

Description

Improved double burner for gas hot plates with multiple flame crowns.

The present patent application for industrial invention relates to a double burner for gas hot plates that is an improved embodiment of a previous model patented by the same applicant under application no. MC2005 A 000036 registered on 29.04.2005, to which integral reference is made herein.

5 In order to understand the reasons that have originated the ameliorative modifications adopted in this improved embodiment, the structural configuration and operation of the double gas burner of the aforementioned patent application are described below.

For more clarity, the same figures enclosed to patent application no.
10 MC2005 A 000036 are used.

In particular:

- figure 1 is a sectional view of the burner with a diametral vertical plane passing through the axis of the first gas inlet conduit designed to feed the external flame crowns;

15 - figure 2 is a sectional view of the burner with a diametral vertical plane passing through the axis of the second gas inlet conduit, which is positioned at a higher height than the first inlet conduit.

- figure 3 is a top view of the head of the burner without caps.

With reference to the aforementioned figures, the double burner of the
20 invention comprises a circular tub-shaped body (1), which houses a raised central cross-piece (2) with housings for multiple gas injection nozzles.

Two different, non-communicating gas inlet conduits (3 and 4) are obtained under the body (1), each of them being designed to selectively and respectively feed the nozzle associated with the central flame crown and the
25 group of nozzles associated with the external flame crowns.

The two gas inlet conduits (3 and 4) reach the centre of the body (1) at slightly different heights; more precisely, the upper inlet conduit (3) exactly ends in the centre of the body (1), while the lower inlet conduit (4) goes

beyond the said centre, as shown in Fig. 1.

A vertical channel (3a) branches upwards from the upper inlet conduit (3), on which the first gas injection nozzle (5) designed to introduce gas in the Venturi mixing chamber that supplies the central flame crown (FC) is mounted, while four ascending diverging channels (4a) branch from the lower inlet conduit (4), on which corresponding injection nozzles (6) designed to introduce gas in the mixing chambers that feed the external flame crowns (FE) are mounted.

A radial Venturi mixing chamber (5a) with vertical axis is situated downstream the nozzle (5), while four axial Venturi mixing chambers (6a) with inclined axis, preferably from 40° to 60°, are situated downstream the four nozzles (6).

Moreover, the burner of the invention comprises a head (T) formed of a lower dish (7) and an upper dish (8) shaped in such a way as to match perfectly.

More precisely, the lower dish (7) has a truncated-conical profile and a stepped external border (7a) that supports and centres the upper dish (8) with a stepped perimeter collar (8a).

The upper dish (8) is also supported and centred in the central flange (9) of the lower dish (7).

The two dishes (7 and 8) are respectively provided with semi-conduits (7b and 8b) that form the said axial Venturi mixing chambers (6a); a V-shaped deflector partition (10) obtained on the lower dish (7) is situated immediately downstream the chambers (6a), being designed to favour bifurcation of the ascending air-gas mixture flow from the chambers (6a), conveying it inside the corridor (11) that feeds the external concentric flame crowns (FE), as shown in Fig. 3, which also illustrates the three toothed crowns (12) obtained above the upper dish (8).

The annular corridor (11) is formed of four identical consecutive communicating corridor sections, each of them being bordered by a pair of deflector partitions (10).

The corridor (11) is closed by an annular cap (13), on whose internal and external border the said external concentric flame crowns (FE) are formed.

The Venturi mixing chamber (5) is completely housed in the upper dish (8) and ends in a circular compartment closed laterally by the toothed crown (12) with lower diameter and on top by a circular cap (14), on whose external border the central concentric flame crown (FC) is formed.

- 5 It was noted that during the use of the said burner the external flames (FE) situated near the outlet of the axial Venturi mixing chambers (6a) are longer than the other flames and have yellow-coloured tips that indicate different combustion.

It was proved that the reason for such an irregularity is that the pressure of
10 the mixture in the outlet of the Venturi mixing chambers (6a) is higher than the pressure measured in the two corridors (11) that branch on the right and left side of the V-shaped deflector (10).

The overpressure increases the speed of the mixing to the holes from which the external flames (FE) emanate.

- 15 The purpose of the present invention is to remedy the aforementioned inconvenience in order to obtain a double burner with multiple flame crowns with the following advantages: high power, compact height and uniform external flames (FE) in terms of length and colour.

The model of improved burner of the invention is characterised in that it
20 comprises a deflector partition with suitable profile situated in front of the outlet of the axial Venturi mixing chambers with inclined axis, which forces the mixture to deflect and extend its travel before it reaches the outflow holes of the external flames (FE) situated in the area in front of the outlet.

During the travel deflection and extension, the mixture is reduced by the
25 desired value so that all external flames (FE) have the same length and the same colour.

For purposes of clarity the description of the improved model of the burner of the invention continues with reference to the enclosed drawings, which are intended for purposes of illustration only and not in a limiting sense, in which
30 the same numerals as the first three figures are used when the components of the improved model exactly correspond to the previous model.

Moreover, figures 4, 5 and 6 illustrate the head (T) of the burner, and not the

body, since the modification according to the present invention is only situated inside the head, and the body of the improved burner is not subjected to any constructive variation with respect to the previous embodiment.

5 In view of the above:

- fig. 4 is a perspective top view of the improved burner without the top caps;
- fig. 5 is a sectional view of the improved burner with a diametral plane with caps;
- fig. 6 is a top view of the improved burner without top caps.

10 With special reference to fig. 5, attention is drawn on the fact that a deflector partition (100) is provided in front of the outlet of the Venturi mixing chambers (6a), which forces the mixture to deflect laterally and downwards to reach the openings (101) that give access to the two corridors (11) that branch on the two sides of the said deflector partition (100).

15 The deflector partition (100) is obtained in one moulded piece with the upper dish (8) of the head (T), where a pair of openings (101) astride each partition (100) is obtained.

Circular corridors (11) are obtained on the upper side of the dish (8) and partially house an annular cap (102) provided with a series of holes (103)
20 from which the external flames (FE) emanate.

The annular cap (102) has a transversal sunken mushroom-shaped section, with head situated above the corridors (11) and provided with the said series of holes (103).

The mixture that comes out of the openings (101) is conveyed inside the
25 corridors (11) and travels along the groove (102a) sunken under the annular cap (102), from which it comes out through the series of holes (103).

With special reference to figure 6, attention is drawn on the directions travelled by the mixture coming out of the said openings (101) to reach the holes (103) situated in front of the outlet of the Venturi mixing chambers (6a).

30 As mentioned earlier, a deflector partition (100) is positioned between the outlet and the holes (103), which forces the mixture to deflect laterally in the two directions and downwards until it passes through the opposite pair of

openings (101) that give access to the corridors (11).

As mentioned in fig. 6, the mixture flow coming out of the openings (101) is divided into two flows (F1 and F2) with opposite directions.

The first flow (F1) passes over the partition (100), inverting the direction to
5 reach and feed the holes (103) situated under the partition (100) before the outlet of the Venturi mixing chambers (6a).

The second flow (F2) goes towards the holes (103) situated at furthest distance from the deflector partition (100).

Claims

1) Double burner for gas hot plates with multiple concentric flame crowns, of the type comprising a head (T) with multiple concentric flame crowns and a circular tub-shaped body (1), which houses a cross-piece (2) with nozzles on top and two different and non-communicating gas inlet conduits (3 and 4) on the bottom, each of them being designed to selectively and respectively feed the nozzle (5) associated with the central flame crown (FC) and the group of nozzles (6) associated with the external flame crowns (FE); in which the group of nozzles (6) is formed of at least three regularly spaced nozzles (6) that feed corresponding axial Venturi mixing chambers (6a) with inclined axis, and the nozzle (5) feeds a corresponding radial Venturi mixing chamber (5a) with vertical axis; burner characterised in that it comprises a deflector partition (100) situated in front of the outlet of each axial Venturi mixing chamber (6a), which forces the mixture to deflect laterally in the two directions and downwards until it passes through an opposite pair of openings (101) astride each deflector partition (100), through which the said mixture reaches the corridors (11) that feed the holes (103) from which the external flames (FE) emanate.

2) Burner as claimed in the preceding claim, characterised in that the head (T) is formed of a lower dish (7) and an upper dish (8) that are shaped in such a way as to be perfectly matched and in that the said deflector partitions (100) are obtained in one moulded piece with the upper dish (8) of the head (T) provided with the said openings (101).

3) Burner as claimed in the preceding claims, characterised in that the said circular corridors (11) are obtained on the upper side of the dish (8) and partially house an annular cap (102) provided with a series of holes (103) from which the external flames (FE) emanate.