés et/ou pourvus d'un moyen de protection de câble.
9. Plaque de cuisson (10 ; 50) selon l'une quelconque des revendications précédentes, **caractérisée en ce qu'**une paroi de séparation (34) et/ou moyen d'étanchéité sont prévus pour séparer les sections de plaque de protection (36, 38).









REFERENCES CITED IN THE DESCRIPTION

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