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(54) **Atmospheric gas burner of radiant type**

(57) A burner of radiant atmospheric type, comprising a porous ceramic element, positioned to close a chamber (11, 11A) into which a gas/air mixture is fed,

there being provided at least a second chamber (12, 12A) adjacent to the first, both being closed by the porous ceramic element (5, 6; 5A, 6A)

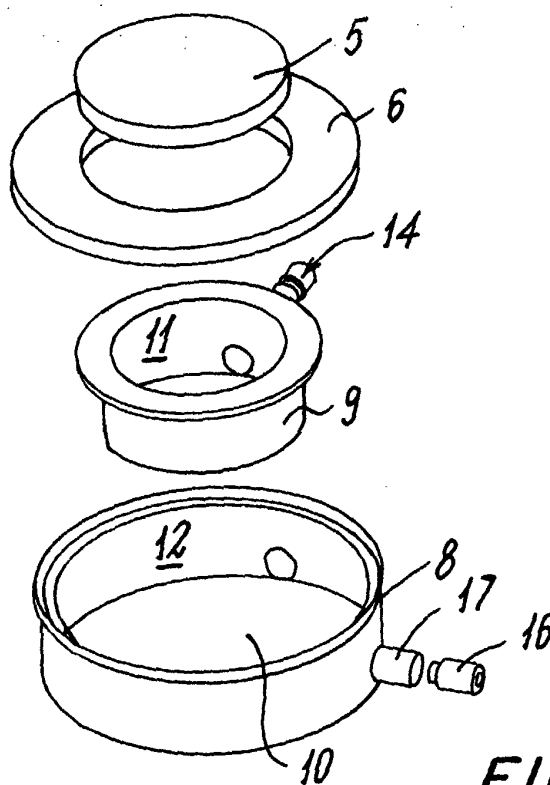


FIG. 2

EP 1 255 081 A2

Description

[0001] The present invention relates to an atmospheric gas burner of radiant type in accordance with the introduction to the accompanying claim 1.

[0002] Atmospheric gas burners of radiant type are known comprising a porous refractory ceramic element (with or without catalyst) closing a chamber into which the air/gas mixture is fed through an injector, in which the gas (the variable throughput of which is controlled by a valve operated by a knob) acts as the vector fluid, i.e. for drawing-in the combustion air.

[0003] The burner conceived in this manner is located at a distance below a profiled or non-profiled glass ceramic plate acting as a heat receiver. An example of a burner of this type is described in a previous utility model in the name of the same applicant.

[0004] The burner of the prior art is not always able to provide the required performance. This is the case for example when saucepans of considerably different diameter or perimeter are required to be positioned on one and the same burner (of given dimensions). If the burner is sized for the smaller saucepan, cooking requires a much longer time if the larger saucepan is used instead (even if the burner is used at its maximum thermal power). If the burner is sized for the larger saucepan, using the smaller saucepan results in considerable energy wastage even if the burner is operated at low power.

[0005] An example of this situation is that of a fish-kettle (representing the larger pan) and a frying pan occupying a surface area of one half that of the fish-kettle.

[0006] The object of the present invention is to provide a burner able to satisfy different thermal requirements determined by the bearing dimensions of the cooking utensil, in a simple and economical manner.

[0007] The invention will be more apparent from the ensuing detailed description provided by way of example and given with reference to the accompanying drawings, in which:

Figure 1 is a schematic plan view of a cooking appliance with three cooking positions;

Figure 2 is an exploded perspective view of one of the cooking positions of the appliance of Figure 1, but omitting the glass ceramic plate acting as the heat receiver;

Figure 3 is a schematic vertical section through a cooking position of the appliance of Figures 1 and 2;

Figure 4 is an exploded perspective view of a different embodiment of a cooking position.

[0008] With reference to Figures 1-3, the cooking appliance represented presents three cooking positions, which can be different or equal to each other and are indicated by 1. It comprises (see Figure 3 in particular) a glass ceramic flat element or plate 2 on which the cooking utensil rests. In this specific case the plate 2 is supported by a metal spacer means 3 in front of a burner

indicated overall by 4. The burner comprises a discoidal central part 5 of porous ceramic material and a circular annular part 6 also of porous ceramic material, having an inner diameter substantially equal to the outer diameter of the discoidal central part 5. According to a variant the two parts 5 and 6 can be a single disc, i.e. a single part.

[0009] Whether the arrangement comprises two parts 5, 6 or a single part, a metal support body 7 is provided presenting an inner cylindrical wall 9 and a common base wall 10. The discoidal central part 5 (or the corresponding region in the one-piece arrangement) defines, with the inner cylindrical wall 9 and the base wall 10, a cylindrical chamber 11.

[0010] The annular part 6 (or the corresponding region of the one-piece arrangement) defines, together with the inner cylindrical wall 9, the outer cylindrical wall 8 and the base wall 10, an annular chamber 12.

[0011] The inner cylindrical chamber 11 is connected to a conduit 13, which passes through the annular chamber 12 and carries a conventional injector 14 for the gas which, by the venturi effect, draws the combustion air through intake apertures 15 present in the conduit 13.

[0012] To the outer annular chamber 12 there is connected a similar injector 16 present in a conduit 17 provided with combustion air intake apertures.

[0013] The injectors of the two chambers are connected by pipes 18, 19 to a two-exit cock 20 of known type connected to the gas source and controlled by one and the same knob 21 to feed gas to the inner chamber 11 from its minimum to its maximum value, and then, by rotating the said knob, to feed gas to the annular chamber 12, for example from its maximum to its minimum value, while feeding gas at maximum value to the inner chamber 11. If only that part of the burner corresponding to the chamber 11 is to be used (for cooking), the cock 20 is opened within a first adjustment range by which gas is controlledly fed to only that chamber. Flameless combustion of the air/gas mixture passing through the porous ceramic mass 5 covering the chamber 11 is triggered in known traditional manner. If the situation requires it, by operating the same cock with further rotation of the relative knob, the air/gas mixture is made to also controlledly enter the outer annular chamber 12, and is ignited by passage through the porous ceramic mass 6 covering the chamber 12, while the chamber 11 is fed at its maximum value, with the result that the entire porous mass (disc 5 plus ring 6) intervenes in heating the glass ceramic plate 2.

[0014] The arrangement of Figure 4, in which parts equal or corresponding to those of Figures 1-3 are indicated by the same reference numerals plus the letter A, comprises two partly complementary adjacent chambers 11A and 12A, one cylindrical and the other similar to an annular sector, closed respectively by a discoidal part 5A of porous ceramic material and by a part 6A of shape matching that of the underlying chamber 12A. Again in this case gas flows to the two chambers via a

cock controlled by the same knob. The two parts 5A and 6A can again in this case represent two regions of one and the same piece.

[0015] The heat receiver, represented by glass ceramic discs in the embodiment of Figures 1-3, is in this case shaped relatively. 5

[0016] In the two embodiments the heat receiver can be a single plate, for example rectangular, common to all the burners used, although the fact of having several heat receivers, each associated with its relative burner, enables the thermal efficiency to be increased by virtue of direct heat transfer between the hot combustion gases and the walls of the cooking utensil. 10

[0017] Further advantages of the invention include: a) a wider range of utilization of radiant burners, the usual main drawback of which is that they operate correctly only within a narrow range of gas throughput, and b) enabling the number of cooking points 1 to be reduced when these burners are used in cooking hobs. The invention also extends to embodiments in which the radiant burner comprises three or more chambers, In that case, more than one electronically controlled valve or cock can be used. 20

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Claims

1. A burner of radiant atmospheric type, comprising a porous ceramic element, positioned to close a chamber (11, 11A) into which a gas/air mixture is fed, **characterised by** comprising at least a second chamber (12, 12A) adjacent to the first, both being closed by the porous ceramic element (5, 6; 5A, 6A). 30
2. A burner as claimed in claim 1, wherein the feed to said two chambers takes place via a valve means (20) controlled by a single knob (21). 35
3. A burner as claimed in claim 1, wherein the porous ceramic element is common to the two chambers (11, 11A and 12, 12A). 40
4. A burner as claimed in claim 1, wherein the porous ceramic element (5, 5A; 6, 6A) is separate for each of said chambers (11, 11A and 12, 12A). 45
5. A burner as claimed in one or more of the preceding claims, wherein during a first part of the travel of its single knob (21), the valve member (20) controls the gas feed to a first chamber from a minimum to a maximum value, whereas during a second part of said travel it controls the gas feed to the second chamber and allows feed to the first chamber at maximum value. 50 55
6. A burner as claimed in one or more of the preceding claims, wherein the two chambers (11, 12) are con-

centric.

7. A burner as claimed in one or more of claims from 1 to 5, wherein the two chambers (11A, 12A) are side by side or adjacent.

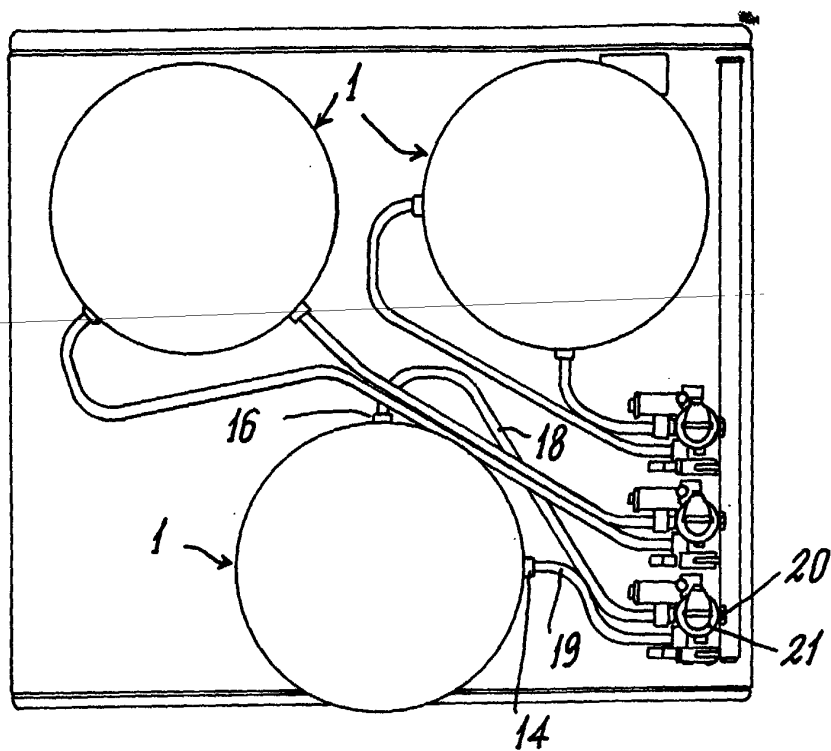


FIG. 1

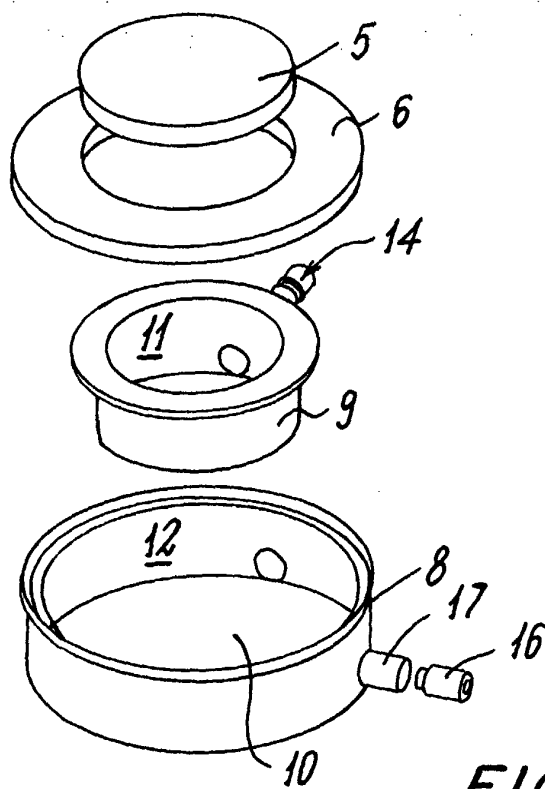


FIG. 2

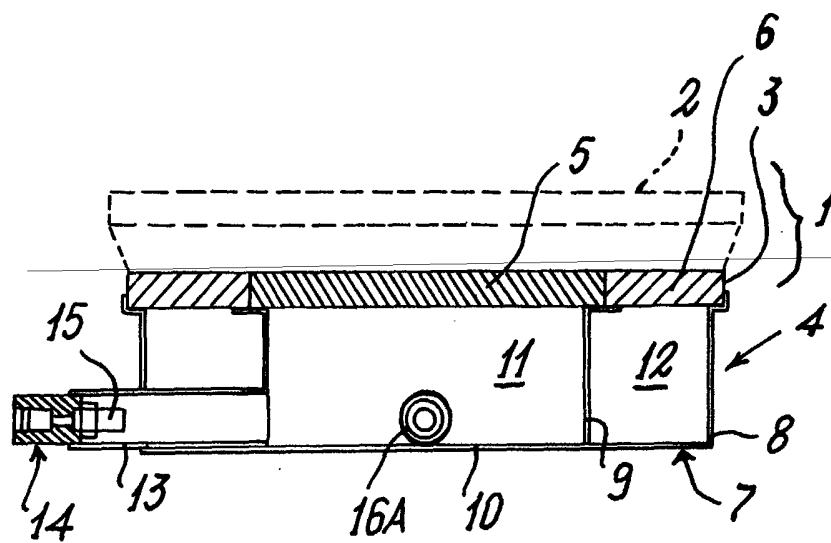


FIG. 3

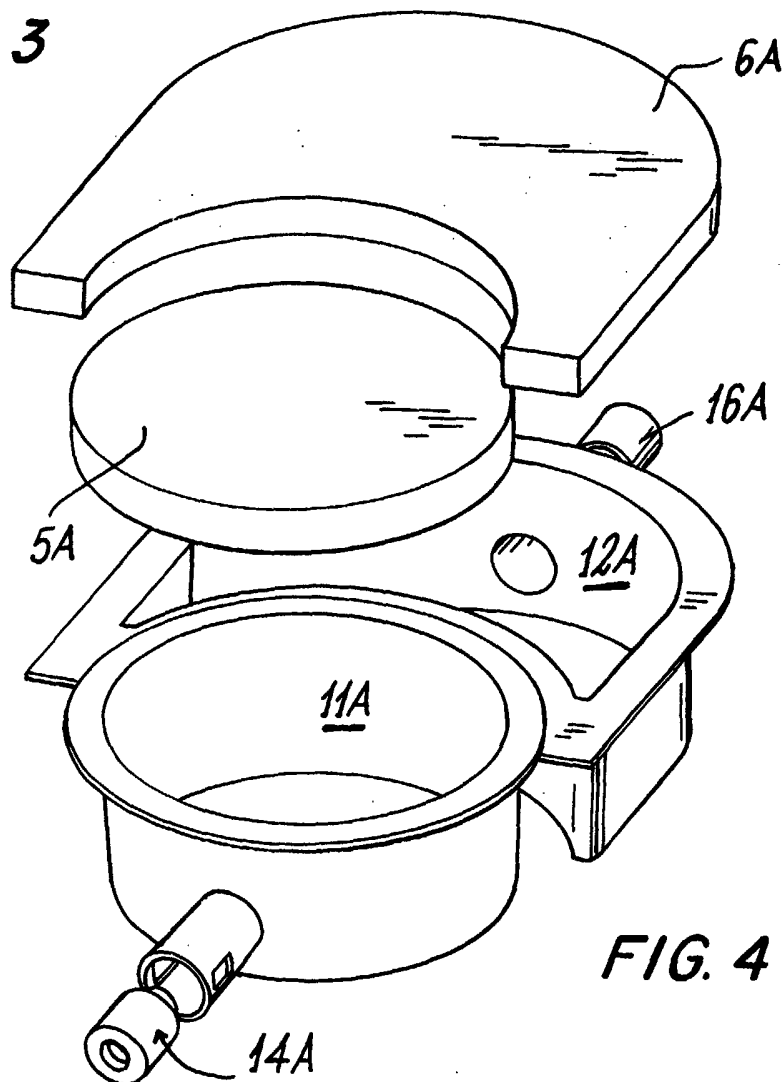


FIG. 4