



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



(11) EP 0 801 269 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
15.10.1997 Bulletin 1997/42

(51) Int. Cl.⁶: F24C 3/08, F24C 3/12

(21) Application number: 97104383.1

(22) Date of filing: 14.03.1997

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

• Pellegrini, Antonio,
c/o Whirlpool Europe s.r.l.
21024 Biandronno (IT)
• Ruschetta, Severino,
c/o Whirlpool Europe s.r.l.
21024 Biandronno (IT)

(30) Priority: 12.04.1996 IT MI960715

(71) Applicant: WHIRLPOOL CORPORATION
Benton Harbor Michigan 49022 (US)

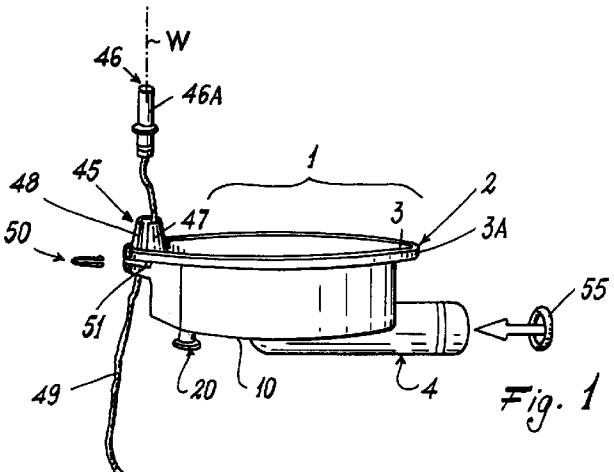
(72) Inventors:

• Distaso, Alessandro,
c/o Whirlpool Europe s.r.l.
21024 Biandronno (IT)

(74) Representative: Guerci, Alessandro
Whirlpool Europe S.r.l.
Patent Department
Viale G. Borghi 27
21025 Comerio (VA) (IT)

(54) Gas burner for easy connection to the cooking hob structure and to the gas feed conduit

(57) A gas burner comprising a support part or injector carrier (1) to be fixed to the lower structure (15) and the upper structure (16) of a cooking hob, said part (1) being connectable to a gas feed conduit (5) in which there is a usual valve (57) controlled by a knob or tap (58) positioned on the cooking hob. On that lower face (10) of said part or injector carrier (1) which is to cooperate with the lower structure (15) of said cooking hob there are provided centering means (21) for the correct positioning of the injector carrier (1) on said structure (15) and means (13, 20) for coupling to counter-means (31) of said structure (15) to facilitate the fixing of said injector carrier (1) to said structure (15), said means and counter-means (13, 20, 31) hence fixing the injector carrier (1) to the structure (15).



Description

This invention relates to a gas burner in accordance with the introduction to the main claim.

As is well known, such a burner comprises an injector carrier arranged between (substantially flat) superposed structures defining the cooking hob. The injector carrier is fixed to at least one of these structures by screws. The injector carrier also supports the usual spark plug or similar ignition means for generating the flame by triggering combustion of the gas leaving a usual diffuser secured upperly to the injector carrier and provided on the upper structure of the cooking hob. Finally, said injector carrier is connected to a usual feed conduit for the gas to reach said diffuser.

As stated, the injector carrier is secured to the superposed structures of the cooking hob. This is achieved by fixing elements which fix the injector carrier to the lower structure of said hob and at least one screw for fixing the injector carrier to the upper structure of said hob. Because of the shape of said burner part and of the described structures, the said fixing is difficult to achieve on mounting the cooking hob.

Additionally, in known burners problems can also arise with regard to the position of said spark plug. In known arrangements this is screwed or otherwise fixed in a hole provided in a flange or lug of the injector carrier. Most of the body of the spark plug projects from said hole. Because of this, if the spark plug is operated in the absence of the gas diffuser or of the flame (for example during a test of its operation after its fixing to the injector carrier or, for example, because its operating pushbutton has been accidentally pressed during the cleaning of the cooking hob, the electrical discharge generated by it could return along its body and discharge through the high voltage generator to which the spark plug is connected; this could cause obvious problems in such a generator (which is responsible for the operation of all the spark plugs of said hob), with obvious consequences for the use of the cooking hob.

Moreover, known injector carriers do not allow easy, reliable and fast connection to the gas feed conduits connected to it.

An object of the present invention is to provide a burner which represents an improvement over known burners.

A particular object of the invention is to provide a burner of the stated type, the injector carrier of which can be quickly and securely fixed to the cooking hob structure, which can be safely fixed to the gas feed conduit, and which supports the corresponding spark plug in such a manner as to protect it and its connection to the high voltage generator in the case of electricity discharge in the absence of the flame diffuser.

These and further objects which will be more apparent to the expert of the art are attained by a burner in accordance with the accompanying claims.

The present invention will be more apparent from the accompanying drawing, which is provided by way of

non-limiting example and in which:

Figure 1 is a perspective exploded view of a injector carrier of the burner according to the invention, together with certain members connected to it; Figure 2 is a view from below of the injector carrier of Figure 1; Figure 3 is a section on the line 3-3 of Figure 4 through the injector carrier associated with the lower structure of a cooking hob during the first stage in the fixing together of said parts; Figure 4 is a view from below of the structure of Figure 3 in the state of assembly shown in that figure; Figure 5 is a view similar to that of Figure 3 but in a different stage in the fixing of the injector carrier to the lower structure of the cooking hob; Figure 6 is a view similar to that of Figure 4, but in the assembly stage shown in Figure 5; Figure 7 is a longitudinal section through that part of the injector carrier of the preceding figures for connection to the burner gas feed conduit; Figure 8 is a view from above of the injector carrier of the burner according to the invention.

With reference to said figures, a burner comprises a injector carrier 1 with a substantially cup-shaped body 2 flanged along its edge 3. Laterally, the body 2 comprises a tubular cylindrical projection 4 for connecting the injector carrier to a conduit 5 for feeding gas to an injector (not shown) to be positioned in a seat 7 provided in the centre of the body 2. The tubular projection projects partially from a lower wall 10 of the base 11 of the body 2 in which, within this latter, there is provided said seat 7.

From the wall 10 there upwardly project two diametrically opposite seats 13 for elements 14 (integral with said seats or defined by screws or similar members) for fixing the body 2 to the lower structure 15 of a cooking hob (not shown) which also comprises an upper structure 16 (Figure 5) to overlie the body 2. This latter structure comprises a cavity 18 to enable the other usual parts of the burner (for example a usual flame diffuser) to be coupled to the injector carrier 1. On the wall 10, on an ideal circumference connecting together said seats 13 and the elements 14 (hereinafter jointly known by the term "fixing means 14"), there are provided diametrically opposing substantially L-shaped projections 20 and a projecting centering element 21 positioned at the centre of the injector carrier. On said ideal circumference equidistant between a projection 20 and the adjacent fixing means 14 there is provided a further projection 23 having a height (from said wall) equal to the height of the projection 4. The fixing means 14 and the projections 20 have heights (from the wall 10) greater than the heights of the projections 4 and 23.

The element 21 is arranged to cooperate with a corresponding recess (not shown) provided in the structure 15. Each fixing means 14 and that projection 20 which follows said fixing means in the anticlockwise direction

along said ideal circumference are arranged to cooperate with an arched recess or slot 30 having a widened end 31. The slots 30 allow simple connection of the injector carrier 1 to the structure 15. In this respect, during the assembly of the cooking hob, the fixing means 14 are arranged in the ends 31 of the slots 3 (Figure 4). The body 2 is then rotated in the direction of the arrow F of Figure 2 (ie in the clockwise direction in the illustrated embodiment) so that in each slot 30 the corresponding fixing means 14 are brought to the other end 33 of the slot, distant from the end 31 (Figure 6). The raised part 20A of that projection 20 which follows the means 14 penetrates into the end 31 to lock the rotation of the body in the opposite direction to the arrow F. The injector carrier 1 hence remains fixed to the lower structure 15 of the cooking hob.

The body 2 also comprises a seat 40 for a screw 41 which fixes the upper structure 16 of the cooking hob. This seat is formed in a portion 42 of the body 2 which projects from its edge 3 towards the injector seat 7.

The injector carrier 1 also comprises a seat 45 for a spark plug 46. This seat is formed in the flange 3A of the edge 3 and comprises a frusto-conical portion 47 projecting upwards from this latter and open at 48 on one of its sides. The usual electric cable 49 connecting the spark plug 46 to a usual high voltage generator (not shown) passes through this opening. The spark plug is then locked in said seat 45 by a substantially U-shaped elastic element inserted into a seat 51 lying in a plane perpendicular to the axis W of the seat 45.

The portion 47 protects a large part of the spark plug body 46A and can receive any electrical discharge emitted by the spark plug in the absence of the usual flame diffuser. In this manner, said discharge or spark is discharged to earth (via a connection between the body 2 and earth, not shown) without it damaging said high voltage generator.

Finally, the projection 4 on the body 2 receives by simple insertion the end 5A of the conduit 5, about which there is positioned an O-ring 55 inserted in a seat 56 in said projection.

The conduit 5 is simply inserted into the projection 4 and is retained therein by the shape of the conduit 5 itself. In this respect, this latter comprises two parallel portions (5A and 5B), the first connected to the body 2 and the second fixed to a known gas feed source in which there is located a usual valve 57 controlled by a known knob or tap 58.

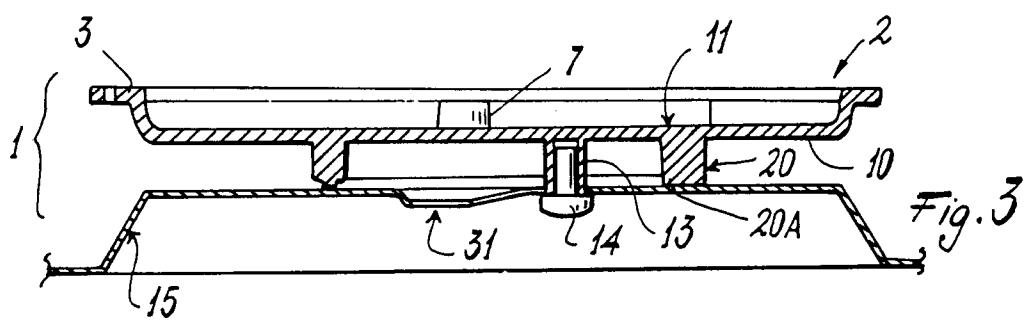
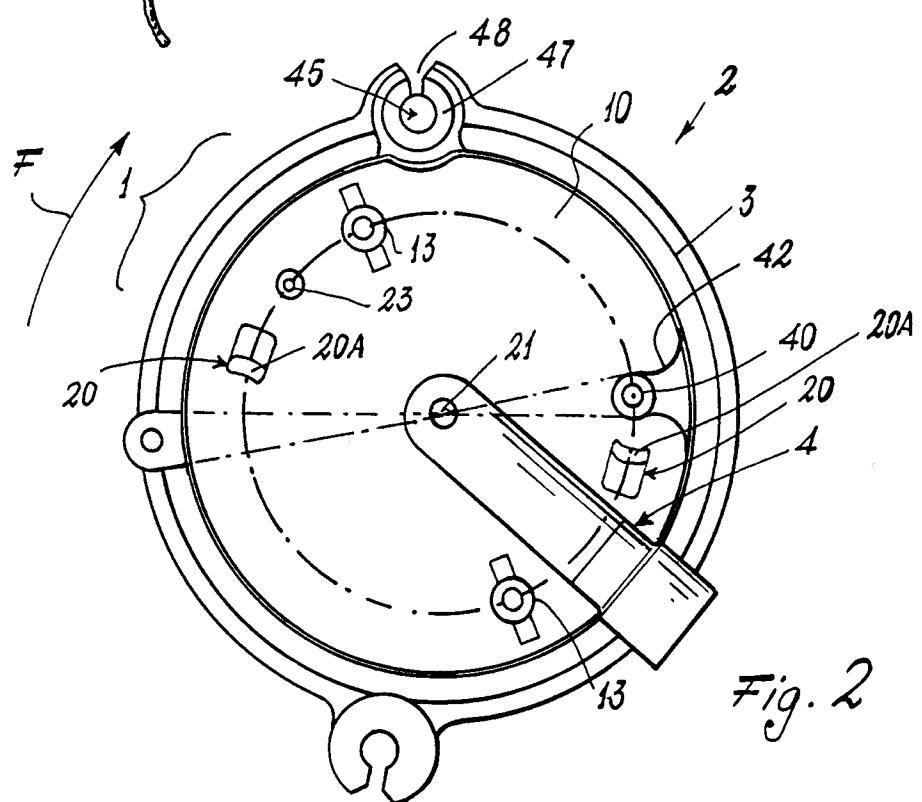
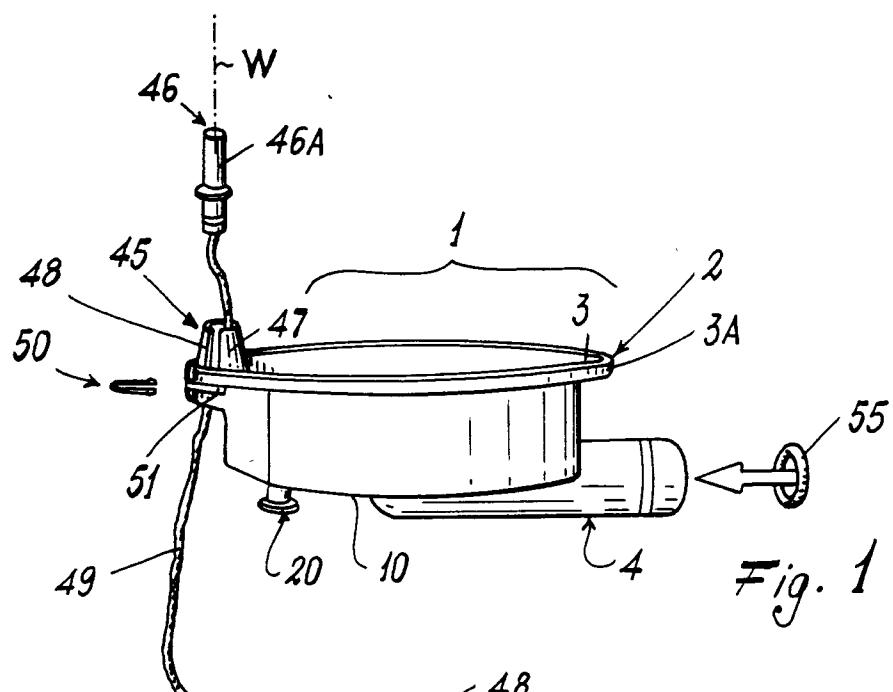
The burner with an injector carrier as described is advantageous for use on a cooking hob and provides considerable safety in use against electrical discharges generated by the spark plug if the flame diffuser has been removed from the injector carrier. The burner is easy to connect to the gas feed conduit.

One embodiment of the invention has been described. Others however are possible in the light of the present description.

These other embodiments are to be considered as falling within the scope of the present document.

Claims

1. A gas burner comprising a support part or injector carrier (1) to be fixed to the lower structure (15) and the upper structure (16) of a cooking hob, said part (1) being connectable to a gas feed conduit (5) in which there is a usual valve (57) controlled by a knob or tap (58) positioned on the cooking hob, characterised in that on that lower face (10) of said part or injector carrier (1) which is to cooperate with the lower structure (15) of said cooking hob there are provided centering means (21) for the correct positioning of the injector carrier (1) on said structure (15) and means (13, 14, 20) for coupling to counter-means (31) of said structure (15) to facilitate the fixing of said injector carrier (1) to said structure (15), said means and counter-means (13, 14, 20, 31) hence fixing the injector carrier (1) to the structure (15).
2. A burner as claimed in claim 1, characterised in that the coupling means are seats (13) for elements (14) for fixing the injector carrier (1) to the lower structure of the cooking hob, and projections (20), these latter and said seats projecting from the underside of the body (2) of the injector carrier (1) and being positioned at a short distance from each other along an arc of an ideal circumference, the fixing elements and said projections being arranged to cooperate with arched slots (30) provided in the lower structure (15) of the cooking hob.
3. A burner as claimed in claim 2, characterised in that the projections (20) are substantially of L-shape and comprise a part (20A) arranged to cooperate with one end (31) of the arched slots (30).
4. A burner as claimed in claim 1, characterised by comprising at least one seat (40) for a corresponding screw (41) fixing the upper part (16) of the cooking hob to the injector carrier (1).
5. A burner as claimed in claim 1, characterised by comprising a seat (45) for a flame activation spark plug (46) provided in a flanged edge (3) of the body (2) of the injector carrier (1), said seat (48) comprising a portion (47) rising from said edge (3) and embracing the body (46A) of the spark plug (46).
6. A burner as claimed in claim 5, characterised by comprising elastic means (50) for securing the spark plug (46) to the injector carrier body (2).
7. A burner as claimed in claim 1, characterised in that the injector carrier (1) comprises a tubular projection (4) associated with the base (10) of its body (2) to receive by simple insertion-coupling one end (5A) of the gas feed conduit (5).



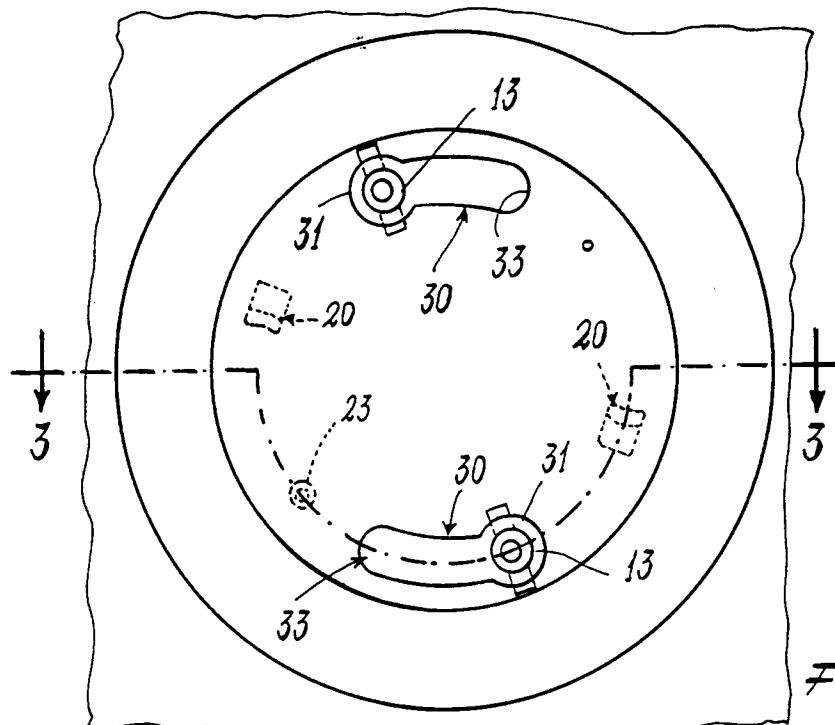


Fig. 4

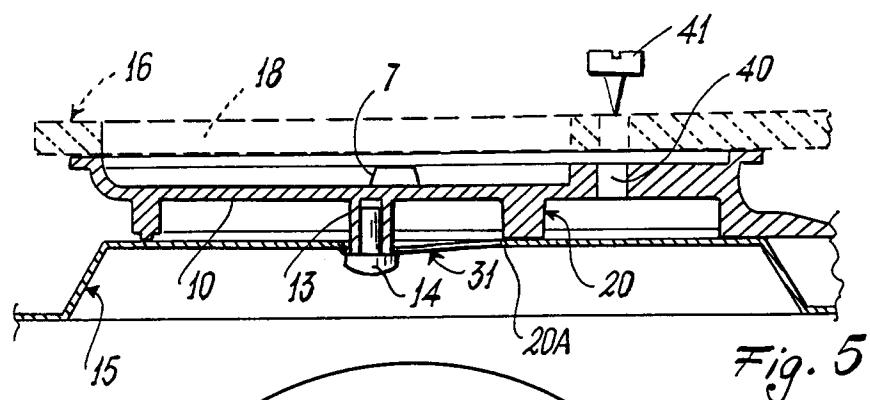


Fig. 5

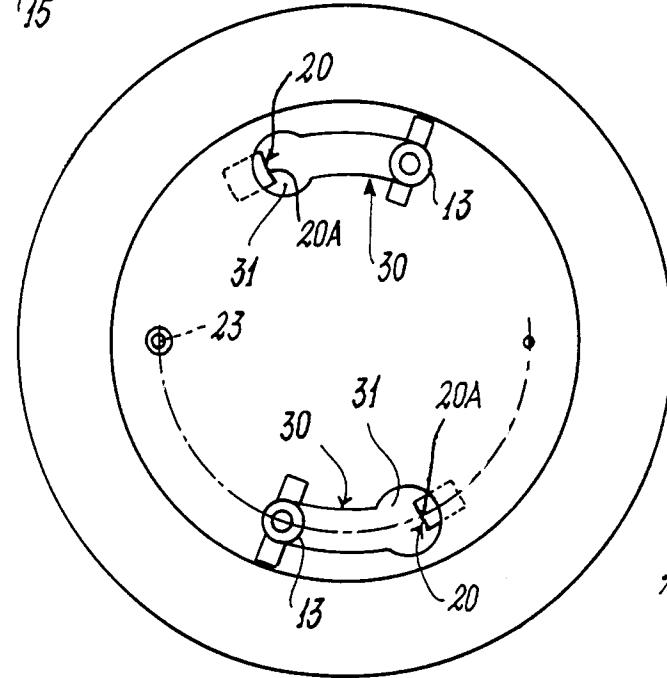


Fig. 6

