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(54) **Electric radiant heater**

(57) Electric radiant heater adapted to a cooking hob, in particular a glass-ceramic cooktop, which comprises an insulating base that has, on one end, a substantially flat and circular first face upon which at least one heating resistance is fixed, and, on an opposite end, a substantially circular second face, and a metal support cover that

houses said insulating base in its interior. The second face of the insulating base is supported directly on a bottom surface of the support cover via a contact surface, the area of said contact surface being smaller than the area of the circle delimited by the second face of the insulating base.

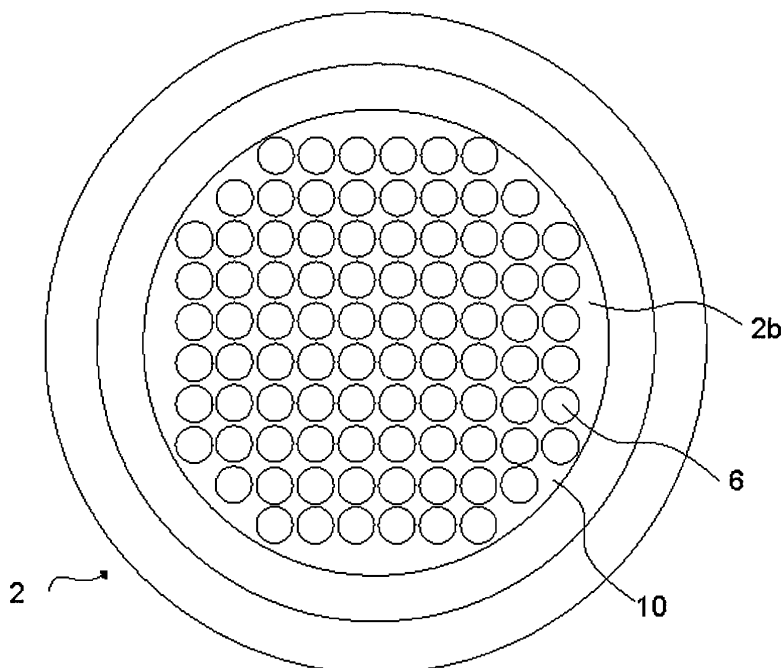


FIG. 1

Description

TECHNICAL FIELD

[0001] This invention relates to an electric radiant heater adapted to a cooking hob, in particular a glass-ceramic cooktop.

PRIOR ART

[0002] Electric radiant heaters adapted to a cooking hob are known in the prior art, and which comprise a metal support cover that houses in its interior an insulating base that includes a perimeter rim and upon which is fixed at least one thermal conductor, said support cover including a support projection that projects out in relation to its base, as disclosed in documents ES 1054629U and EP 1139696A.

[0003] The insulating base is made of a thermal insulating material obtained by compression, which comprises a micro-porous silica aerogel reinforced with ceramic fibres and, optionally, alumina and an opacifier, with the result that said insulating base has good mechanical and thermal insulation properties, as disclosed in document GB 1580909 A.

[0004] In general terms, the insulating base, the faces of which are substantially flat, is supported on the support projection of the support cover via the perimeter rim, whereas in the bottom surface, generally convex, of the support cover, there is a non-uniform gap between the insulating base and the bottom of said support cover.

DISCLOSURE OF THE INVENTION

[0005] The object of this invention is to provide an electric radiant heater adapted to a cooking hob, in particular a glass-ceramic cooktop, as defined in the claims.

[0006] The electric radiant heater of the invention comprises an insulating base that has, on one end, a substantially flat and circular first face upon which at least one heating resistance is fixed, and, on the opposite end, a substantially circular second face, and a metal support cover that houses said insulating base in its interior.

[0007] The second face of the insulating base is supported directly on the bottom surface of the support cover via a contact surface, the area of said contact surface being smaller than the area of the circle delimited by the second face of said insulating base. As a result, the conduction of heat between the insulating base and the support cover is minimised, as the contact surface between said insulating base and said support cover is reduced, a radiant heater with a high insulating capacity and of minimal cost thus being obtained thanks to the optimised shape of the insulating base and support cover, thus enabling its repetitive manufacturing.

[0008] These and other characteristics and advantages of the invention will be made evident in the light of the drawings and the detailed description thereof.

DESCRIPTION OF THE DRAWINGS

[0009]

Figure 1 is a cross-section of a first embodiment of an insulating base inserted into an external cover of a radiant heater according to the invention.

Figure 2 is a ground view of the insulating base of Figure 1.

Figure 3 is a cross-section of a second embodiment of an insulating base inserted into an external cover of a radiant heater according to the invention.

Figure 4 is a ground view of the insulating base of Figure 3.

Figure 5 is a cross-section of a third embodiment of an insulating base inserted into an external cover of a radiant heater according to the invention.

Figure 6 is a ground view of the insulating base of Figure 5.

DETAILED DISCLOSURE OF THE INTENTION

[0010] With reference to figures 1 to 6, an electric radiant heater according to the invention, adapted to a cooking hob, not shown in the figures, comprises a substantially revolving insulating base 2 that has, on one end, a substantially flat and circular first face 2a upon which are fixed one or more heating resistances, not shown in the figures, and on the opposite end, a substantially flat and circular second face 2b defined by a diameter D1, and a metal support cover 3 adapted to the external shape of the insulating base 2, which houses said insulating base 2 in its interior.

[0011] The support cover 3 has a substantially vertical wall 3b of a height greater than a thickness H2 of the insulating base 2, and a bottom surface 3a upon which the second face 2b of the insulating base 2 is supported directly via a contact surface 10, the area of said contact surface 10 being smaller than the area of the circle of diameter D1 delimited by the second face 2b.

[0012] In a first embodiment of the invention shown in figures 1 and 2, the insulating base 2 is formed by moulding a single layer of uniform micro-porous material, a good heat-insulating material with good mechanical properties and resistant to the absorption of moisture, which comprises a silica aerogel dust mixed with ceramic-reinforcing fibres, and, optionally, opacifying materials and ceramic loads. The insulating base 2 includes a plurality of holes 6, symmetrically disposed on the second face 2b, which reduce the area of the contact surface 10 of said second face 2b with the bottom surface 3a, and create layers of insulating air between the insulating base 2 and the support cover 3. The holes 6 are blind holes

defined by a height H1, which is smaller than the thickness H2 of the insulating base 2.

[0013] In a second embodiment shown in figures 3 and 4, the insulating base 2 comprises a first substantially cylindrical element 4, one of the two faces of which corresponds to the first face 2a of the insulating base 2, and a second substantially cylindrical element 5, one of the two faces of which corresponds to the second face 2b of the insulating base 2, said first element 4 and second element 5 being coaxial and said first element 4 being supported on the second element 5. The first element 4 is formed by moulding a single layer of uniform microporous material, a good heat-insulating material with good mechanical properties and resistant to the absorption of moisture, which comprises a silica aerogel dust mixed with ceramic-reinforcing fibres and, optionally, opacifying materials and ceramic loads, while the second element 5 is made of a material with good mechanical properties, such as alumina, steatite, cordierite or a similar material.

[0014] In addition, the second element 5 includes a plurality of corresponding holes 7, symmetrically disposed in a beehive panel arrangement, said holes 7 being through-holes, and which reduce the area of the contact surface 10 of the insulating base 2 with the support cover 3, and create air cavities that improve the insulation between the insulating base 2 and the support cover 3.

[0015] In a third embodiment of the invention, shown in figures 5 and 6, the support cover 3 includes projections 8 towards the interior of the support cover 3, made by means of a stamping procedure, and upon which the second face 2b of the insulating base 2 is supported, thereby reducing the contact surface 10 between the insulating base 2 and the support cover 3. The projections 8 may have varying shapes, being capable of taking the form of a matrix of individual projections, of rectilinear channels or concentric circular channels.

is smaller than the area of the circle delimited by the second face (2b) by means of a plurality of holes (6,7) disposed on said second face (2b).

- 5 3. Electric radiant heater according to the preceding claim, wherein the holes (6,7) are disposed symmetrically and have a depth (H1) smaller than the thickness (H2) of the base plate (2).
- 10 4. Electric radiant heater according to any of claims 2 or 3, wherein the insulating base (2) comprises a first element (4), one of the two faces of which corresponds to the first face (2a) of the insulating base (2), and a second element (5) one of the two faces of which corresponds to the second face (2b) of the insulating base (2), said first element (4) and second element (5) being coaxial and said first element (4) being supported on the second element (5).
- 15 5. Electric radiant heater according to the preceding claim, wherein the holes (7) are disposed symmetrically in the second element (5) and are through-holes.
- 20 6. Electric radiant heater according any of preceding claims, wherein the area of the contact surface (10) is smaller than the area of the circle delimited by the second face (2b) by means of projections (8) included in said bottom surface (3a).
- 25 7. Electric radiant heater according to the preceding claim, wherein the projections (8) are obtained by means of a stamping procedure.
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Claims

1. Electric radiant heater adapted to a cooking hob, in particular a glass-ceramic cooktop, which comprises an insulating base (2) that has, on one end, a substantially flat and circular first face (2a) upon which at least one heating resistance is fixed, and, on an opposite end, a substantially circular second face (2b), and a metal support cover (3) that houses said insulating base (2) in its interior, **characterised in that** the second face (2b) of the insulating base (2) is supported directly on a bottom surface (3a) of the support cover (3) via a contact surface (10), the area of said contact surface (10) being smaller than the area of the circle delimited by the second face (2b) of the insulating base (2).
2. Electric radiant heater according to the preceding claim, wherein the area of the contact surface (10)

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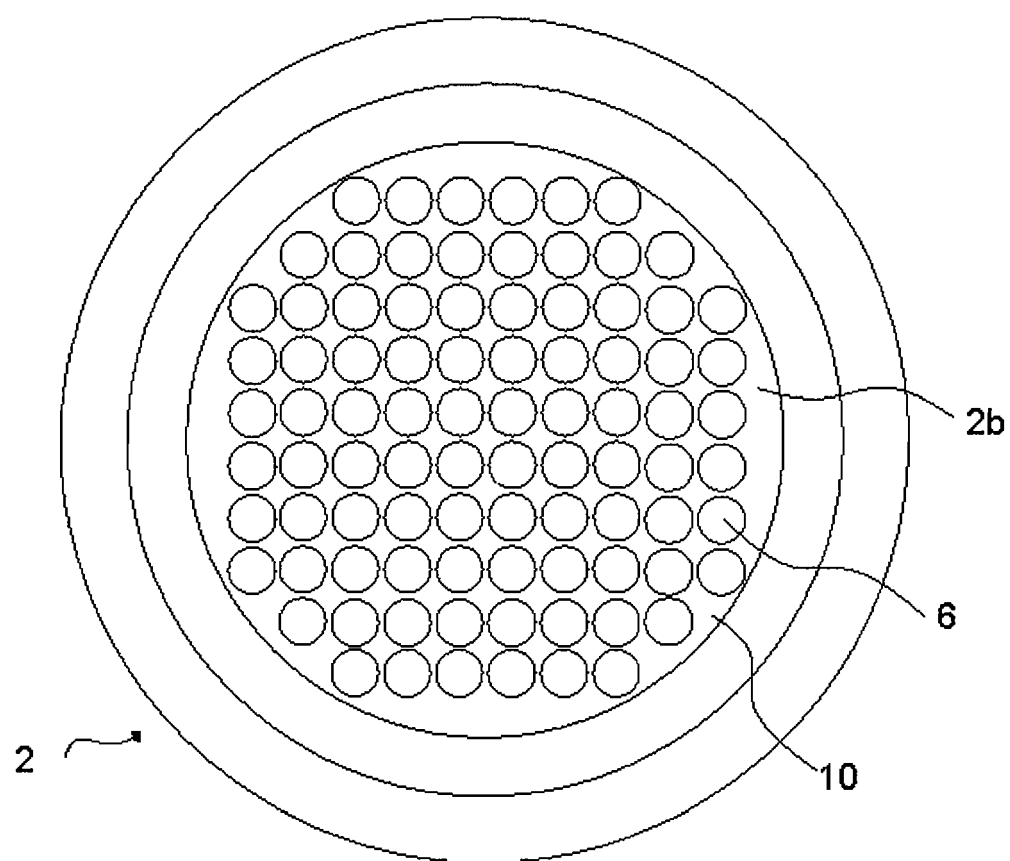


FIG. 1

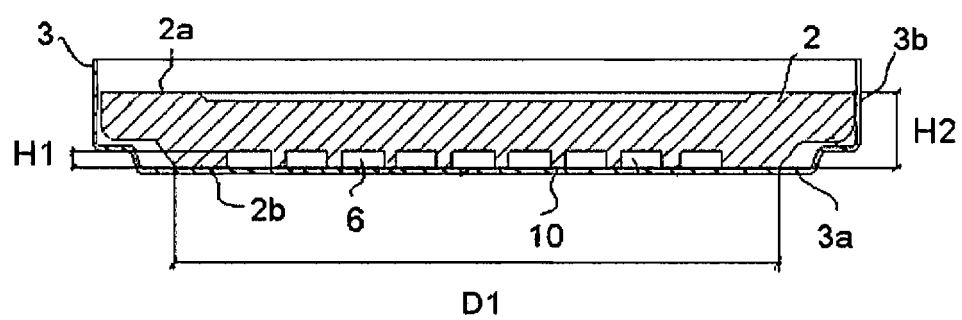


FIG. 2

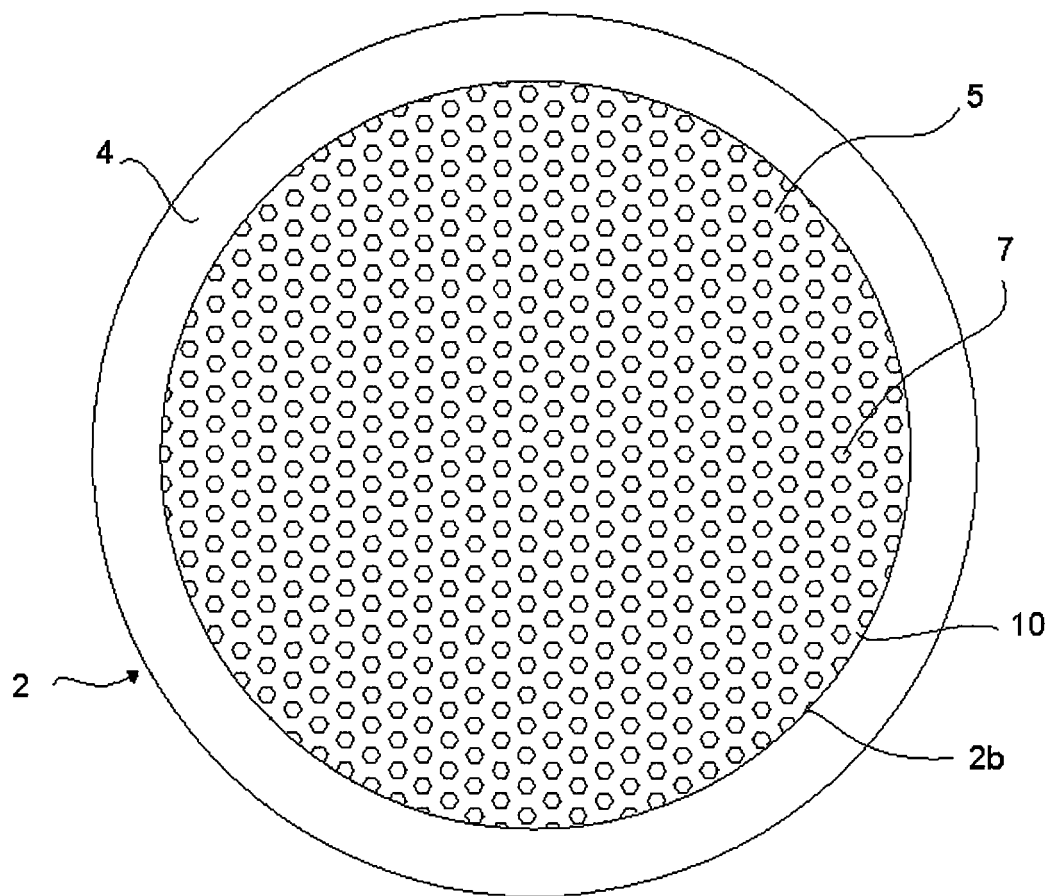


FIG. 3

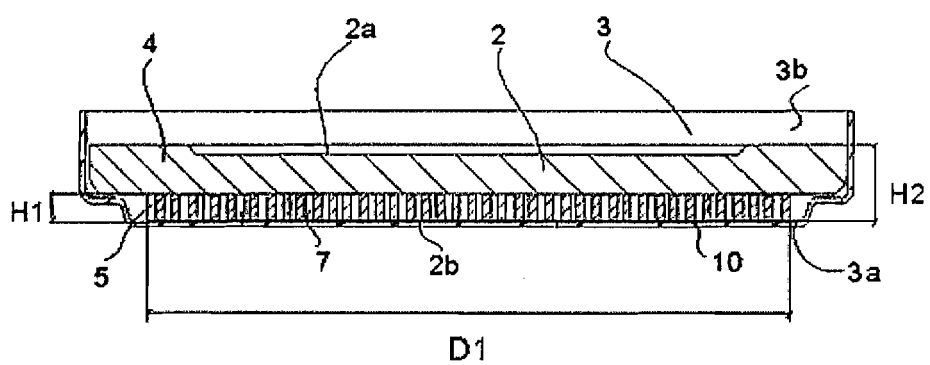


FIG. 4

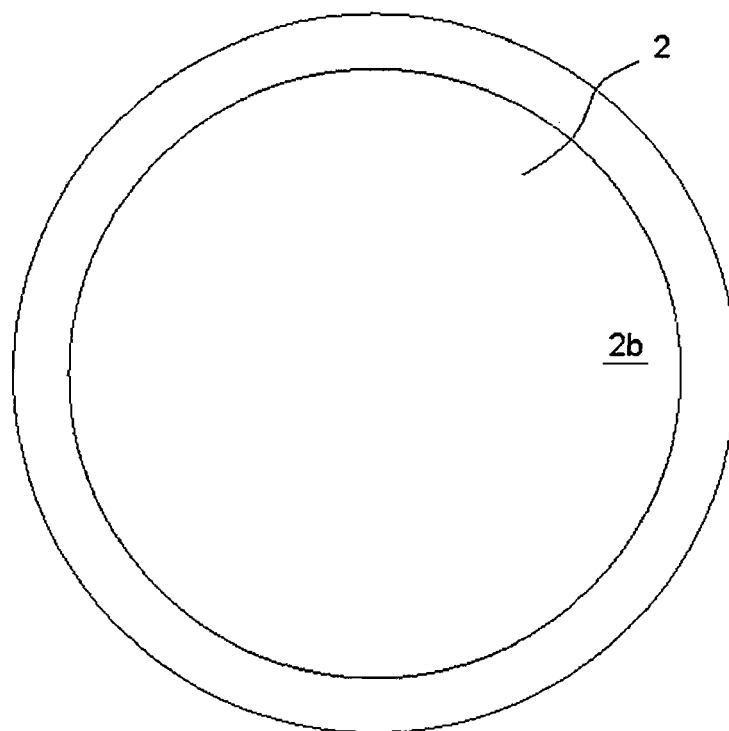


FIG. 5

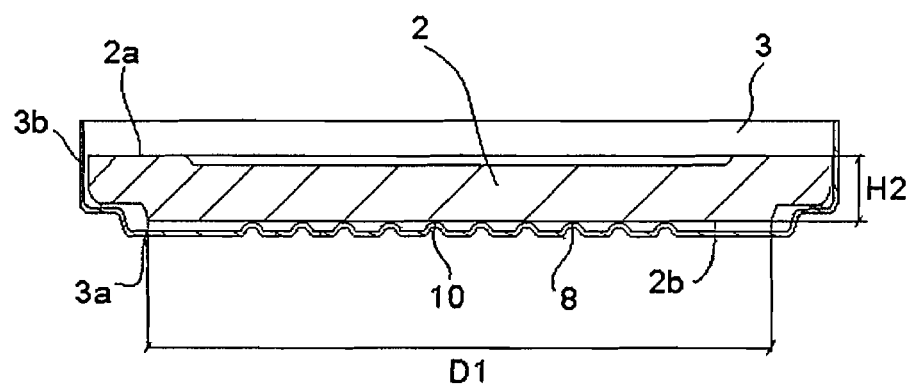


FIG. 6

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- ES 1054629 U [0002]
- EP 1139696 A [0002]
- GB 1580909 A [0003]