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• **Strada, Stefano**
47100 Forli, Forli Cesena (IT)
• **Starnini, Marco**
47100 Forli, Forli Cesena (IT)

(71) Applicant: **Electrolux Home Products
Corporation N.V.**
1930 Zaventem (BE)

(74) Representative: **Giugni, Valter**
PROPRIA S.r.l.,
Via Mazzini 13
33170 Pordenone (IT)

(72) Inventors:
• **Todoli, Silvano**
47100 Forli, Forli Cesena (IT)

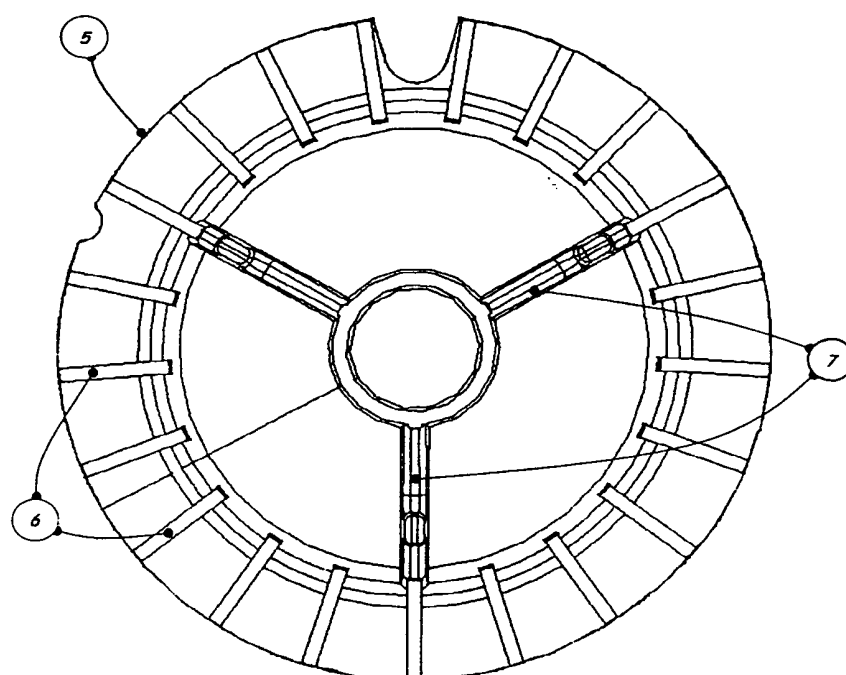
(54) **Gas burner**

(57) The present invention relates to a gas burner, in particular for domestic cooking appliances, comprising a burner crown (5) which is provided on its top surface with a toothed edge (8) and on its bottom surface

with supporting ribs (7).

The burner crown (5) is provided with heat dissipating elements (6), in order to reduce NO_x emission during the combustion.

Figure 2



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Description

[0001] The present invention relates to a new gas burner, in particular for use in a domestic cooker, which reduces the quantity of dangerous products of combustion during its functioning.

[0002] It is known that the combustion of air and gas mixtures in a gas burners for a domestic cooker produces water vapour, CO_n (CO and CO₂) and NO_x (NO and NO₂), besides heat.

[0003] Gases like CO and NO_x are unhealthy substances, especially when released in a closed environment like a kitchen.

[0004] At the present time the European standard for domestic cooking gas burners requires to control and limit the CO emission, but not the NO_x emission.

[0005] It is experimentally proved that the quantity of CO and NO_x emitted during a combustion is function of the flame temperature. Moreover, it should be noted that lower CO emissions are produced at a high flame temperature, while a high flame temperature increases the quantity of NO_x emitted.

[0006] Therefore, there is the need to satisfy requirements which are contrasting each other, so that the burner may work in the best way.

[0007] The main scope of the present invention is to carry out a new gas burner, in particular for domestic cookers, which produces a low emission of NO_x and also a low emission of CO, without jeopardising the thermal efficiency and functional reliability.

[0008] Another scope of the invention is to modify the burner structure in such a way to allow a manufacture simple and not expensive.

[0009] These scopes are obtained with a burner as claimed in the claims of the present patent.

[0010] The invention will be better appreciated from the following description given solely by way of non-limiting example and with reference to the accompanying drawings, wherein:

- Figure 1 is a diagram showing different curves of NO_x emission in function of different flame temperatures of a burner;
- Figure 2 is a bottom view of a first embodiment of a burner according to the invention;
- Figure 3 is a bottom view of a second embodiment of a burner according to the invention;
- Figure 4 is an elevation side view of the burner of Figure 3.

[0011] The diagram in Figure 1 shows different curves of NO_x emission in function of different flame temperatures, by using methane as combustion gas. The different curves correspond to different values of the coefficient λ , which is the airing rate, i.e. the ratio between the actual air mass and the stoichiometric air mass.

[0012] As it is apparent, NO_x emissions decrease by decreasing flame temperatures.

[0013] According to the invention, it is possible to reduce the NO_x emission by optimising the flame temperature of the burner, without jeopardising the thermal efficiency and the functional reliability of the burner itself.

[0014] To obtain this scope, it has been found that there is the need to increase the total heating exchange surface of the burner, so as a higher quantity of heat is removed from the burner during its functioning. Therefore, the best solution is to provide a plurality of wings or fins under the bottom of the burner crown.

[0015] Figure 2 shows a first embodiment of a gas burner with a crown 5 from the bottom of which a plurality of straight wings 6 are radially arranged along the circular edge of the crown. Such a structure allows to dissipate heat from the burner body by means of air convective flows, which are generated in the channels between contiguous wings. Number and dimension of the wings should be chosen depending from various features, e.g. the kind of gas to be used, the burner power and the like. So, it is possible to control the flame temperature by reducing the temperature of the burner body.

[0016] Figures 3 and 4 show a second embodiment of a gas burner according to the invention. In this embodiment, the heat dissipating elements are formed by wings 6 having a curved shape, so as a larger heat dissipating surface is obtained to remove a higher quantity of heat from the burner crown. In this way, the flame temperature of the burner is proportionally lowered and the NO_x emission of the combustion is correspondingly reduced.

[0017] In Figures 2-4 are also represented the ribs 7 to support the burner crown on the burner body (not shown).

[0018] Figure 4 show also the toothed edge 8 on the top surface of the burner crown, said toothed edge defining in cooperation with an overhanging lid (not shown) the burner flame.

[0019] It will be appreciated that further modifications may be introduced, within the scope of the present invention, in order to implement the technical solution in different kinds of burners, e.g. burners with double or triple crowns.

[0020] Of course, it is clear that the wings may be carried out by utilising different materials, like cast iron or ceramic, and different techniques. Preferably, the wings are integral with the crown of the burner.

[0021] The disclosed solution allows to obtain the main advantage of reducing the NO_x emission of the burner during its functioning.

[0022] Another advantage of a burner according to the present invention is an improved stability when arranged in the cooker, because the wings increase the supporting area for the burner crown on the burner body.

Claims

1. Gas burner, in particular for a domestic cooker,

comprising a burner crown (5) which is provided on its top surface with a toothed edge (8) and on its bottom surface with supporting ribs (7), **characterised in that** the burner crown is provided with heat dissipating elements (6).

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2. Gas burner according to claim 1, **characterised in that** said heat dissipating elements (6) are wings or fins extending downward from the bottom surface of the burner crown (5).

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3. Gas burner according to claim 1 or 2, **characterised in that** said wings (6) are radially directed.

4. Gas burner according to any claim 1 to 3, **characterised in that** said wings (6) have a straight shape.

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5. Gas burner according to any claim 1 to 3, **characterised in that** said wings (6) have a curved shape.

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Figure 1

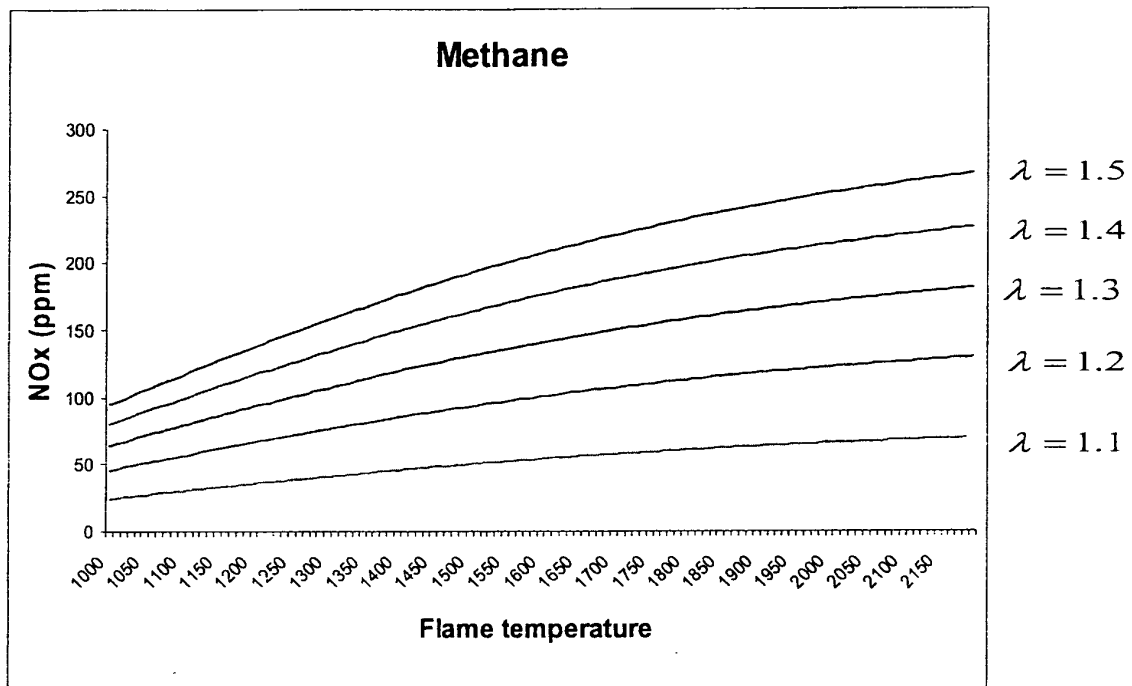


Figure 2

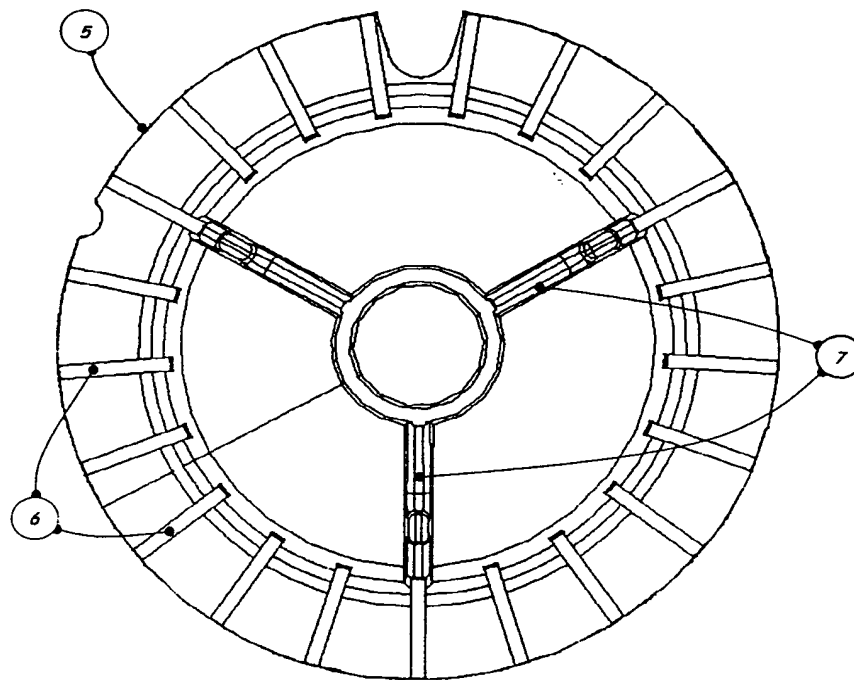
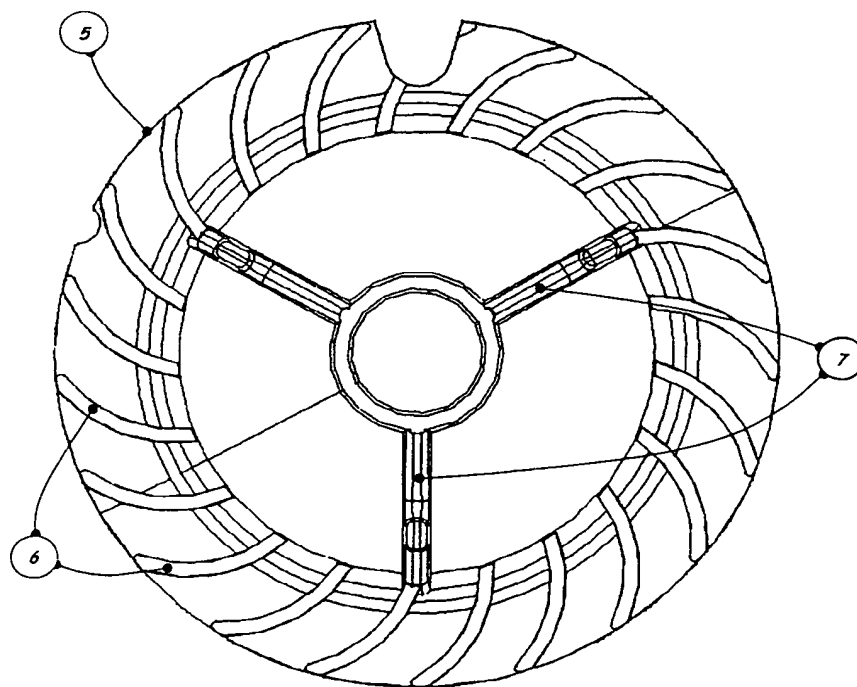


Figure 3



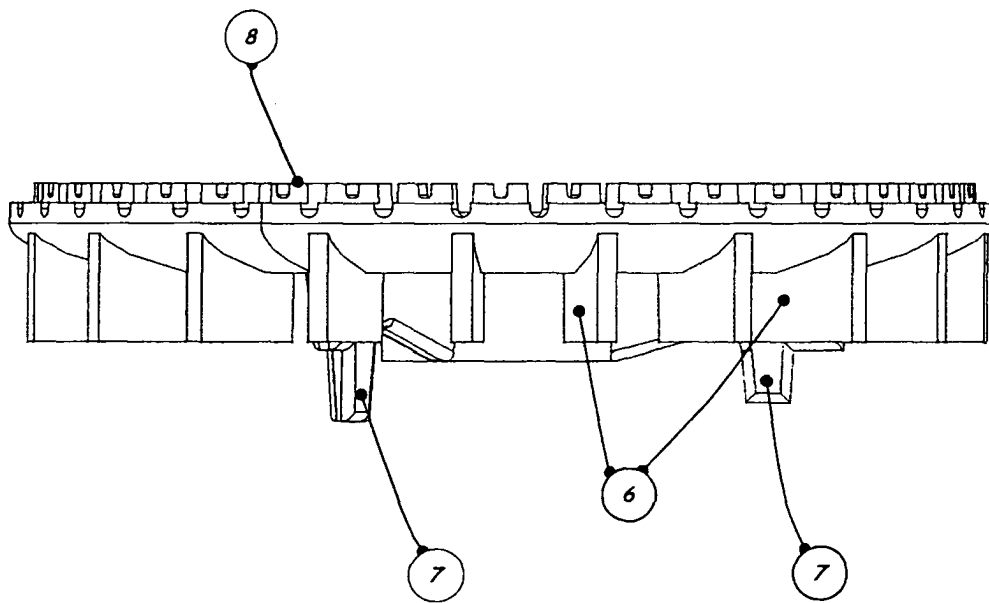


Figure 4



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EUROPEAN SEARCH REPORT

Application Number
EP 03 02 0116

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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 20 February 2004	Examiner Mougey, M
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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