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

(11) Publication number : **0 677 705 A2**

(12) EUROPEAN PATENT APPLICATION

(21) Application number : **95105005.3**

(51) Int. Cl.[6] : **F23D 14/06**

(22) Date of filing : **04.04.95**

(30) Priority : **08.04.94 IT TO940260**

(43) Date of publication of application :
18.10.95 Bulletin 95/42

(84) Designated Contracting States :
DE ES FR GB IT

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(54) Gas burner having variable positioning and cooking hob incorporating such a burner.

(57) Gas burner (1) is described, arranged on a cooking hob (P) for the heating of containers placed on the latter, of the type comprising a base body (10), gas supply means (12), a removable body (15) upon the upper extremity of which a flame divider element (18) is placed. The main characterised of the described burner is that said removable body (15) is realised with a form of such that said flame divider (18,19) is arranged in an off-centred position compared to said base body (10) and that coupling means (13,20) are provided between said base body (10) and said movable body (15) which allow said removable body (15) the selection of at least two different working positions, in function of the type of container to be heated on said burner and/or in function of the container to be heated placed upon a second burner of said cooking hob (P).

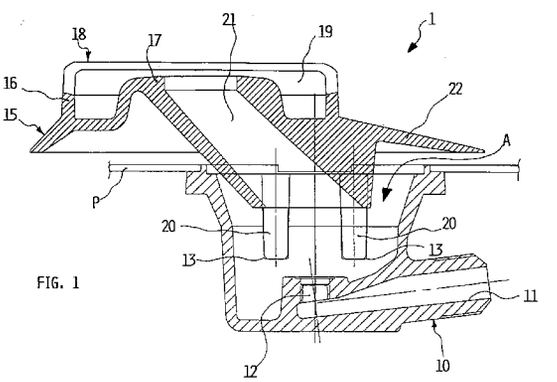

FIG. 1

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The present invention refers to a gas burner arranged on a cooking hob for the heating of food contained in receptacles placed on it, and to a domestic cooking hob incorporating such burner.

Gas burners have been known for many years, under various embodiments and are fixed in use on cooking hobs that are present, under various forms, in practically all domestic kitchens. In some cases such hobs are independent elements, in the form of simple gas hot plates; in other cases such hobs are arranged as modular components, apt at being built-in in openings of standard dimensions obtained on the work top of a modular kitchen; in still other cases said hobs constitute the upper section of an electrical appliance comprising an oven for the cooking of food stuffs.

Cooking hobs incorporating burners according to the known art, although generally speaking efficient, have several drawbacks from the point of view of flexibility of use.

For instance, in some circumstances, the fixed positions of the burners on the cooking hob causes problems for the simultaneous heating of two adjacent containers, when these are of medium or large dimensions: in such cases the containers therefore have to be arranged displaced from the central position on the relative burner, with understandable negative influences on the quality of the cooking.

In other cases it would however be desirable to carry out the heating of containers of particularly large dimensions (such as roasting trays, large saucepans, broilers, etc.) by contemporaneously utilising two burners, so as to obtain a considerable heating power and/or a pleasing distribution of the heat, over the entire surface of the container.

It therefore seems clear that the substantially fixed position of the burners according to the known art is at times an unwanted element of rigidity in the use of cooking hobs.

The aims of the present invention is that of solving the aforementioned drawbacks and in particular to indicate a gas burner and a cooking hob of particularly flexible use, be it with respect to the types of containers to be heated, be it with respect to the available power and to its positioning.

Such aims are reached according to the present invention by a gas burner and a cooking hob incorporating the characteristics of the enclosed claims.

Further aims and advantages of the present invention shall result in being clear from the following detailed description and annexed drawings, supplied purely as an explanatory and non-limiting example, wherein:

- figure 1 represents a sectioned view of a gas burner according to the present invention, in a first condition of use;
- figure 2 represents a plan view the intermediate element, or head, of the burner of figure 1;
- figure 3 represents a view from below of the intermediate element, or head, of figure 2;
- figure 4 represents the burner of figure 1 in a second condition of use.

In figure 1 a sectioned view of a burner is represented realised according to the details of the present invention, indicated as a whole with reference number 1; with reference number 10 a body base or sump is indicated, fixed to the lower part of a cooking hob P; the sump 10 has a gas supply duct, indicated with 11, that terminates in a nozzle 12, arranged substantially to the centre of the base wall of the sump 10. With reference number 13 two of four slots are indicated, obtained on the internal surface of the sump 10.

With reference number 15 a removable body is indicated, or head, of the burner; the head 15 is also illustrated in figures 2 and 3, respectively seen from above and below.

As can be seen from figures 1 and 2, in the upper part of the head 15 a circular wall 16 elevates which, together with a central contour 17 and an upper flame divider element 18, defines a toroidal chamber 19; the flame divider 18, of the known type, has at least one series of passages for the exit of the air-gas mixture.

As can be seen from figures 1 and 3, in the lower part of the head 15 four pins are present, indicated with 20, destined to be coupled in use with said slots 13 of the sump 10; the pins 20 and the slots 13 have the function of allowing a secure and precise coupling of the head 15 to the sump 10.

In the intermediate part of the head 15 a mixture duct 21 is defined, which extends from the lower extremity to the upper extremity of the head 15, placing in direct communication the interior of the sump 10 with the toroidal chamber 19; as can be seen in figure 1, the duct 21 has a substantial inclination, that in the illustrated case is of approximately 45° with respect to the vertical axis of the head 15.

As can be seen from figure 4, the axis X of the upper opening and the axis Y of the lower opening of the duct 21 (which coincides substantially with the axis of the nozzle 12) are off-centred in a substantial manner from one another, which is not the case with burners of the known type.

Finally, with reference number 22 a flanged part of the head 15 is indicated; as can be seen, in particular from figure 2, the circular wall 16, i.e. the zone which creates the flame crown of the burner, is not centred if compared to the flanged part 22 of the head 15.

As can be seen from figure 1, the coupling of the head 15 of the burner together with the sump 10 is such to allow the presence of at least a gap, indicated with arrow A, through which the primary air necessary for the functioning of the burner reaches the interior of the sump 10.

The operation of the burner illustrated in the figure is the following.

The gas coming from the supply duct 11 in the known way reaches, through the nozzle 12, the interior of the sump 10; the primary air for the forming of the air-gas mixture penetrates the interior of the sump 10 through the mentioned gap, following the passage indicated by the arrow A.

In the sump 10 the gas therefore begins to mix with the primary air, penetrates the mixture duct 21, where said mixture is completed, and then reaches the toroidal chamber 19.

At this point the air gas mixture exits the nozzles of the flame divider 18, so as to create, once alighted, the flame crown necessary for heating a container placed on the burner 1.

It is to be noted that the substantial inclination of the duct 21 has the important effect of improving the mixture of the primary air and gas; in fact, with equal dimensions in height with a burner of the known type, the burner according to the invention has a mixture duct having a length, or development, being substantially greater; it is therefore clear that the greater length of the duct 21 allows for obtaining a more thorough mixture of the primary air and gas. In the specific case, the burner of figure 1 has a mixture duct which is longer by more than 30% if compared to a mixture duct that a burner according to the known art being of a similar height would have. The particular structure of the illustrated burner, with the duct 21 inclined, in union with the toroidal chamber 19 displaced in a substantial way compared to the sump 10 and with distinct coupling means between the head 15 and the sump 10, allow for considerably increasing the flexibility of the burner according to the invention, which is able to take on a plurality of different positions.

As can be understood, in fact, the burner 1 can be rotated so as to take on different working positions, being for instance of 90° one from the other; in figure 4 the burner 1 is in fact illustrated in which the head results in having been rotated 180° compared to that illustrated in figure 1 (in figure 4 the flame divider 18 is not represented).

Such rotation is obtained in a very simple manner, directly by the user of the cooking hob, in the simple manner that follows:

- extracting the head 15, upon which the flame divider 18 is mounted, from the sump 10; this is simply obtained by raising the head 15 until the pins 20 are freed from the slots 13;
- rotating the head 15 to the desired angle (in the specific case 180°);
- inserting once again the head 15 on the sump 10, so as that the pins 20 come into contact with the slots 13.

Once said rotation has been realised the burner functions in exactly the same way as that previously described.

From the above it results in being clear that a cooking hob equipped with the burner according to the invention guarantees a flexibility of use considerably improved if compared to those known, where the position of use of the burners is fixed. Such cooking hob can also have two or more burners realised according to the aforementioned techniques and therefore each being able to take on at least two different positions; such burners would be arranged on said cooking hob in respective positions of such to allow the combined use with the aims of heating a single container of large dimensions, or the separate use with the aims of heating one or more containers of smaller dimensions.

It is finally clear that the cooking hob incorporating the burner or burners according to the invention will be equipped with a grid, or with a system of a number or grids cooperating with each other, for simplicity not represented, realised so as to be able to support containers of different shapes and sizes, according to the cases (containers, of small, medium and large dimensions, square, rectangular, etc.).

It is also to be noted that the presence of the pins 20 and slots 13 assures the correct positioning of the head 15 on the sump 10, without risks of unbalancing the head; the presence of the pins and slots also impedes undesired separation of the head from the sump of the burner, that could occur in following occasional knocks.

From the given description the characteristics of the cooking hob subject of the present invention result in being clear.

Also clear are the advantages of the invention, mainly represented in the great flexibility of use of the proposed burner and of the relative cooking hob, be it from the point of view of the types of saucepans be it from that of the usable power, singularly or in combination; the described burner is in fact able to take on in relation to the cooking hob at least two different positions, in function with the type of container to be heated on said burner and/or in function of the container to be heated placed on a second burner of said cooking hob.

The burner according to the invention also has the advantage of allowing an improved mixture of the primary air and gas, due to the inclined position of the duct 21.

It is clear that numerous variants are possible by the man skilled in the art to the burner or cooking hob described by way of an example, without for this departing from the novelty principles inherent in the inventive idea.

For instance the burner could provide a pair of concentric burners each equipped with a relative mixture duct, i.e. an internal burner, apt at producing a central flame crown of reduced dimensions, and a peripheral burner, apt at producing two peripheral flame semi-crowns (see for instance the techniques described in the Italian Patent n. 1.232.887, in the

name of the same Applicant). It is clear that, in keeping with the characteristics previously described a cooking hob realised according to the proposed variant has a flexibility of use being even further improved.

It is also clear that the burner described herein by way of an example could be, with simple perceptions, realised so as to withdraw the primary air from below the surface P of figure 1: for instance, instead of providing of the gap A and the sump 10, the head 15 could rest upon a sleeve element, equipped with seats 13 and also open towards the bottom, for the entrance of the gas coming from a nozzle arranged below and the primary air, thus withdrawn from below the cooking hob.

Also the mixture duct apt at inducing a Venturi effect on the air-gas mixture could be of a form being different from that illustrated and described: in fact it is clear that while remaining with the off-centring of the flame divider and burner head compared with the sump, the mixture duct could be realised in another way.

Claims

1. Gas burner (1), arranged on a cooking hob (P) for the heating of containers placed on the latter, of the type comprising a base body (10), gas supply means (12), a removable body (15) upon the upper extremity of which a flame divider element (18) is placed, characterised in that said removable body (15) is realised with a form of such that said flame divider (18,19) is arranged in an off-centred position compared to said base body (10) and that coupling means (13,20) are provided between said base body (10) and said movable body (15) which allow said removable body (15) the selection of at least two different working positions, as a result of the type of container to be heated on said burner and/or as a result of the container to be heated placed upon a second burner of said cooking hob (P).

2. Gas burner, according to claim 1, characterised in that said removable body (15) has an air-gas mixture duct (21) which extends from said gas supply means (12) and said flame divider (18).

3. Gas burner, according to the previous claim, characterised in that the entrance and the exit of said mixture duct (21) are substantially off-centred one from the other.

4. Gas burner, according to claim 1, characterised in that said mixture duct (21) has a substantial inclination, in particular in the order of 45°, compared to the vertical axis of the burner.

5. Gas burner, according to claim 1, characterised in that said removable body (15) has pins or locators (20) apt at being coupled in appropriate seats (13) being present in said base body (10), said pins (20) and said seats (13) in particular being four.

6. Gas burner, according to claim 1, characterised in that below said removable body (15) said base body is provided, in particular in the form of a sump (10), where said gas supply means (12) are situated.

7. Gas burner, according to claim 5, characterised in that said seats (13) present in said base body (10), are realised under the form of slots.

8. Gas burner, according to claim 6, characterised in that between said removable body (15) and said base body (10) at least one passage (A) is provided for withdrawing the primary air necessary for the functioning of the burner from above the cooking hob (P) upon which the burner is arranged.

9. Gas burner, according to claim 1, characterised in that the primary air necessary for the functioning of the burner is withdrawn from below the cooking hob (P) upon which the burner is arranged.

10. Domestic cooking hob, characterised in that it comprises a gas burner according to one or more of the previous claims.

11. Domestic cooking hob, of the type comprising a plurality of gas burners (1), for the heating of cooking containers, where at least a first burner (1) is provided comprising a removable body (15) upon which a flame divider element (18) is placed in use, characterised in that said removable body (15) is able to take on upon said cooking hob (P) at least two different positions, as a result of the type of container to be heated on said burner and/or as a result of the container to be heated placed upon a second burner of said cooking hob (P).

12. Domestic cooking hob, according to the previous claim, characterised in that at least two burners (1) are provided each comprising a removable body (15) and a flame divider element (18), said removable body (15) and flame divider element (18) being able to take on at least two different positions, and in that said burners (1) are arranged on said cooking hob (P) in respective positions of such to allow the combinede use with the aims of heating a single container of large dimen-

sions, or the separate use with the aims of heating one or two containers of smaller dimensions.

13. Cooking hob, according to at least one of the previous claims, characterised in that one or more grids are provided apt at supporting containers of different shapes and sizes, said grids being in particular interchangeable and/or able to take on different positions, depending upon the arrangement and use of said burners (1).

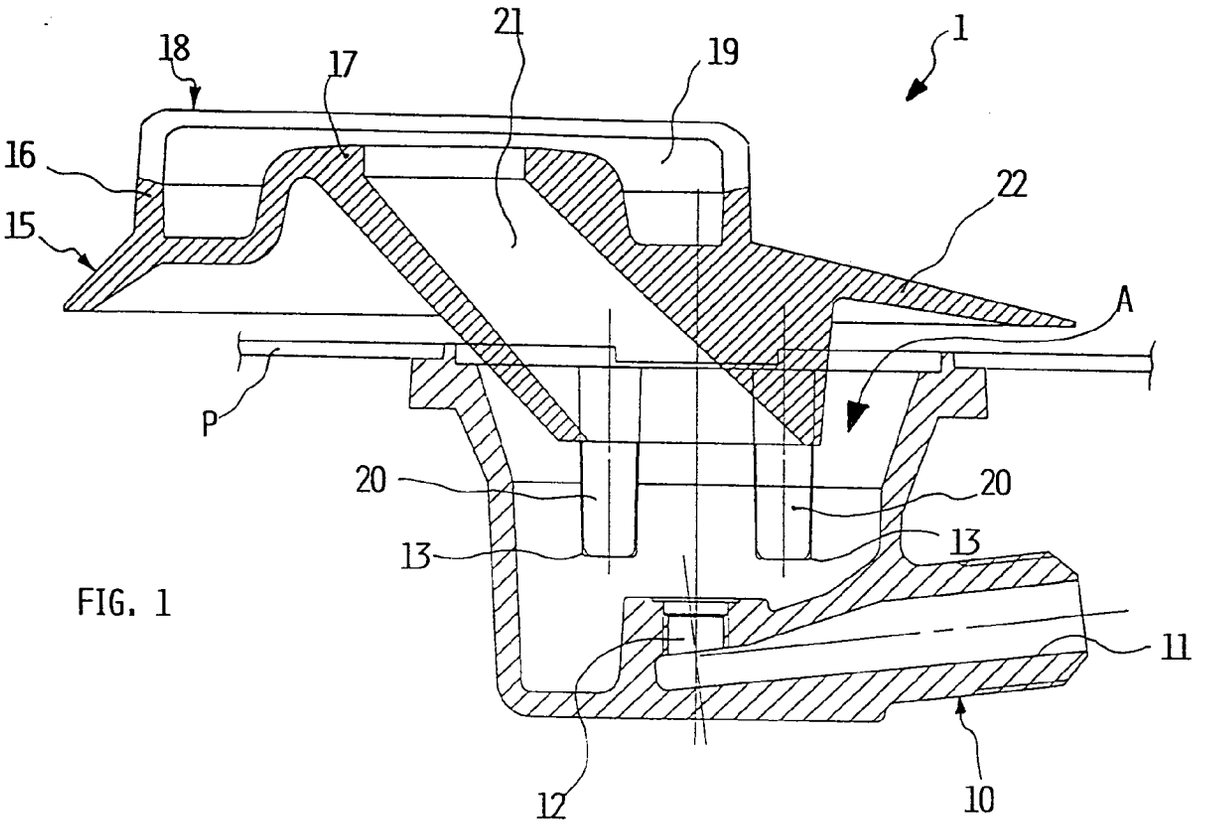
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FIG. 1

FIG. 4

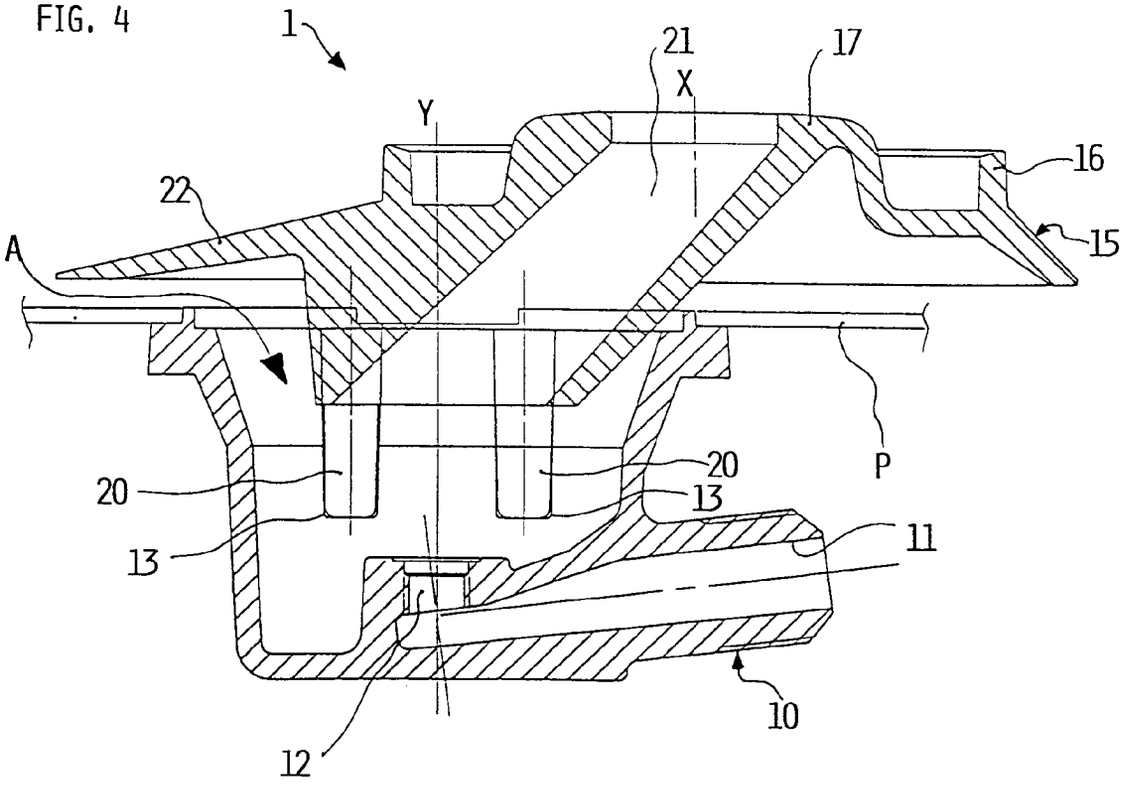
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FIG. 3

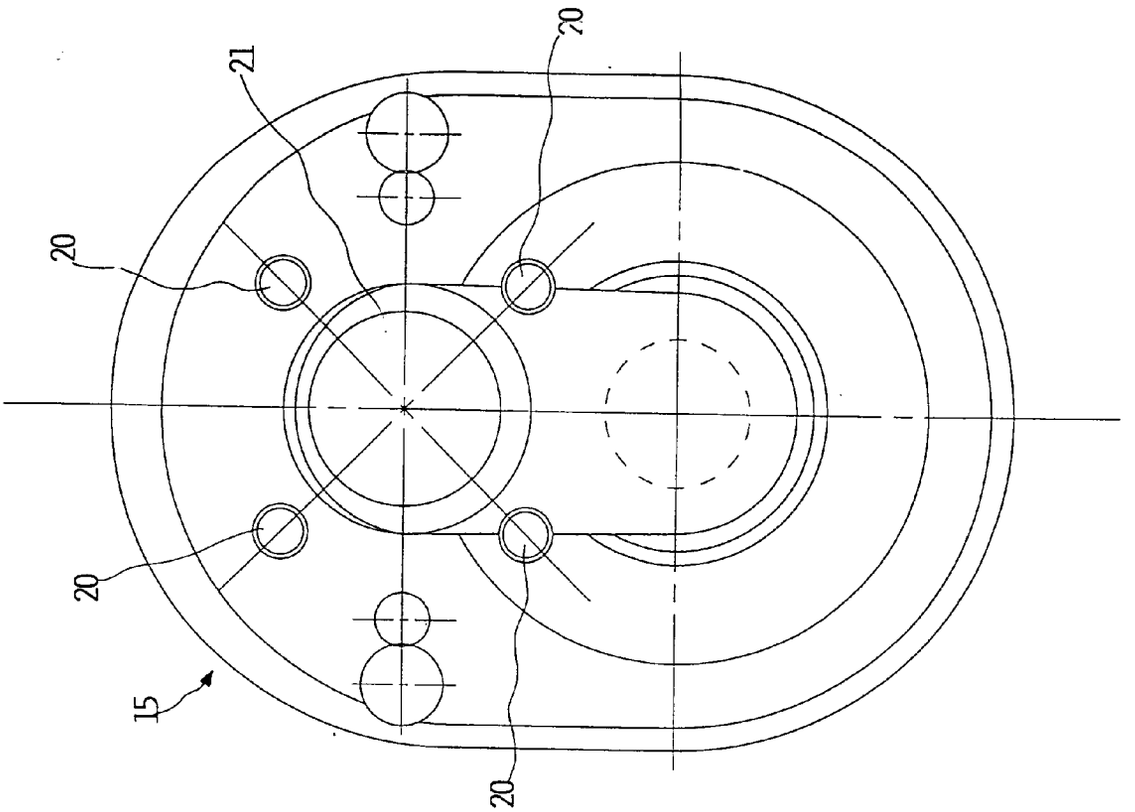

FIG. 2