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

(11) EP 0 677 705 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
16.08.2001 Bulletin 2001/33

(51) Int Cl.[7]: **F23D 14/06**, F24C 3/08

(21) Application number: **95105005.3**

(22) Date of filing: **04.04.1995**

(54) **Gas burner having variable positioning and cooking hob**

Gasbrenner mit veränderbarer Lage und Kochplatte

Brûleur à gaz à position variable et plaque de cuisson

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

(30) Priority: **08.04.1994 IT TO940260**

(43) Date of publication of application:
18.10.1995 Bulletin 1995/42

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DE-C- 826 060
FR-A- 2 404 803
GB-A- 2 223 303

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Description

[0001] 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.

[0002] 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.

[0003] 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.

[0004] 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.

[0005] 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.

[0006] 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.

[0007] From GB-A-2.223.303 a gas cooking apparatus is known, comprising a rotary burner; the burner is offset from the axis of rotation of a respective burner carrier, which is inserted in the top of a support which is rotated on a fixed feed pipe with an horizontal venturi tube, by a motor and a chain drive.

[0008] From FR-A-2.404.803 a gas burner is also known, having a base body, including *gas supply means, and an intermediate body upon which a flame divider element is placed; within the* intermediate body at least two inclined venturi tubes are defined, so that at least a portion of the flame divider element results in being off-centred with respect to the base body.

[0009] The aim 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.

[0010] Such aims are reached according to the present invention by a gas burner and a cooking hob incorporating the characteristics of the enclosed claims 1 and 10, respectively.

[0011] 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.

[0012] 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.

[0013] 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.

[0014] 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.

[0015] 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.

[0016] 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.

[0017] 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.

[0018] 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.

[0019] 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.

[0020] The operation of the burner illustrated in the figure is the following.

[0021] 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.

[0022] 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.

[0023] 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.

[0024] 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.

[0025] 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).

[0026] 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.

[0027] Once said rotation has been realised the burner functions in exactly the same way as that previously described.

[0028] 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.

[0029] 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.).

[0030] 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.

[0031] From the given description the characteristics of the cooking hob subject of the present invention result in being clear.

[0032] 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.

[0033] 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.

[0034] 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 scope of the invention as defined in the claims.

[0035] 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 semicrowns (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.

[0036] 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.

[0037] 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), to be arranged on a cooking hob (P) for the heating of containers, 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, said removable body (15) having a form such that at least a portion of said flame divider (18,19) is arranged in an off-centred position compared to said base body (10), coupling means (13,20) being provided between said base body (10) and said movable body (15), characterised in that said coupling means (13,20) allows at least a portion of said removable body (15) to be inserted into said base body (10) in at least two different working positions, as a function of the type of container to be heated on said burner and/or as a function of a desired distribution of heat over a container to be heated.

2. Gas burner, according to claim 1, characterised in that said removable body (15) has an air-gas mixture duct (21) which extends between 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 2, 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 (P) for the heating of cooking containers, comprising a plurality of gas burners, among which at least a first burner (1) 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,
    - coupling means (13,20) between said base body (10) and said movable body (15),

    characterised in that said coupling means (13,20) allows at least a portion of said removable body (15) to be inserted into said base body (10) in at least two different working positions, for allowing to change the position of said flame divider element (18) as a function of the type of container to be heated on said burner and/or as a function of the con-

tainer to be heated placed upon a second burner of said cooking hob (P).

11. Domestic cooking hob, according to the previous claim, characterised in that said first and second burners (1) are arranged on said cooking hob (P) in respective positions so as to allow their joint use for the heating of a single container of large dimensions, or their the separate use for the heating of one or two containers of smaller dimensions.

12. Domestic cooking hob, according to claim 10 or 11, characterised in that also said second burner (1) comprises

- 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,
- coupling means (13,20) between said base body (10) and said movable body (15), whereby said coupling means (13,20) allows at least a portion of said removable body (15) to be inserted into said base body (10) in at least two different working positions.

13. Cooking hob, according to at least one of the claims 10-12, 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).

Patentansprüche

1. Gasbrenner (1), der an einem Kochherd (P) zum Erhitzen von Behältern anordenbar ist und der enthält: einen Grundkörper (10), Gaszuführmittel (12), einen abnehmbaren Körper (15), auf dessen oberem Ende ein Flammteiler (18) angeordnet ist, wobei der abnehmbare Körper (15) eine solche Form aufweist, daß zumindest ein Abschnitt des Flammteilers (18, 19) in einer außermittigen Position, bezogen auf den Grundkörper (10), angeordnet ist, ein Kupplungsmittel (13, 20), welches zwischen dem Grundkörper (10) und dem bewegbaren Körper (15) vorgesehen ist,
dadurch gekennzeichnet, daß es das Kupplungsmittel (13, 20) zumindest einem Abschnitt des abnehmbaren Körpers (15) ermöglicht, in zumindest zwei unterschiedlichen Arbeitspositionen in Abhängigkeit der Art des auf dem Brenner zu erhitzenden Behälters und/oder in Abhängigkeit einer gewünschten Verteilung der Wärme über einen zu erwärmenden Behälter in den Grundkörper (10) eingesetzt zu werden.

2. Gasbrenner nach Anspruch 1,
dadurch gekennzeichnet, daß der abnehmbare Körper (15) ein Luftgasgemisch-Leitung (21) aufweist, welche sich zwischen den Gaszuführmitteln (12) und dem Flammenteiler (18) erstreckt.

3. Gasbrenner nach dem vorstehenden Anspruch,
dadurch gekennzeichnet, daß der Anfang und das Ende der Gemischleitung (21) im wesentlichen außermittig zueinander angeordnet sind.

4. Gasbrenner nach Anspruch 2,
dadurch gekennzeichnet, daß die Gemischleitung (21) eine deutliche Steigung, insbesondere im Bereich von 45°, bezogen auf die Vertikalachse des Brenners aufweist.

5. Gasbrenner nach Anspruch 1,
dadurch gekennzeichnet, daß der abnehmbare Körper (15) Stifte oder Positionierelemente (20) aufweist, welche in geeignete Sitze (13) einführbar sind, die an dem Grundkörper (10) vorgesehen sind, wobei insbesondere vier Stifte (20) und vier Sitze (13) vorgesehen sind.

6. Gasbrenner nach Anspruch 1,
dadurch gekennzeichnet, daß unterhalb des abnehmbaren Körpers (15) der Grundkörper vorgesehen ist, insbesondere in der Form eines Sumpfes (10), an dem die Gaszuführmittel (12) angeordnet sind.

7. Gasbrenner nach Anspruch 5,
dadurch gekennzeichnet, daß die in dem Grundkörper (10) vorhandenen Sitze (13) durch Schlitze gebildet sind.

8. Gasbrenner nach Anspruch 6,
dadurch gekennzeichnet, daß zwischen dem abnehmbaren Körper (15) und dem Grundkörper (10) zumindest ein Kanal (A) zum Abziehen der für das Funktionieren des Brenners notwendigen Primärluft von oberhalb des Kochherds (P) vorgesehen ist, auf dem der Brenner angeordnet ist.

9. Gasbrenner nach Anspruch 1,
dadurch gekennzeichnet, daß die für das Funktionieren des Brenners notwendige Primärluft von unterhalb des Kochherds (P) abgezogen wird, auf dem der Brenner angeordnet ist.

10. Haushaltskochherd (P) zum Erwärmen von Kochbehältern, enthaltend mehrerer Gasbrenner, von denen zumindest ein erster Gasbrenner (1) enthält:

- einen Grundkörper (10),

- Gaszuführmittel (12),
- einen abnehmbaren Körper (15), an dessen oberem Ende ein Flammteiler (18) angeordnet ist,
- ein Kupplungsmittel (13, 20) zwischen dem Grundkörper (10) und dem abnehmbaren Körper (15),

dadurch gekennzeichnet, daß es das Kupplungsmittel (13, 20) zumindest einem Abschnitt des abnehmbaren Körpers (15) ermöglicht, in zumindest zwei unterschiedlichen Arbeitspositionen in den Grundkörper (10) eingesetzt zu werden, um Änderungen in der Position des Flammteilers (18) in Abhängigkeit der Art des auf dem Brenner zu erwärmenden Behälters und/oder in Abhängigkeit dem zu erwärmenden Behälters zu ändern, der auf einem zweiten Brenner des Kochherds (P) angeordnet ist.

11. Haushaltskochherd nach dem vorstehenden Anspruch,
dadurch gekennzeichnet, daß der erste und der zweite Brenner (1) auf dem Kochherd (P) in entsprechenden Positionen angeordnet sind, um ihre gemeinsame Verwendung zum Erwärmen eines einzelnen Behälters mit großen Abmessungen oder ihre getrennte Verwendung zum Erwärmen von einem oder zwei Behältern mit kleineren Abmessungen zu ermöglichen.

12. Haushaltskochherd nach Anspruch 10 oder 11,
dadurch gekennzeichnet, daß der zweite Brenner (1) ebenfalls enthält:

- einen Grundkörper (10),
- Gaszuführmittel (12),
- einen abnehmbaren Körper (15), an dessen oberem Ende ein Flammteiler (18) angeordnet ist,
- ein Kupplungsmittel (13, 20) zwischen dem Grundkörper (10) und dem abnehmbaren Körper (15),

wobei es das Kupplungsmittel (13, 20) zumindest einem Abschnitt des abnehmbaren Körpers (15) ermöglicht, in zumindest zwei unterschiedlichen Arbeitspositionen in den Grundkörper (10) eingesetzt zu werden.

13. Kochherd nach einem der Ansprüche 10 bis 12,
dadurch gekennzeichnet, daß ein oder mehrere Gitter vorgesehen sind, die zum Tragen von Behältern unterschiedlicher Form und Größe in der Lage sind, wobei die Gitter insbesondere austauschbar und/oder in der Lage sind, unterschiedliche Positionen in Abhängigkeit der Anordnung und der Verwendung der Brenner (1) einzunehmen.

Revendications

1. Brûleur à gaz (1), devant être disposé sur une plaque de cuisson (P) pour le chauffage de récipients, comportant un corps de base (10), des moyens d'alimentation en gaz (12), un corps amovible (15) sur l'extrémité supérieure duquel est placé un élément de division de flamme (18), ledit corps amovible (15) ayant une forme telle qu'au moins une partie dudit diviseur de flamme (18, 19) est disposée dans une position excentrée par rapport audit corps de base (10), des moyens de liaison (13, 20) étant prévus entre ledit corps de base (10) et ledit corps amovible (15), caractérisé en ce que lesdits moyens de liaison (13, 20) permettent à au moins une partie dudit corps amovible (15) d'être insérée dans ledit corps de base (10) dans au moins deux positions de travail différentes, en fonction du type de récipient devant être chauffé sur ledit brûleur et/ou en fonction d'une répartition de chaleur souhaitée sur un récipient devant être chauffé.

2. Brûleur à gaz selon la revendication 1,
caractérisé en ce que ledit corps amovible (15) possède une conduite de mélange air-gaz (21) qui s'étend entre lesdits moyens d'alimentation en gaz (12) et ledit diviseur de flamme (18).

3. Brûleur à gaz selon la revendication précédente,
caractérisé en ce que l'entrée et la sortie de ladite conduite de mélange (21) sont sensiblement excentrées l'une par rapport à l'autre.

4. Brûleur à gaz selon la revendication 2,
caractérisé en ce que ladite conduite de mélange (21) présente une inclinaison substantielle, en particulier de l'ordre de 45°, comparée à l'axe vertical du brûleur.

5. Brûleur à gaz selon la revendication 1,
caractérisé en ce que ledit corps amovible (15) possède des doigts ou éléments de positionnement (20) qui peuvent être reliés à des sièges appropriés (13) qui sont présents dans ledit corps de base (10), lesdits doigts (20) et lesdits sièges (13) en particulier étant quatre.

6. Brûleur à gaz selon la revendication 1,
caractérisé en ce que, sous ledit corps amovible (15), ledit corps de base est prévu en particulier sous la forme d'un bloc (10), où se trouvent lesdits moyens d'alimentation en gaz (12).

7. Brûleur à gaz selon la revendication 5,
caractérisé en ce que lesdits sièges (13) présents dans ledit corps de base (10) sont réalisés sous la forme de fentes.

8. Brûleur à gaz selon la revendication 6, caractérisé en ce que, entre ledit corps amovible (15) et ledit corps de base (10), au moins un passage (A) est prévu afin d'extraire l'air principal nécessaire pour le fonctionnement du brûleur depuis le dessus de la plaque de cuisson (P) sur laquelle est disposé le brûleur.

9. Brûleur à gaz selon la revendication 1, caractérisé en ce que l'air principal nécessaire pour le fonctionnement du brûleur par en dessous la plaque de cuisson (P) sur laquelle est disposé le brûleur.

10. Plaque de cuisson domestique (P) pour le chauffage de récipients de cuisson, comportant plusieurs brûleurs à gaz, parmi lesquels au moins un premier brûleur (1) comporte :

- un corps de base (10),
- des moyens d'alimentation en gaz (12),
- un corps amovible (15) sur l'extrémité supérieure duquel est placé un élément de division de flamme (18),
- des moyens de liaison (13, 20) entre ledit corps de base (10) et ledit corps amovible (15),

caractérisée en ce que lesdits moyens de liaison (13, 20) permettent à au moins une partie dudit corps amovible (15) d'être insérée dans ledit corps de base (10) dans au moins deux positions de travail différentes, afin de permettre de changer la position dudit élément de division de flamme (18) en fonction du type de récipient devant être chauffé sur ledit brûleur et/ou en fonction du récipient devant être chauffé placé sur un deuxième brûleur de ladite plaque de cuisson (P).

11. Plaque de cuisson domestique, selon la revendication précédente, caractérisée en ce que lesdits premier et deuxième brûleurs (1) sont disposés sur ladite plaque de cuisson (P) dans des positions respectives de façon à permettre leur utilisation conjointe pour le chauffage d'un unique récipient de grandes dimensions, ou leur utilisation séparée pour le chauffage d'un ou deux récipients de dimensions plus petites.

12. Plaque de cuisson domestique, selon la revendication 10 ou 11, caractérisée en ce que ledit deuxième brûleur (1) comporte également :

- un corps de base (10),
- des moyens d'alimentation en gaz (12),
- un corps amovible (15) sur l'extrémité supérieure duquel est placé un élément de division de flamme (18),
- des moyens de liaison (13, 20) entre ledit corps de base (10) et ledit corps amovible (15), de sorte que lesdits moyens de liaison (13, 20) permettent à au moins une partie dudit corps amovible (15) d'être insérée dans ledit corps de base (10) dans au moins deux positions de travail différentes.

13. Plaque de cuisson domestique, selon au moins une des revendications 10 à 12, caractérisée en ce que une ou plusieurs grilles sont prévues en pouvant supporter des récipients de différentes formes et tailles, lesdites grilles étant en particulier interchangeables et/ou capables de prendre des positions différentes, en fonction de l'agencement et de l'utilisation desdits brûleurs (1).

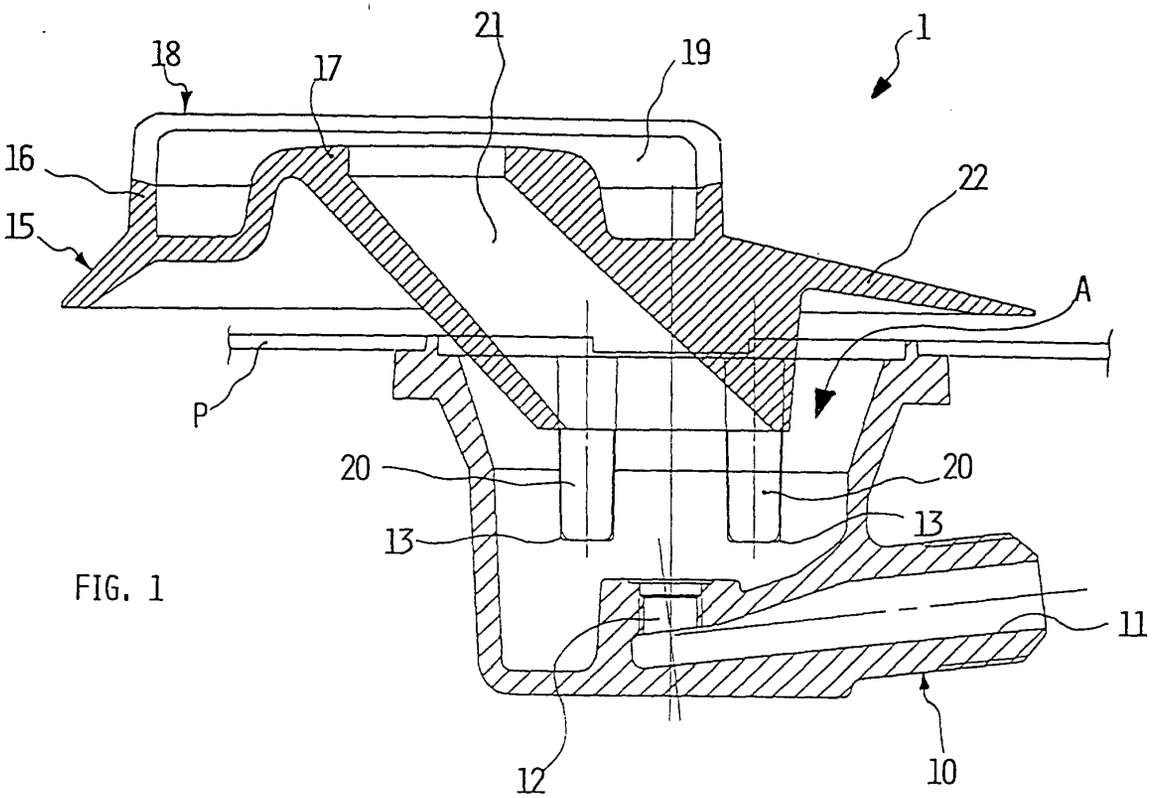
18
17
21
19
1
16
15
22
A
P
20
20
13
13
11
12
10

FIG. 1

FIG. 4

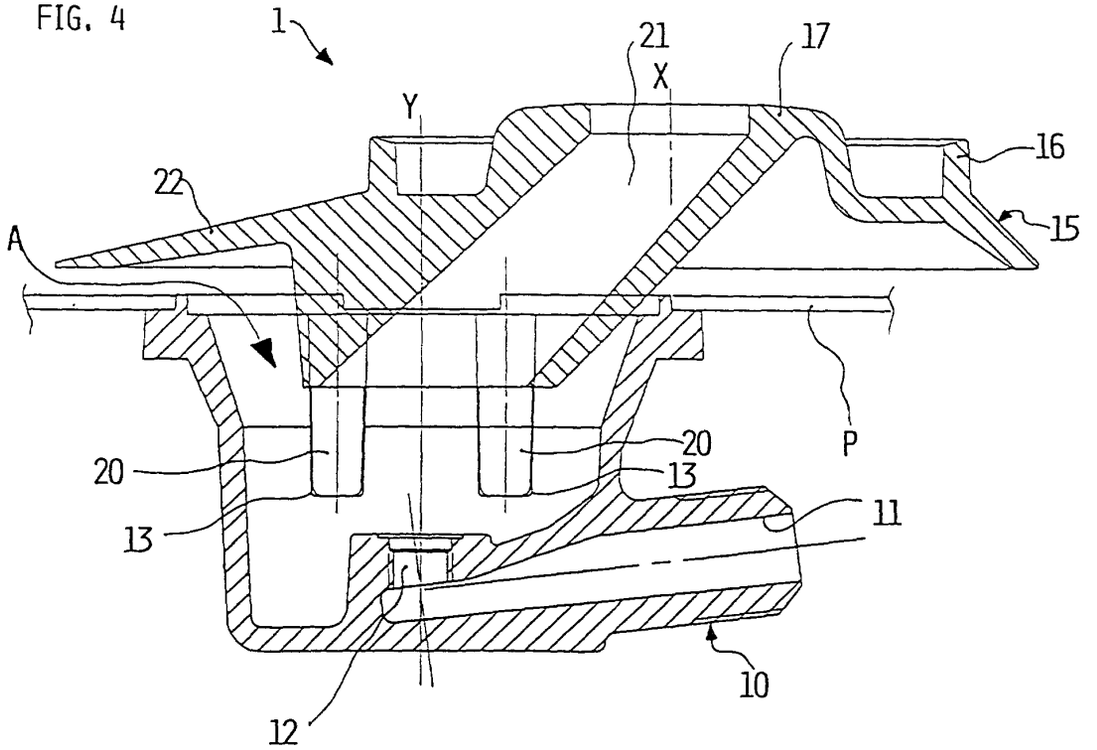
1
21
X
17
Y
16
22
15
A
P
20
20
13
13
11
10
12

FIG. 3

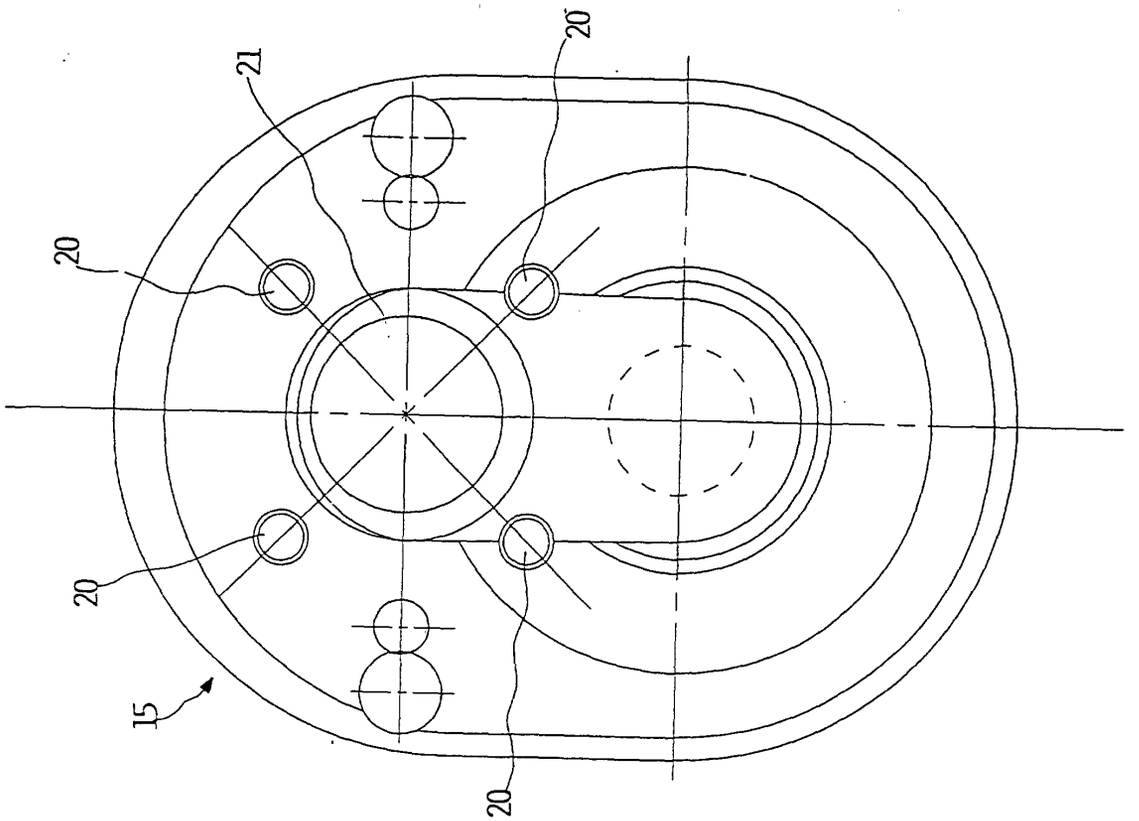

FIG. 2