(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 615 378 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
15.03.2017 Bulletin 2017/11

(21) Application number: **12151024.2**

(22) Date of filing: **13.01.2012**

(51) Int Cl.:
A47J 36/04 *(2006.01)* ***A47J 37/06*** *(2006.01)*
F24C 15/10 *(2006.01)*

(54) **Griddle plate**

Grillplatte

Plaque de grill

(84) Designated Contracting States:
AL 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 RS SE SI SK SM TR

(43) Date of publication of application:
17.07.2013 Bulletin 2013/29

(73) Proprietor: **Electrolux Home Products Corporation N.V.**
1130 Brussels (BE)

(72) Inventors:
- **Häutle, Ulrich**
  91541 Rothenburg o. d. Tauber (DE)
- **Hauschildt, Heino**
  91541 Rothenburg o. d. Tauber (DE)
- **Dehnert, Thomas**
  91541 Rothenburg o. d. Tauber (DE)

(74) Representative: **Electrolux Group Patents**
AB Electrolux
Group Patents
105 45 Stockholm (SE)

(56) References cited:
EP-A1- 0 695 914
GB-A- 1 428 555
US-A- 4 045 654
US-A1- 2010 186 603

EP 2 615 378 B1

Printed by Jouve, 75001 PARIS (FR)

Description

[0001] The present invention relates to a plate, in particular for a cooking hob, according to the preamble of claim 1. Further, the present invention relates to a cooking hob including at least one griddle plate. In particular, the present invention relates to a Teppan Yaki grill.

[0002] The griddle plate is made of a metal plate. The Teppan Yaki grill also includes a metal plate, in particular made of ferritic steel or iron. The barbecue temperatures are very high, so that the thermal expansion of the metal plate causes a bending of said metal plate. The temperatures in the centre of the metal plate are higher than the temperatures in the outer areas of said metal plate. The bending of the metal plate is unre-quested.

[0003] DE 20 2006 012 631 U1 discloses a griddle plate, in particular a Teppan Yaki grill, which may be a built-in type or a portable tabletop unit. The griddle plate is enclosed by the frame made at least particularly of glass ceramics. The material of the frame has a low thermal conductivity, so that the frame does not reach a too high temperature.

[0004] DE 202 15 979 U1 discloses a cooking plate or griddle plate including several layers. The top layer and the bottom layer are metal sheets. The intermediate sheet is made of aluminium. The griddle plate is subdivided into cooking zones. Between said cooking zones are border zones. In the border zones only the top layer is present, but the intermediate layer and bottom layer lack.

[0005] US 4,045,654 discloses an electric hot plate with a thermostat. A heating plate is joined to the surrounding cold zones by means of a bridge of relative thin metal. An actuating device for a thermostatic switch is operated by the vertical movement of the heating plate. The bridge acts as a hinge for the vertical movement of the heating plate. The heating plate includes a relative thick middle layer and thin layers on the upper and lower sides. The thin layers are made of stainless steel. The upper thin layer forms the bridge between the heating plate and the surrounding cold zones. The middle layer of the heating plate consists of two different materials, wherein a circular plate is surrounded by a ring. The coefficient of linear expansion of the circular plate is bigger than that of the ring. For example, the circular plate is made of copper, while the ring is made of aluminium.

[0006] GB 1 428 555 discloses an induction heating apparatus. The induction heating apparatus includes an inductor and a cover plate. The inductor is provided for heating a susceptor by electromagnetic induction. The cover plate is a non-magnetic metallic plate having a high electrical resistance. The cover plate includes one or more grooves in order to absorb thermal strain within said cover plate. For example, the grooves are U-shaped, S-shaped or V-shaped.

[0007] It is an object of the present invention to provide a plate for a cooking hob, wherein the bending of the griddle plate by the heat is prevented or reduced by low complexity.

[0008] The object of the present invention is achieved by the plate according to claim 1.

[0009] According to the present invention the plate is a griddle plate, the join patch is a welded joint, and the thickness of the central portion is bigger than the thickness of the frame portion.

[0010] The main idea of the present invention is that the griddle plate for the cooking hob is formed as rigid body, wherein the coefficient of thermal expansion for the material of the outer portion is higher than the coefficient of thermal expansion for the material of the inner portion. The higher thermal expansion of the outer portion reduces or prevents the pressure from the outer portion to the inner portion, so that the bending of the inner portion and the griddle plate is reduced or completely avoided. The welded joint allows the rigid connection between the central portion and the frame portion of the griddle plate, so that the griddle plate forms the rigid body. The thickness of the central portion is bigger than the thickness of the frame portion.

[0011] Preferably, the frame portion is made of metal.

[0012] For example, the central portion and/or the frame portion are at least partially made of iron.

[0013] In particular, the griddle plate is formed as a Teppan Yaki grill.

[0014] At last, the present invention relates to a cooking hob including at least one griddle plate mentioned above.

[0015] Novel and inventive features of the present invention are set forth in the appended claims.

[0016] The present invention will be described in further detail with reference to the drawing, in which

FIG 1 illustrates a partial sectional side view of a griddle plate for the cooking hob according to a preferred embodiment of the present invention.

[0017] FIG 1 illustrates a partial sectional side view of a griddle plate 10 for the cooking hob according to a preferred embodiment of the present invention. The griddle plate 10 is formed as a metal sheet and includes a central portion 12 and a frame portion 14. The partial sectional side view in FIG 1 shows the cross-sections of the complete frame portion 14 and of an outer area of the central portion 12.

[0018] The central portion 12 of the griddle plate 10 is the preferred area provided for barbecue or broiling. The frame portion 14 encloses the central portion 12. The central portion 12 and the frame portion 14 are connected by a join patch 16. The join patch 16 allows a rigid connection between the central portion 12 and the frame portion 14 of the griddle plate 10. Thus, the griddle plate 10 forms a rigid body. Preferably, the join patch 16 is realized by a welded joint.

[0019] The central portion 12 and the frame portion 14 of the griddle plate 10 are made of metal. However, the materials of the central portion 12 and the frame portion

14 have different coefficients of thermal expansion. The coefficient of thermal expansion for the material of the frame portion 14 is higher than the coefficient of thermal expansion for the material of the central portion 12. Thus, the thermal expansion of the frame portion 14 is higher than the thermal expansion of the central portion 12, if the temperatures of the central portion 12 and the frame portion 14 are substantially the same. The higher thermal expansion of the frame portion 14 reduces or prevents the pressure from the frame portion 14 to the central portion 12. Thus, the bending of the central portion 12 is reduced or avoided. Further, also the bending of the griddle plate 10 is reduced or completely avoided.

[0020] In this example the frame portion 14 comprises a groove 18. Said groove 18 is provided for collecting fat and/or oil. The groove 18 is an optional element of the griddle plate 10.

[0021] Although an illustrative embodiment of the present invention has been described herein with reference to the accompanying drawing, it is to be understood that the present invention is not limited to that precise embodiment, and that various other changes and modifications may be affected therein by one skilled in the art without departing from the scope or spirit of the invention. All such changes and modifications are intended to be included within the scope of the invention as defined by the appended claims.

List of reference numerals

[0022]

10	griddle plate
12	central portion
14	frame portion
16	join patch
18	groove

Claims

1. A plate (10), in particular for a cooking hob, including a central portion (12) and a frame portion (14), wherein

   - the central portion (12) is formed as a metal plate, and
   - the frame portion (14) encloses the central portion (12),
   - the coefficient of thermal expansion for the material of the frame portion (14) is higher than the coefficient of thermal expansion for the material of the central portion (12), and
   - a join patch (16) connects the central portion (12) and the frame portion (14), so that the central portion (12) and the frame portion (14) form a rigid body,

   characterized in, that
   the plate (10) is a griddle plate (10), the join patch (16) is a welded joint, and the thickness of the central portion (12) is bigger than the thickness of the frame portion (14).

2. The plate according to claim 1,
   characterized in that
   the frame portion (14) is made of metal.

3. The plate according to claim 1 or 2,
   characterized in, that
   the central portion (12) and/or the frame portion (14) are at least partially made of iron.

4. The plate according to any one of the preceding claims,
   characterized in, that
   the griddle plate (10) is formed as a Teppan Yaki grill.

5. A cooking hob including at least one griddle plate (10),
   characterized in, that
   the cooking hob includes at least one griddle plate (10) according to any one of the claims 1 to 4.

Patentansprüche

1. Platte (10), insbesondere für ein Kochfeld, mit einem mittleren Abschnitt (12) und einem Rahmenabschnitt (14), wobei

   - der mittlere Abschnitt (12) als Metallplatte geformt ist, und
   - der Rahmenabschnitt (14) den mittleren Abschnitt (12) umschließt,
   - der Wärmeausdehnungskoeffizient für das Material des Rahmenabschnitts (14) höher als der Wärmeausdehnungskoeffizient für das Material des mittleren Abschnitts (12) ist, und
   - eine Fügestelle (16) den mittleren Abschnitt (12) und dem Rahmenabschnitt (14) miteinander verbindet, so dass der mittlere Abschnitt (12) und der Rahmenabschnitt (14) einen starren Körper bilden,

   dadurch gekennzeichnet, dass
   die Platte (10) eine Grillplatte (10) ist, die Fügestelle (16) eine Schweißverbindung ist und die Dicke des mittleren Abschnitts (12) größer als die Dicke des Rahmenabschnitts (14) ist.

2. Platte nach Anspruch 1,
   dadurch gekennzeichnet, dass
   der Rahmenabschnitt (14) aus Metall besteht.

3. Platte nach Anspruch 1 oder 2,

dadurch gekennzeichnet, dass
der mittlere Abschnitt (12) und/oder der Rahmenabschnitt (14) wenigstens teilweise aus Eisen bestehen.

4. Platte nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass**
die Grillplatte (10) als Teppanyaki-Grill geformt ist.

5. Kochfeld mit wenigstens einer Grillplatte (10), **dadurch gekennzeichnet, dass**
das Kochfeld wenigstens eine Grillplatte (10) nach einem der Ansprüche 1 bis 4 aufweist.

Revendications

1. Plaque (10), en particulier pour une table de cuisson, comportant une partie centrale (12) et une partie de cadre (14),

   - la partie centrale (12) étant formée en tant que plaque métallique, et
   - la partie de cadre (14) entourant la partie centrale (12),
   - le coefficient de dilatation thermique du matériau de la partie de cadre (14) étant supérieur au coefficient de dilatation thermique du matériau de la partie centrale (12), et
   - une zone de joint (16) reliant la partie centrale (12) et la partie de cadre (14) de telle sorte que la partie centrale (12) et la partie de cadre (14) forment un corps rigide,

   caractérisée en ce que
   la plaque (10) est une plaque de gril (10), la zone de joint (16) est un joint soudé, et l'épaisseur de la partie centrale (12) est supérieure à l'épaisseur de la partie de cadre (14).

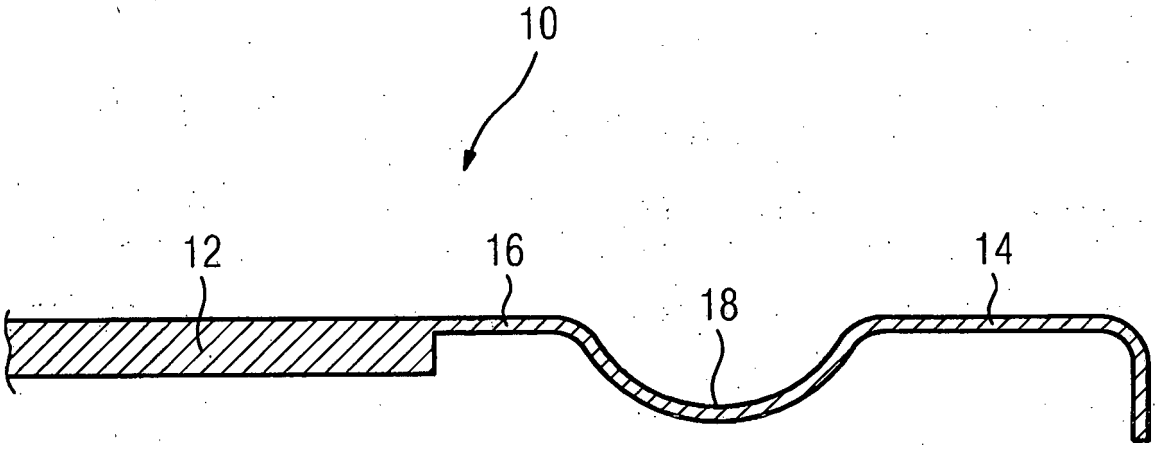
2. Plaque selon la revendication 1, **caractérisée en ce que**
la partie de cadre (14) est fabriquée en métal.

3. Plaque selon la revendication 1 ou 2, **caractérisée en ce que**
la partie centrale (12) et/ou la partie de cadre (14) sont au moins en partie fabriquées en fer.

4. Plaque selon l'une quelconque des revendications précédentes, **caractérisée en ce que**
la plaque de gril (10) est formée sous forme de gril Teppan Yaki.

5. Table de cuisson comportant au moins une plaque de gril (10), **caractérisée en ce que**
la table de cuisson comporte au moins une plaque de gril (10) selon l'une quelconque des revendications 1 à 4.

FIG 1



REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- DE 202006012631 U1 **[0003]**
- DE 20215979 U1 **[0004]**
- US 4045654 A **[0005]**
- GB 1428555 A **[0006]**