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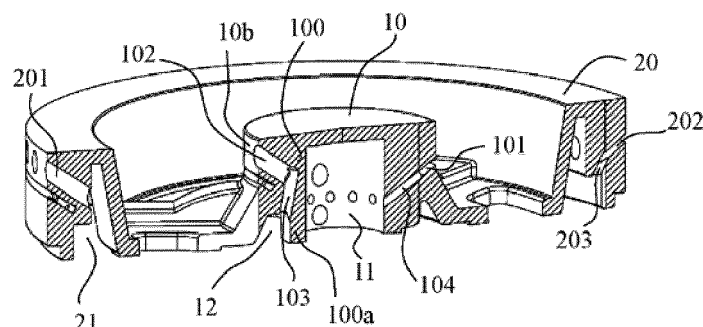
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(54) **BURNER CAP OF BURNER USED FOR GAS COOKTOP, BURNER HEAD, BURNER, AND GAS COOKTOP**

(57) A burner cap of a burner used for a gas cooktop, a burner head, a burner, and a gas cooktop are disclosed. The burner cap includes an inner ring cap portion (10), where the bottom includes an inwardly concaved first concaved portion (11), and the inner ring cap portion (10) is provided with a first gas outlet (101) in communication with the first concaved portion (11); and an outer ring cap portion (20), where the outer ring cap portion (20) surrounds the periphery of the inner ring cap portion (10), the bottom of the outer ring cap portion (20) is inwardly concaved to form an outer ring concaved portion (21),

and the outer ring cap portion (20) is provided with outer ring gas outlets (201, 202) in communication with the outer ring concaved portion (21), where the inner ring cap portion (10) is further provided with a second gas outlet (102), and in a use state of the burner cap (3), the first concaved portion (11) is separated from the outer ring concaved portion (21), and the second gas outlet (102) is in communication with the outer ring concaved portion (21). In a small fire state, a sufficiently low power can be achieved, and emission of CO can be reduced.



**FIG. 3**

## Description

### BACKGROUND

#### Technical Field

[0001] The present invention relates to the field of gas cooktops, and in particular to a burner cap of a burner used for a gas cooktop, a burner head including the burner cap, a burner including the burner head, and a gas cooktop including the burner.

#### Related Art

[0002] Cooking styles make consumers hope that domestic cooktop products have a heat load as large as possible and an energy saving effect as good as possible. Therefore, such products are focuses of researches and development of gas cooktop manufacturers.

[0003] For a burner having inner ring flames and outer ring flames, the inner ring flames contribute to improving heat efficiency of the burner and making a cooking pot bottom heated uniformly. In view of the two points, for a burner having a specific power, to reach a specific power to ensure heat efficiency while making the cooking pot bottom heated uniformly when an inner ring of the burner is in a maximum fire state, when the inner ring is in a minimum fire state, a power of the inner ring cannot be lower than a specific value. Otherwise, a flameout problem is likely to occur. For example, for a burner having a nominal heat load of 4.0 kw, to reach a power of 800 w or above to ensure heat efficiency and make a cooking pot bottom heated uniformly when an inner ring of the burner is in a maximum fire state, when a valve switches the inner ring of the burner to a minimum fire state, a power of the inner ring cannot be lower than 300 w. Otherwise, flames can hardly be normally maintained, and flameout or flashback is likely to occur.

### SUMMARY

[0004] An objective of the present invention is for at least one of the foregoing technical problems, to provide an improved burner cap of a burner used for a gas cooktop, a burner head including the burner cap, a burner including the burner head, and a gas cooktop including the burner.

[0005] To achieve the foregoing technical objective, the present invention first provides the following technical solution: a burner cap of a burner used for a gas cooktop, including: an inner ring cap portion and an outer ring cap portion, where the bottom includes an inwardly concaved first concaved portion, the first concaved portion is configured to accommodate gas supplied by an inner ring gas injector, and the inner ring cap portion is provided with a first gas outlet in communication with the first concaved portion; the outer ring cap portion surrounds the periphery of the inner ring cap portion, the bottom of the

outer ring cap portion is inwardly concaved to form an outer ring concaved portion, the outer ring concaved portion is configured to accommodate gas supplied by an outer ring gas injector, the outer ring cap portion is provided with outer ring gas outlets in communication with the outer ring concaved portion; and in a use state of the burner cap, the first concaved portion is separated from the outer ring concaved portion, where the inner ring cap portion is further provided with a second gas outlet, and in the use state of the burner cap, the second gas outlet is in communication with the outer ring concaved portion.

[0006] When the burner cap of the present invention is in a maximum fire state, there are flames on all of the outer ring gas outlet on the outer ring cap portion and the first gas outlet and the second gas outlet on the inner ring cap portion. When the burner cap is in a minimum fire state, an outer ring gas channel corresponding to the outer ring gas injector is closed, so that the flames on the outer ring cap portion are extinguished, the flames on second gas outlet of the inner ring cap portion are also in an extinguished state, and only the flames on the first gas outlet are maintained. In view of the above, a first advantage of the technical solutions of the present invention is that when the burner cap is in the use state, the inner ring cap portion of the burner can, in the maximum fire state, have a sufficiently high power, to ensure heat efficiency of the entire burner cap, and can, in the minimum fire state, reach a sufficiently low power, to satisfy a demand of a user for a small fire such as melting chocolate, boiling milk, simmering congee, keeping a temperature or making ketchup. Compared with existing gas cooktops, a gas cooktop using the burner cap of the present invention has a broader fire or power control range. In an example in which a nominal heat load of a burner is 5.0 kw or 5.2 kw, after the technical solutions of the present invention are used, when the burner is the maximum fire state, a burning power of the inner ring cap portion may reach 1000 w, and when the gas cooktop is in the minimum state, flames on the outer ring cap portion are extinguished, the fire power of the inner ring cap portion may be lowered to approximately 100 w. However, in existing burners, a power of the inner ring cap portion can only be lowered to a minimum of 300 w unless the design in which three independent gas injectors match three independent gas flow channels and three independent valve flow channels is used. However, such a solution has a complex structure and high costs.

[0007] An area of the gas outlet on the inner ring cap portion is increased, so that the power of inner ring cap portion during burning can be increased, but more air needs to be supplied for the inner ring cap portion during the burning. However, due to a structural limitation of the burner, the inner ring cap portion cannot be supplied with more air from the surrounding, so that a demanded amount of primary air is correspondingly increased. In the existing burners, even if an air regulator is adjustable, because a hole diameter of the inner ring gas injector is small, after the air regulator reaches a specific opening

degree, further increasing the opening degree does not work, and it is impossible to introduce more primary air. Therefore, due to limitations of the inner ring gas injector and the inner ring gas flow channel, even if the power of the inner ring of the burner is increased, it is unlikely to supply sufficient air, resulting in incomplete combustion and an obvious increase in emission of wastes and seriously affecting improvement of heat efficiency.

**[0008]** Another technical effect of the present invention is that the second gas outlet on the inner ring cap portion is in communication with the outer ring concaved portion. The second gas outlet is supplied with gas by the outer ring gas injector, and can obtain a more sufficient amount of primary air, so that combustion is more complete, emission of waste gases, such as carbon monoxide (CO), is reduced, and heat efficiency of the burner can be notably improved. By means of experiments, the heat efficiency of the burner of an embodiment of the present invention may reach up to 69 to 70%. The existing burners in the market can only reach, to the best, 64 to 65%.

**[0009]** The foregoing technical effect is obtained because a hole diameter of the outer ring gas injector is large, more primary air may be introduced by adjusting the air regulator to improve a proportion of primary air. The second gas outlet is in communication with outer ring concaved portion, and a more sufficient amount of primary air can be obtained.

**[0010]** It should be explained that "gas" mentioned in the present invention cannot be limitedly understood as a pure gas, and it includes a gas-air mixture after mixing gas with air in advance. "Communication" mentioned in the present invention includes not only direct communication, but also indirect communication.

**[0011]** In a possible implementation, the bottom of the inner ring cap portion further includes an inwardly concaved second concaved portion, and the second concaved portion is disposed at the periphery of the first concaved portion; and in the use state of the burner cap, the second concaved portion is separated from the first concaved portion, the second concaved portion is in communication with the outer ring concaved portion, and the second gas outlet is in communication with the second concaved portion. The second concaved portion can not only produce a gas buffering effect, but also shorten the second gas outlet or a channel depth of the connection channel in communication with the second gas outlet, so that manufacturing of the second gas outlet is easier. Otherwise, a drilling depth is too large, and a drilling bit is likely to break in a drilled channel, resulting in scraping of the entire burner cap.

**[0012]** In a possible implementation, the burner cap of the burner used for a gas cooktop further includes at least one connection portion connected between the outer ring cap portion and the inner ring cap portion, where in the use state of the burner cap, the connection portion forms a constituent part of a gas guide channel used for communicating the outer ring concaved portion and the second concaved portion. The connection portion not only

forms a constituent part of the gas guide channel, but also connects the inner ring cap portion and the outer ring cap portion, so that the burner cap of the present invention can form an integrally formed member to facilitate manufacturing and reduce parts of the gas cooktop. The connection portion may include a flat plate portion, and the burner cap base is provided with slot matching the flat plate portion to form a gas guide channel; or the connection portion includes a slot, and the burner cap base is provided with a flat plate portion or a slot matching the slot to form a gas guide channel.

**[0013]** In a possible implementation, the connection portion includes a connection slot, and the connection slot communicates the outer ring concaved portion and the second concaved portion. Usually, the connection portion is disposed to no affect flames on the gas outlet on the inner ring cap portion and satisfy a requirement for reducing the thickness of the burner cap to obtain a thin burner head, and in consideration of a burning structure and the thickness of the burner cap, the connecting slot can be manufactured to have a very shallow depth.

**[0014]** In a possible implementation, the inner ring cap portion includes a wall portion surrounding the first concaved portion, and the wall portion is internally provided with a connection channel that communicates the second gas outlet and the second concaved portion. A plurality of connection channels, such as a plurality of connection holes, may be embedded into the wall portion, and the wall portion may alternatively be internally provided with a connection channel such as a continuously extending slot.

**[0015]** In a possible implementation, the burner cap includes a plurality of connection channels, where the plurality of connection channels is a plurality of connection holes circumferentially distributed along the wall portion.

**[0016]** In a possible implementation, the wall portion includes a protruded extension portion, and the extension portion is configured to separate the first concaved portion from the second concaved portion in the use state of the burner cap.

**[0017]** In a possible implementation, the first gas outlet includes a gas slot, and the second gas outlet includes a plurality of gas holes. The first gas outlet may be a ring-shaped gas slot, and a plurality of holes is formed inside the gas slot to communicate the gas slot and the first concaved portion. The first gas outlet may alternatively include a plurality of discontinuous gas slots. Certainly, in another embodiment, the first gas outlet may include a gas hole, and the second gas outlet may alternatively include a gas slot.

**[0018]** In a possible implementation, the total area of all first gas outlets on the burner cap is less than the total area of all second gas outlets. Hence, the second gas outlet, in communication with the outer ring concaved portion, on the inner ring cap portion has a larger burning area, that is, a main gas outlet on the inner ring cap portion is supplied with gas by the outer ring gas injector,

and the first gas outlet whose burning area is smaller is supplied with gas by the inner ring gas injector, so as to make the power of the inner ring cap portion as low as possible in the minimum fire state. Moreover, when there are flames on both the first gas outlet and the second gas outlet on the inner ring cap portion, a more sufficient amount of primary air is supplied, combustion is more complete, and heat efficiency is higher and can reach 69 to 70% and is much higher than those of the existing burners. When the burner cap is designed, the first gas outlet may be designed into a flame stabilizing slot or a flame stabilizing hole of the inner ring cap portion, and the second gas outlet may be designed into a main gas hole or a main gas slot of the inner ring cap portion.

**[0019]** In a possible implementation, the first gas outlet includes a plurality of gas holes, and the second gas outlet includes a gas slot.

**[0020]** In a possible implementation, the total area of all first gas outlets on the burner cap is larger than the total area of all second gas outlets. In this embodiment, the second gas outlet, in communication with the outer ring concaved portion, on the inner ring cap portion has a smaller burning area. That is, the main gas outlet on the inner ring cap portion is supplied with gas by the inner ring gas injector. When the burner cap is designed, the first gas outlet may be designed into a main gas hole or a main gas slot of the inner ring cap portion, and the second gas outlet may be designed into a flame stabilizing slot or a flame stabilizing hole of the inner ring cap portion.

**[0021]** In a possible implementation, the first gas outlet and the second gas outlet are formed on a same smooth surface on the inner ring cap portion. It should be noted that if the first gas outlet or the second gas outlet is a ring-shaped gas slot extending along a smooth circumferential surface, it should not be determined that the first gas outlet and the second gas outlet are formed on two surfaces on the grounds that the ring-shaped gas slot divides the smooth circumferential surface into two surfaces. In this case, it should still be understood as that the two are formed on a same smooth surface.

**[0022]** In a possible implementation, an outer edge of a vertical projection of the first gas outlet and an outer edge of a vertical projection of the second gas outlet are located on a same circumference. For example, the inner ring cap portion includes a cylindrical portion, and the first gas outlet and the second gas outlet are separately formed on an outer circumferential surface of the cylindrical portion.

**[0023]** In a possible implementation, the burner cap is an integrally formed member. In terms of manufacturing, the integrally formed member of this embodiment may be formed in a forging, die-casting, or casting manner, so that a quantity of parts of the entire burner is reduced, and the inner ring cap portion is unlikely to be lost.

**[0024]** In a possible implementation, the inner ring cap portion includes an inner ring base portion and a top cap detachably covered on the inner ring base portion. The

outer ring cap portion and the inner ring base portion form the integrally formed member.

**[0025]** The present invention further provides a burner head of a burner used for a gas cooktop, including the burner cap as stated above.

**[0026]** In a possible implementation, the burner head of a burner used for a gas cooktop includes a burner cap base, where the burner cap is detachably covered on the burner cap base, the first concaved portion matches the burner cap base to form an inner ring gas mixing room, the outer ring concaved portion matches the burner cap base to form an outer ring gas mixing room, and the outer ring gas mixing room is separated from the inner ring gas mixing room. A gas mixture of the gas supplied by the outer ring gas injector and primary air sucked by the venturi pipe enters the outer ring gas mixing room, and a gas mixture of the gas supplied by the inner ring gas injector and primary air sucked by the venturi pipe enters the inner ring gas mixing room.

**[0027]** In a possible implementation, the burner cap base includes an inner ring gas inlet, the inner ring gas inlet is used for allowing gas supplied by the inner ring gas injector to enter the burner head, the burner cap base includes a barrel portion, and an inlet of the barrel portion forms the inner ring gas inlet; and in a use state of the burner head, the barrel portion matches a portion enclosing the first concaved portion to form the inner ring gas mixing room. Therefore, the inner ring gas mixing room is separated from the outer ring gas mixing room.

**[0028]** In a possible implementation, the burner cap base includes an outer ring gas inlet, the outer ring gas inlet is used for allowing gas supplied by the outer ring gas injector to enter the burner head, the burner cap base further includes a gas guide slot in communication with the outer ring gas inlet, the gas guide slot matches the burner cap to form a gas guide channel, and the gas guide channel communicates the outer ring gas inlet and the outer ring gas mixing room.

**[0029]** In a possible implementation, the burner cap base includes an outer ring wall and a plurality of air inlets, the burner cap is provided with a plurality of air outlets respectively corresponding to the plurality of air inlets, and the air inlet matches the air outlet to form an air channel; and the burner cap base includes a plurality of fence portions disposed at intervals, each of the fence portions fences one of the air inlets, two neighboring fence portions form the gas guide slot, a groove is formed between the fence portion and the outer ring wall, the groove is in communication with the gas guide slot, and the groove matches the outer ring concaved portion to form the outer ring gas mixing room. In a preferred embodiment, each fence portion and the enclosed air inlet have a same cross-sectional surface. The air channel supplies secondary air for burning of the burner head. The air channel is directly in communication with the atmosphere outside.

**[0030]** Based on the same inventive concept, the present invention further provides a burner head of a burner used for a gas cooktop, and its technical solution

is as follows: a burner head of a burner used for a gas cooktop, including an outer ring gas mixing room and an inner ring gas mixing room that are separated from each other, where the outer ring gas mixing room is used for accommodating gas supplied by an outer ring gas injector, and the inner ring gas mixing room is used for accommodating gas supplied by an inner ring gas injector; and the burner head includes outer ring gas outlets distributed in an outer ring area of the burner head, the outer ring gas outlets are in communication with the outer ring gas mixing room, and the burner head further includes a first gas outlet and a second gas outlet that are distributed in an inner ring area of the burner head, where the first gas outlet is in communication with the inner ring gas mixing room, and the second gas outlet is in communication with the outer ring gas mixing room.

**[0031]** Hence, when the burner cap of the present invention is in a maximum fire state, there are flames on all of the outer ring gas outlet on the outer ring area and the first gas outlet and the second gas outlet on the inner ring area. The burner head can reach a sufficiently high power, to ensure its heat efficiency and meanwhile, make a cooking pot bottom heated uniformly. When the burner cap is in a minimum fire state, an outer ring gas channel corresponding to the outer ring gas injector is closed, so that the flames on the outer ring area are extinguished, the flames on second gas outlet of the inner ring area are also in an extinguished state, and only the flames on the first gas outlet are maintained. Therefore, in a use state of the burner head, the inner ring area of the burner head can, in the maximum fire state, have a sufficiently high power, to ensure heat efficiency of the entire burner head, and can, in the minimum fire state, reach a sufficiently low power, to satisfy a demand of a user for a small fire such as boiling milk, simmering congee, keeping a temperature or making ketchup. Compared with existing gas cooktops, a gas cooktop using the burner head of the present invention has a broader fire or power control range.

**[0032]** Another technical effect of the present invention is that the second gas outlet on the inner ring area is in communication with the outer ring gas mixing room. The second gas outlet is supplied with gas by the outer ring gas injector, and can obtain a more sufficient amount of primary air, so that combustion is more complete, emission of waste gases, such as CO, is reduced, and heat efficiency of the burner can be notably improved. By means of experiments, the heat efficiency of the gas cooktop using the burner head of an embodiment of the present invention may reach up to 69 to 70%. The existing gas cooktops in the market can only reach, to the best, 64 to 65%.

**[0033]** In a possible implementation, the first gas outlet and the second gas outlet are formed on a same smooth extending surface on the burner head. It should be noted that if the first gas outlet or the second gas outlet is a ring-shaped gas slot extending along a smooth circumferential surface, it should not be determined that the first

gas outlet and the second gas outlet are formed on two surfaces on the grounds that the ring-shaped gas slot divides the smooth circumferential surface into two surfaces. In this case, it should still be understood as that the two are formed on a same smooth surface.

**[0034]** In a possible implementation, the burner head is an integrally formed member.

**[0035]** In a possible implementation, the burner head is assembled from components.

**[0036]** Herein, the present invention provides a burner used for a gas cooktop, including the burner head as stated above.

**[0037]** In a possible implementation, the burner used for a gas cooktop includes a burner base, where the burner head detachably disposed on the burner base.

**[0038]** In a possible implementation, the burner used for a gas cooktop includes a burner base, where the burner head is disposed on the burner base, the burner base includes an inner ring injection system and an outer ring injection system, and the inner ring injection system includes the inner ring gas injector, an inner ring venturi pipe connected to the inner ring gas injector, and an inner ring pressure stabilizing chamber connected to the inner ring venturi pipe; and the outer ring injection system includes the outer ring gas injector, an outer ring venturi pipe connected to the outer ring gas injector, and an outer ring pressure stabilizing chamber connected to the outer ring venturi pipe, the inner ring pressure stabilizing chamber is in communication with the inner ring gas mixing room or the first concaved portion, and the outer ring pressure stabilizing chamber is in communication with the outer ring gas mixing room or the outer ring concaved portion.

**[0039]** Herein, the present invention provides a gas cooktop, including the burner for a gas cooktop as stated above.

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0040]**

FIG. 1 is a three-dimensional diagram of a burner cap according to Embodiment 1 of the present invention;

FIG. 2 is a bottom-up three-dimensional diagram of the burner cap according to Embodiment 1 of the present invention;

FIG. 3 is a cross-sectional view of the burner cap according to Embodiment 1 of the present invention;

FIG. 4 is a cross-sectional view along another cross section of the burner cap according to Embodiment 1 of the present invention;

FIG. 5 is a cross-sectional view of a burner cap according to Embodiment 2 of the present invention;

FIG. 6 is a bottom-up three-dimensional diagram of the burner cap according to Embodiment 2 of the present invention;

FIG. 7 is an exploded view of a burner head according to an embodiment of the present invention;

FIG. 8 is a three-dimensional diagram of a burner head according to an embodiment of the present invention;

FIG. 9 is a three-dimensional diagram of a burner cap base according to an embodiment of the present invention;

FIG. 10 is an exploded view of a burner according to an embodiment of the present invention;

FIG. 11 is a three-dimensional diagram of a burner according to an embodiment of the present invention;

FIG. 12 is a cross-sectional view of the burner according to Embodiment 1 of the present invention; and

FIG. 13 is a cross-sectional view of a burner according to Embodiment 2 of the present invention.

Reference signs:

**[0041]** 1-burner; 2-burner head; 3-burner cap; 4-burner cap base; 5-burner base; 10-inner ring cap portion; 11-first concaved portion; 12-second concaved portion; 13-inner ring gas mixing room; 14-burner cap positioning hole; 15-connection portion; 16-air outlet; 20-outer ring cap portion; 21-outer ring concaved portion; 23-outer ring gas mixing room; 40-barrel portion; 41-inner ring gas inlet; 42-outer ring gas inlet; 43-gas guide slot; 44-outer ring wall; 45-fence portion; 46-air inlet; 47-groove; 48-burner cap positioning column; 51-inner ring injection system; 52-outer ring injection system; 53-thermocouple; 54-ignition needle; 100-wall portion; 101-first gas outlet; 102-second gas outlet; 103-connection channel; 104, 203-connection holes; 150-connecting slot; 201, 202-outer ring gas outlet; 420-gas diverging portion; 511-inner ring gas injector; 512-inner ring venturi pipe; 513-inner ring pressure stabilizing chamber; 521-outer ring gas injector; 522-outer ring venturi pipe; 523-outer ring pressure stabilizing chamber; 42a, 42b, 42c-gas diverging ports; 100a-extension portion; 101a, 101b, 101c, 101d-gas holes.

## DETAILED DESCRIPTION

**[0042]** To make objectives, construction, features, and other functions of the present invention further understood, detailed descriptions are provided below with ref-

erence to embodiments.

**[0043]** First, referring to FIG. 1 to FIG. 4, FIG. 1 is a three-dimensional diagram of a burner cap according to Embodiment 1 of the present invention, FIG. 2 is a bottom-up three-dimensional diagram of the burner cap according to Embodiment 1 of the present invention, FIG. 3 is a cross-sectional view of the burner cap according to Embodiment 1 of the present invention, and FIG. 4 is a cross-sectional view along another cross section of the burner cap according to Embodiment 1 of the present invention. A burner cap 3 used for a gas cooktop in this embodiment is an integrally formed member, and the burner cap 3 includes an inner ring cap portion 10 and an outer ring cap portion 20.

**[0044]** The bottom of the inner ring cap portion includes an inwardly concaved first concaved portion 11, the first concaved portion 11 is configured to accommodate gas supplied by an inner ring gas injector, and the inner ring cap portion 10 is provided with a first gas outlet 101 in communication with the first concaved portion 11. The first gas outlet 101 includes a gas slot. The gas slot is a ring-shaped slot circumferentially extending along an outer circumference of the inner ring cap portion 10, and the gas slot is provided with a plurality of connection holes 104 that communicates the gas slot and the first concaved portion 11.

**[0045]** The outer ring cap portion surrounds the periphery of the inner ring cap portion 10, the bottom of the outer ring cap portion 20 is inwardly concaved to form an outer ring concaved portion 21, and the outer ring concaved portion 21 is configured to accommodate gas supplied by an outer ring gas injector. In a use state of the burner cap 3, the first concaved portion 11 is separated from the outer ring concaved portion 21. The outer ring cap portion 20 is provided with an outer ring gas outlet 201 and an outer ring gas outlet 202 that are in communication with the outer ring concaved portion 21. The outer ring gas outlet 201 includes a plurality of gas holes circumferentially distributed along the outer ring cap portion 20. The outer ring gas outlet 202 includes a gas slot circumferentially extending along the outer ring cap portion 20. The gas slot is internally provided with a plurality of connection holes 203 that communicates the gas slot and the outer ring concaved portion 21.

**[0046]** The inner ring cap portion 10 is provided with a second gas outlet 102, and the second gas outlet 102 includes a plurality of gas holes. The first gas outlet 101 and the second gas outlet 102 are formed on a same smooth surface, that is, an outer circumferential surface 10b, on the inner ring cap portion 10. In addition, in this embodiment an outer edge of a vertical projection of the first gas outlet 101 and an outer edge of a vertical projection of the second gas outlet 102 are located on a same circumference. In the use state of the burner cap 3, the second gas outlet 102 is in communication with the outer ring concaved portion 21. Specifically, in this embodiment, the bottom of the inner ring cap portion 10 further includes an inwardly concaved second concaved

portion 12, and the second concaved portion 12 is disposed at the periphery of the first concaved portion 11. In the use state of the burner cap 3, the second concaved portion 12 is separated from the first concaved portion 11, the second concaved portion 12 is in communication with the outer ring concaved portion 21, and the second gas outlet 102 is in communication with the second concaved portion 12. Therefore, in the use state of the burner cap, the second gas outlet 102 is in communication with the outer ring concaved portion 21.

**[0047]** Referring to FIG. 2 and FIG. 3, the inner ring cap portion 10 includes a wall portion 100 surrounding the first concaved portion 11, and the wall portion 100 is internally provided with a plurality of connection channels 103 that communicates the second gas outlet 102 and the second concaved portion 12. The plurality of connection channels 103 are a plurality of connection holes circumferentially distributed along a plurality of wall portions 100. The wall portion 100 further includes a protruded extension portion 100a, and the extension portion 100a is configured to separate the first concaved portion 11 from the second concaved portion 12 in the use state of the burner cap 3. Expanded descriptions would be provided below.

**[0048]** In this embodiment, the total area of all first gas outlets 101 on the burner cap 3 is less than the total area of all second gas outlets 102. Therefore, flames burning on the second gas outlet 102 whose gas is supplied by the outer ring gas injector form main flames on the inner ring cap portion 10, and flames burning on the first gas outlet 101 whose gas is supplied by the inner ring gas injector form booster flames and stabilize burning of the main flames. The burner cap of this embodiment can, when there are flames on the outer ring cap portion, burn more sufficiently, reach heat efficiency of 69 to 70%, and reduce emission of CO during burning on the burner cap. In a minimum fire state, the power of the burner cap is sufficiently low.

**[0049]** The burner cap 3 further includes at least one connection portion 15 connected between the outer ring cap portion 20 and the inner ring cap portion 10. In the use state of the burner cap 3, the connection portion 15 forms a constituent part of a gas guide channel used for communicating the outer ring concaved portion 21 and the second concaved portion 12. The burner cap 3 of this embodiment includes three connection portions 15. Each connection portion 15 includes a connecting slot 150, and the connecting slot 150 communicates the outer ring concaved portion 21 and the second concaved portion 12.

**[0050]** Still referring to FIG. 4, the first gas outlet 101 further includes a gas hole 101a corresponding to a thermocouple, a gas hole 101c above the thermocouple, a gas hole 101b corresponding to an ignition needle, and a gas hole 101d above the ignition needle, to ensure ignition performance and safety protection performance of the burner cap 3.

**[0051]** A burner cap according to Embodiment 2 of the

present invention is described below as shown in FIG. 5 and FIG. 6, where FIG. 5 is a cross-sectional view of a burner cap according to Embodiment 2 of the present invention, and FIG. 6 is a bottom-up three-dimensional diagram of the burner cap according to Embodiment 2 of the present invention. Components in this embodiment and components corresponding to same reference signs in the burner cap in Embodiment 1 have same or similar structures and same or similar functions. To avoid repetition, details are not described herein again. Refer to relevant description in Embodiment 1. Different from Embodiment 1, in this embodiment, the total area of all first gas outlets 101 on the burner cap is larger than the total area of all second gas outlets 102. The first gas outlet 101 includes a plurality of gas holes circumferentially distributed along the inner ring cap portion 10. The second gas outlet 102 includes a gas slot. The gas slot is a gas slot circumferentially extending along an outer circumferential surface of the inner ring cap portion 10. The wall portion 100 is internally provided with a plurality of connection channels 103 that communicates the second gas outlet 102 and the second concaved portion 12. The plurality of connection channels 103 are a plurality of connection holes circumferentially distributed along a plurality of wall portions 100, so as to communicate the gas slot and the second concaved portion 12. Although heat efficiency of the burner cap of this embodiment is lower than that of Embodiment 1, compared with existing burner caps, the burner cap can, when there are flames on the outer ring cap portion, burn more sufficiently and reduce emission of CO during burning on the burner cap. In a minimum fire state, the power of the burner cap is lower than those of the existing burner caps.

**[0052]** The above are merely exemplary examples of the present invention. More burner cap-related embodiments can be derived by modifying some features and combining different features. For example, in another embodiment of the present invention, the inner ring cap portion includes an inner ring base portion and a top cap detachably covered on the inner ring base portion, where the outer ring cap portion, the connection portion, and the inner ring base portion form an integrally formed member.

**[0053]** FIG. 7 and FIG. 8 further present a burner head 2 of a burner used for a gas cooktop. FIG. 7 is an exploded view of a burner head according to an embodiment of the present invention, and FIG. 8 is a three-dimensional diagram of a burner head according to an embodiment of the present invention. The burner head 2 includes a burner cap base 4 and a burner cap 3. The burner cap 3 is detachably covered on the burner cap base 4. The burner cap 3 may be the burner cap described in the foregoing embodiments. When the burner cap 3 is covered on the burner cap base 4, a first concaved portion 11 matches the burner cap base 4 to form an inner ring gas mixing room 13 (see FIG. 12 and FIG. 13), an outer ring concaved portion matches the burner cap base 4 to form an outer ring gas mixing room 23, and an outer ring

gas mixing room 23 is separated from the inner ring gas mixing room 13.

**[0054]** With comparison to FIG. 12 or 13, referring to FIG. 9, FIG. 9 is a three-dimensional diagram of a burner cap base according to an embodiment of the present invention. The burner cap base 4 includes an inner ring gas inlet 41 and an outer ring gas inlet 42. The inner ring gas inlet 41 is used for allowing gas supplied by an inner ring gas injector to enter a burner head 2, and the outer ring gas inlet 42 is used for allowing gas supplied by an outer ring gas injector to enter the burner head 2. More specifically, the burner cap base 4 includes a barrel portion 40 in a central area, and an inlet of the barrel portion 40 forms the inner ring gas inlet 41; and in a use state of the burner head 2, the barrel portion 40 matches a portion enclosing the first concaved portion 11 to form an inner ring gas mixing room 13. That is, the barrel portion 40 is seamlessly docked with the wall portion 100 to form the inner ring gas mixing room 13. That is, the barrel portion 40 is seamlessly docked with the extension portion 100a to form the inner ring gas mixing room 13. Therefore, in the use state of the burner cap 3, the first concaved portion 11 is separated from the outer ring concaved portion 21.

**[0055]** The burner cap base 4 includes an outer ring wall 44 and a plurality of air inlets 46 located on an inner side of the outer ring wall 44. As shown in FIG. 1, FIG. 2, and FIG. 6, a plurality of air outlets 16 respectively corresponding to a plurality of air inlets 46 is disposed on the burner cap 3. The air inlet 46 matches the air outlet 16 to form an air channel. Air enters the air channel from a place above the burner head 2, to supply secondary air for burning of the burner head 2. The burner cap base 4 includes a plurality of fence portions 45 disposed at intervals, each of the fence portions 45 fences one of the air inlets 46, and two neighboring fence portions 46 form the gas guide slot 43. A groove 47 is formed between the fence portion 45 and the outer ring wall 44. The gas guide slot 43 communicates an outer ring gas inlet 42 and the groove 47. When the burner cap 3 is covered on the burner cap base 4, the groove 47 matches the outer ring concaved portion 21 to form an outer ring gas mixing room 23 (see FIG. 12 and FIG. 13), the gas guide slot 43 matches a connecting slot 150 on the burner cap 3 to form a gas guide channel, and the gas guide channel communicates the outer ring gas inlet 42 and the outer ring gas mixing room 23. Moreover, the second concaved portion 12 on the burner cap 3 faces the outer ring gas inlet 42. Therefore, in the use state of the burner head, after gas enters through the outer ring gas inlet 42, the second concaved portion 12 accommodates the gas, and the gas enters the outer ring gas mixing room 23 through the gas guide channel.

**[0056]** In this embodiment, the burner cap base 4 is an integrally formed member, is made of a brass material the same as the burner cap 3, and is manufactured in a press forming manner. To reduce tolerance accumulation in a manufacturing process, to avoid that after the

burner cap 3 is covered on the burner cap base 4, an inner ring gas mixing room and an outer ring gas mixing room that are separated cannot be formed, for example, gas leaks at a joint between the barrel portion 40 and the extension portion 100a, in this embodiment, an upper surface of the barrel portion 40 and an upper surface of a part forming the gas guide slot 43 are located on a same plane, that is, the upper surface of the barrel portion 40 and an upper surface of the fence portion 45 are located on a same plane.

**[0057]** The burner cap base 4 further includes a plurality of flow diverging portions 420, and the flow diverging portions 420 are connected between an outer wall of the barrel portion 40 and a wall enclosing the outer ring gas inlet 42. The outer ring gas inlet 42 is divided by the flow diverging portion 420 into a plurality of gas diverging ports, and each gas guide slot 43 corresponds to at least one flow diverging portion 420. As shown in FIG. 9, specifically in this embodiment, the burner cap base 4 includes three flow diverging portions 420, the outer ring gas inlet 42 is divided by the flow diverging portions 420 into three gas diverging ports 42a, 42b, and 42c, and a gas flow of the outer ring gas inlet 42 is divided into three flows. Each gas guide slot 43 corresponding to a flow diverging portion 420, and each flow diverging portion 420 directly faces a central location of the gas guide slot 43. In another word, the flow diverging portion 420 extends along a straight line, and an extending direction of each flow diverging portion 420 overlaps a symmetric axis of the corresponding gas guide slot 43.

**[0058]** After the flow diverging portion 420 is disposed, the extending direction of the flow diverging 420 is perpendicular to a gas flow direction of the gas at the outer ring gas inlet 42. Therefore, a mixture of a part of gas from the gas diverging port 42a and a part of gas from the gas diverging port 42b enters the gas guide slot 43 on the middle upper part of FIG. 9, and then enters into a groove 47. Certainly, the description is made from the single perspective of the burner cap base 4. In face, when the burner head is in the use state, a part of gas from the gas diverging port 42a is mixed with a part of gas from the gas diverging port 42b, and the mixture enters the outer ring gas mixing room 23 through a gas guide channel corresponding to the gas guide slot 43 on the middle upper part of FIG. 9. To avoid repetition, descriptions are provided below merely from the perspective of the burner cap base 4. A mixture of a part of gas from the gas diverging port 42b and a part of gas from the gas diverging port 42c enters a gas guide slot 43 on the right part of FIG. 9, and then enters into the groove 47. A mixture of a part of gas from the gas diverging port 42c and a part of gas from the gas diverging port 42a enters a gas guide slot 43 on the left part of FIG. 9, and then enters into the groove 47. In view of this, a flow guide portion 420 is disposed to perform flow divergence for a first time, which is equivalent to additionally providing resistance at the outer ring gas inlet 42, to reduce pressure and a flow rate of an entered gas flow. Each gas guide slot 43 corre-

sponds to a flow diverging portion 420, which is equivalent to performing flow divergence for a second time to further diverge the diverged gas flows, and then converging them into the gas guide slot 43. Therefore, before the gas flow enters the outer ring gas mixing room, flow divergence is performed twice, so that the gas that enters into the outer ring gas mixing room 23 is more uniform.

**[0059]** In this embodiment, the burner cap base 4 includes an inner ring gas flow channel and an outer ring gas flow channel. The barrel portion 40 encloses the inner ring gas flow channel, and the outer ring gas flow channel includes the outer ring gas inlet 42, the gas guide slot 43, and the groove 47. In the use state of the burner cap base 4, the inner ring gas flow channel and the outer ring gas flow channel are separated from each other.

**[0060]** It should be additionally noted that the burner cap that matches the burner cap base 4 of the embodiment shown in FIG. 9 may be the burner cap 3 described in the foregoing embodiments or may be any burner cap that matches the burner cap base 4. Certainly, the burner cap base that matches the burner cap of the embodiments shown in FIG. 1 to FIG. 6 may be the burner cap base shown in FIG. 9 or may be any burner cap base that matches the burner cap 3.

**[0061]** It should also be mentioned that in this embodiment, the burner cap base 4 is provided with a burner cap positioning column 48, and the burner cap 3 is provided with a burner cap positioning hole 14 corresponding to the burner cap positioning column 48, as shown in FIG. 2 and FIG. 6. In the prior art, the burner cap positioning hole is provided on the burner cap base. In this case, after entering the burner cap base, a splith or dirt is likely to fall into the burner cap positioning hole and fill the burner cap positioning hole by a specific height. Then, the burner cap positioning column cannot be completely inserted in place. Therefore, the burner cap cannot be seamlessly covered onto the burner cap base. If there is a seam that leaks gas, flames are formed at the seam that leaks gas, and gradually, the burner cap would be burned to deform. This embodiment can avoid the foregoing problem. Even if a splith or dirt enters the burner cap base, fastening of the burner cap would not be affected.

**[0062]** In addition, the present invention further provides a burner head 2 of a burner used for a gas cooktop, including an outer ring gas mixing room 23 and an inner ring gas mixing room 13 that are separated from each other. The outer ring gas mixing room 23 is configured to accommodate gas supplied by an outer ring gas injector 521 (shown in FIG. 12 and FIG. 13), and the inner ring gas mixing room 13 is configured to accommodate gas supplied by an inner ring gas injector 511. The burner head 2 includes an outer ring gas outlet 201 and an outer ring gas outlet 202 that are distributed in an outer ring area of the burner head 2, the outer ring gas outlet 201 and the outer ring gas outlet 202 are separately in communication with the outer ring gas mixing room 23, and the burner head 2 further includes a first gas outlet 101

and a second gas outlet 102 that are distributed in an inner ring area of the burner head 2, where the first gas outlet 101 is in communication with the inner ring gas mixing room 13, and the second gas outlet 102 is in communication with the outer ring gas mixing room 23. In an embodiment, the burner head 2 is assembled from components, for example, the burner head described in the foregoing embodiments. Details are not provided herein gain. In an embodiment, the burner head 2 is an integrally formed member. The entire burner head may be integrally formed by using an existing machining process.

**[0063]** The present invention further provides a burner 1 used for a gas cooktop, including the burner head 2 according to any one of the foregoing embodiments. As shown in FIG. 10 and FIG. 11, FIG. 10 is an exploded view of a burner head according to an embodiment of the present invention, and FIG. 11 is a three-dimensional diagram of a burner head according to an embodiment of the present invention.

**[0064]** The burner 1 includes a burner base 5, and the burner head 2 is detachably disposed on a burner base 5. The burner base 5 includes an inner ring injection system 51, an outer ring injection system 52, a thermocouple 53, and an ignition needle 54. The inner ring injection system 51 includes an inner ring gas injector 511, an inner ring venturi pipe 512 connected to the inner ring gas injector 511, and an inner ring pressure stabilizing chamber 513 connected to the inner ring venturi pipe 512. The outer ring injection system 52 includes an outer ring gas injector 521, an outer ring venturi pipe 522 connected to the outer ring gas injector 521, and an outer ring pressure stabilizing chamber 523 connected to the outer ring venturi pipe 522. The inner ring pressure stabilizing chamber 513 is in communication with an inner ring gas mixing room 13 or a first concaved portion 11. The outer ring pressure stabilizing chamber 523 is in communication with an outer ring gas mixing room 23 or an outer ring concaved portion 21. After the burner 1 is completely assembled, the thermocouple 53 corresponds to a gas hole 101a, and the ignition needle 54 corresponds to a gas hole 101b.

**[0065]** As shown in FIG. 12, FIG. 12 is a cross-sectional view of the burner according to Embodiment 1 of the present invention. To show more structural features, FIG. 12 is not a cross-sectional view commonly along one cross-section. A burner 1 shown in this embodiment uses the burner cap 3 described in Embodiment 1 above. Refer to foregoing descriptions for relevant descriptions. The burner cap 3 includes an inner ring cap portion 10 and an outer ring cap portion 20. The bottom of the inner ring cap portion 10 includes an inwardly concaved first concaved portion 11, and a wall portion 100 surrounding the first concaved portion 11 matches a barrel portion 40 of the burner cap base 4 to form an inner ring gas mixing room 13. Gas supplied by the inner ring gas injector 511 and primary air sucked by a front end of an inner ring venturi pipe 512 enter into the inner ring venturi pipe 512, then arrive at an inner ring pressure stabilizing chamber

513, and further enter the inner ring gas mixing room 13 through an inner ring gas inlet 41.

[0066] The outer ring cap portion 20 surrounds the periphery of the inner ring cap portion 10, the bottom of the outer ring cap portion 20 is inwardly concaved to form an outer ring concaved portion 21, and the outer ring concaved portion 21 matches a groove 47 on the burner cap base 4 to form an outer ring gas mixing room 23. Gas supplied by the outer ring gas injector 521 and primary air sucked by a front end of an outer ring venturi pipe 522 enter into the outer ring venturi pipe 522, then arrive at an outer ring pressure stabilizing chamber 523, and further enter the outer ring gas mixing room 23 through an outer ring gas inlet 42. The outer ring cap portion 20 is provided with an outer ring gas outlet 201 and an outer ring gas outlet 202 that are in communication with the outer ring concaved portion 21.

[0067] The bottom of the inner ring cap portion 10 further includes an inwardly concaved second concaved portion 12, and the second concaved portion 12 is disposed at the periphery of the first concaved portion 11. The second concaved portion 12 is in communication with both the outer ring gas inlet 42 and the outer ring gas mixing room 23.

[0068] The inner ring cap portion 10 is provided with a first gas outlet 101 in communication with the first concaved portion 11. The first gas outlet 101 includes a gas slot. The inner ring cap portion 10 is provided with a second gas outlet 102 in communication with the second concaved portion, and the second gas outlet 102 includes a plurality of gas holes. The total area of all first gas outlets 101 on the burner cap 3 is less than the total area of all second gas outlets 102.

[0069] As shown in FIG. 13, FIG. 13 is a cross-sectional view of a burner according to Embodiment 2 of the present invention. A burner 1 shown in this embodiment uses the burner cap 3 described in Embodiment 2 above. Refer to the foregoing descriptions for some relevant descriptions. Components in this embodiment and components corresponding to same reference signs in the burner in Embodiment 1 have same or similar structures and same or similar functions. To avoid repetition, details are not described herein again. Refer to relevant description in Embodiment 1. Different from Embodiment 1, in this embodiment, the total area of all first gas outlets 101 on the burner cap used in the burner is larger than the total area of all second gas outlets 102. The first gas outlet 101 includes a plurality of gas holes circumferentially distributed along an inner ring cap portion 10, and second gas outlet 102 includes a gas slot.

[0070] Finally, the present invention provides a gas cooktop, including the burner 1 for a gas cooktop according to any one of the foregoing embodiments.

[0071] Various embodiments of individual parts described with reference to FIG. 1 to FIG. 13 can be combined in any given manner, to implement advantages of the present invention.

[0072] The present invention is described by using the

foregoing relevant embodiments. However, the foregoing embodiments are merely examples for implementing the present invention. It should be pointed out that the disclosed embodiments do not limit the scope of the present invention. On the contrary, changes and modifications made without departing from the spirit and scope of the present invention shall fall within the protection scope of the present invention.

## Claims

1. A burner cap (3) of a burner (1) used for a gas cooktop, comprising:

an inner ring cap portion (10), wherein the bottom comprises an inwardly concaved first concaved portion (11), the first concaved portion (11) is configured to accommodate gas supplied by an inner ring gas injector (511), and the inner ring cap portion (10) is provided with a first gas outlet (101) in communication with the first concaved portion (11); and

an outer ring cap portion (20), wherein the outer ring cap portion (20) surrounds the periphery of the inner ring cap portion (10), the bottom of the outer ring cap portion (20) is inwardly concaved to form an outer ring concaved portion (21), the outer ring concaved portion (21) is configured to accommodate gas supplied by an outer ring gas injector (521), and the outer ring cap portion (20) is provided with outer ring gas outlets (201, 202) in communication with the outer ring concaved portion (21), wherein

in a use state of the burner cap (3), the first concaved portion (11) is separated from the outer ring concaved portion (21), **characterized in that**

the inner ring cap portion (10) is further provided with a second gas outlet (102), and in the use state of the burner cap (3), the second gas outlet (102) is in communication with the outer ring concaved portion (21).

2. The burner cap (3) of the burner (1) used for a gas cooktop according to claim 1, **characterized in that** the bottom of the inner ring cap portion (10) further comprises an inwardly concaved second concaved portion (12), and the second concaved portion (12) is disposed at the periphery of the first concaved portion (11); and in the use state of the burner cap (3), the second concaved portion (12) is separated from the first concaved portion (11), the second concaved portion (12) is in communication with the outer ring concaved portion (21), and the second gas outlet (102) is in communication with the second concaved portion (12).

3. The burner cap (3) of the burner (1) used for a gas cooktop according to claim 2, **characterized by** further comprising at least one connection portion (15) connected between the outer ring cap portion (20) and the inner ring cap portion (10), wherein in the use state of the burner cap (3), the connection portion (15) forms a constituent part of a gas guide channel used for communicating the outer ring concaved portion (21) and the second concaved portion (12).
4. The burner cap (3) of the burner (1) used for a gas cooktop according to claim 2, **characterized in that** the inner ring cap portion (10) comprises a wall portion (100) surrounding the first concaved portion (11), and the wall portion (100) is internally provided with a connection channel (103) that communicates the second gas outlet (102) and the second concaved portion (12).
5. The burner cap (3) of the burner (1) used for a gas cooktop according to claim 4, **characterized in that** the wall portion (100) comprises a protruded extension portion (100a), and the extension portion (100a) is configured to separate the first concaved portion (11) from the second concaved portion (12) in the use state of the burner cap (3).
6. A burner head (2) of a burner (1) used for a gas cooktop, **characterized by** comprising the burner cap (3) according to any one of the foregoing claims.
7. The burner head (2) of the burner (1) used for a gas cooktop according to claim 6, **characterized by** comprising a burner cap base (4), wherein the burner cap (3) is detachably covered on the burner cap base (4), the first concaved portion (11) matches the burner cap base (4) to form an inner ring gas mixing room (13), the outer ring concaved portion (21) matches the burner cap base (4) to form an outer ring gas mixing room (23), and the outer ring gas mixing room (23) is separated from the inner ring gas mixing room (13).
8. The burner head (2) of the burner (1) used for a gas cooktop according to claim 7, **characterized in that** the burner cap base (4) comprises an inner ring gas inlet (41), the inner ring gas inlet (41) is used for allowing gas supplied by the inner ring gas injector (511) to enter the burner head (2), the burner cap base (4) comprises a barrel portion (40), and an inlet of the barrel portion (40) forms the inner ring gas inlet (41); and in a use state of the burner head (2), the barrel portion (40) matches a portion enclosing the first concaved portion (11) to form the inner ring gas mixing room (13).
9. The burner head (2) of the burner (1) used for a gas cooktop according to claim 7, **characterized in that** the burner cap base (4) comprises an outer ring gas inlet (42), the outer ring gas inlet (42) is used for allowing gas supplied by the outer ring gas injector (521) to enter the burner head (2), the burner cap base (4) further comprises a gas guide slot (43) in communication with the outer ring gas inlet (42), the gas guide slot (43) matches the burner cap (3) to form a gas guide channel, and the gas guide channel communicates the outer ring gas inlet (42) and the outer ring gas mixing room (23).
10. The burner head (2) of the burner (1) used for a gas cooktop according to claim 9, **characterized in that** the burner cap base (4) comprises an outer ring wall (44) and a plurality of air inlets (46), the burner cap (3) is provided with a plurality of air outlets (16) respectively corresponding to the plurality of air inlets (46), and the air inlet (46) matches the air outlet (16) to form an air channel; and the burner cap base (4) comprises a plurality of fence portions (45) disposed at intervals, each of the fence portions (45) fences one of the air inlets (46), two neighboring fence portions (45) form the gas guide slot (43), a groove (47) is formed between the fence portion (45) and the outer ring wall (44), the groove (47) is in communication with the gas guide slot (45), and the groove (47) matches the outer ring concaved portion (21) to form the outer ring gas mixing room (23).
11. The burner head (2) of the burner (1) used for a gas cooktop according to claim 6 to 10, wherein the outer ring gas mixing room (23) is used for accommodating gas supplied by an outer ring gas injector (521), and the inner ring gas mixing room (13) is used for accommodating gas supplied by an inner ring gas injector (511); and the burner head (2) comprises outer ring gas outlets (201, 202) distributed in an outer ring area of the burner head (2), the outer ring gas outlets (201, 202) are in communication with the outer ring gas mixing room (23), and the burner head (2) further comprises a first gas outlet (101) and a second gas outlet (102) that are distributed in an inner ring area of the burner head (2), **characterized in that** the first gas outlet (101) is in communication with the inner ring gas mixing room (13), and the second gas outlet (102) is in communication with the outer ring gas mixing room (23).
12. A burner (1) used for a gas cooktop, **characterized by** comprising the burner head (2) according to any one of claims 6 to 11.
13. The burner (1) used for a gas cooktop according to claim 12, **characterized by** comprising a burner base (5), wherein the burner head (2) is detachably disposed on the burner base (5).
14. The burner (1) used for a gas cooktop according to

claim 12 or 13, **characterized by** comprising a burner base (5), wherein the burner head (2) is disposed on the burner base (5), the burner base (5) comprises an inner ring injection system (51) and an outer ring injection system (52), and the inner ring injection system (51) comprises the inner ring gas injector (511), an inner ring venturi pipe (512) connected to the inner ring gas injector (511), and an inner ring pressure stabilizing chamber (513) connected to the inner ring venturi pipe (512); and the outer ring injection system (52) comprises the outer ring gas injector (521), an outer ring venturi pipe (522) connected to the outer ring gas injector (521), and an outer ring pressure stabilizing chamber (523) connected to the outer ring venturi pipe (522), the inner ring pressure stabilizing chamber (513) is in communication with the inner ring gas mixing room (13) or the first concaved portion (11), and the outer ring pressure stabilizing chamber (523) is in communication with the outer ring gas mixing room (23) or the outer ring concaved portion (21).

15. A gas cooktop, **characterized by** comprising the burner (1) according to any one of claims 12 to 14.

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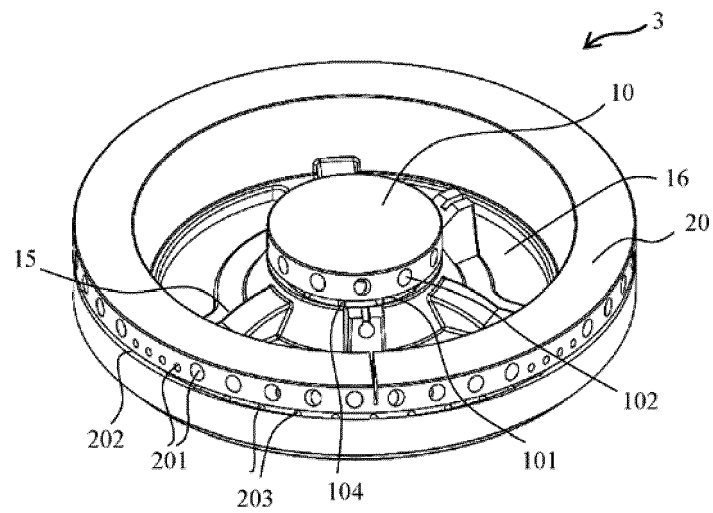


FIG. 1

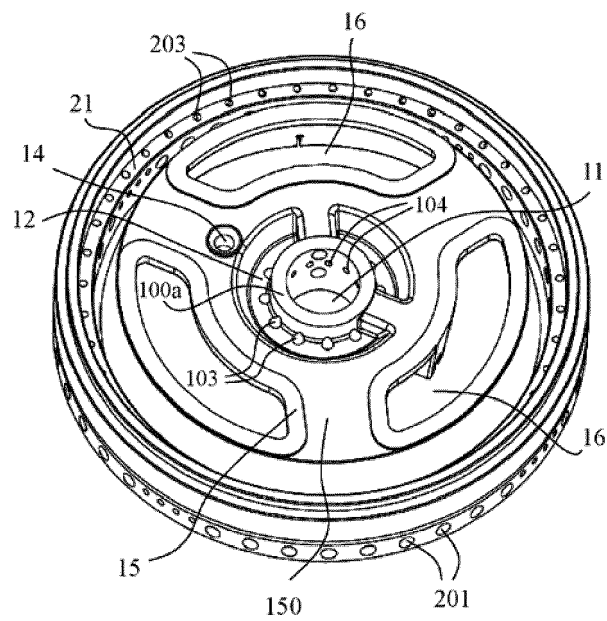


FIG. 2

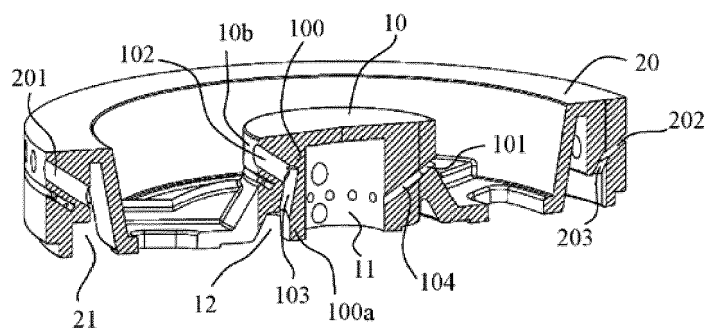


FIG. 3

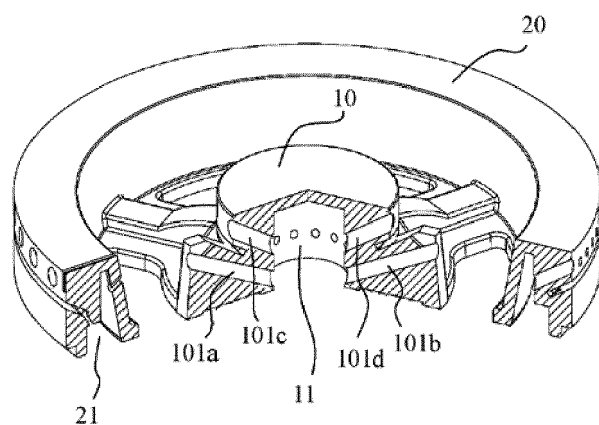


FIG. 4

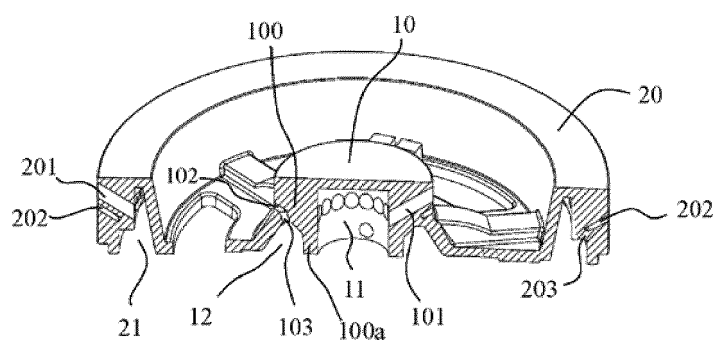


FIG. 5

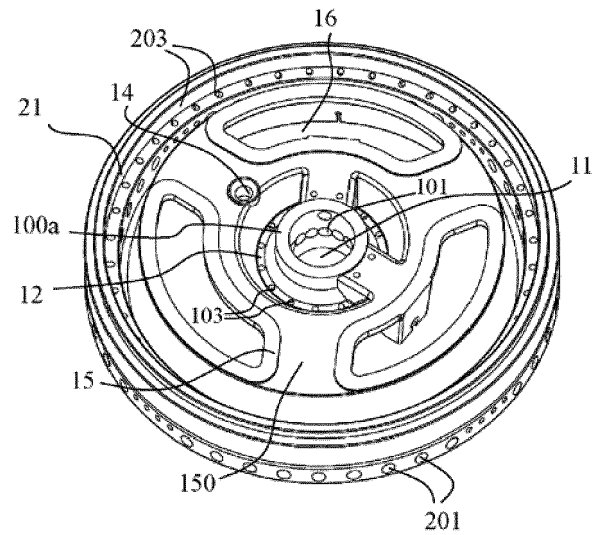


FIG. 6

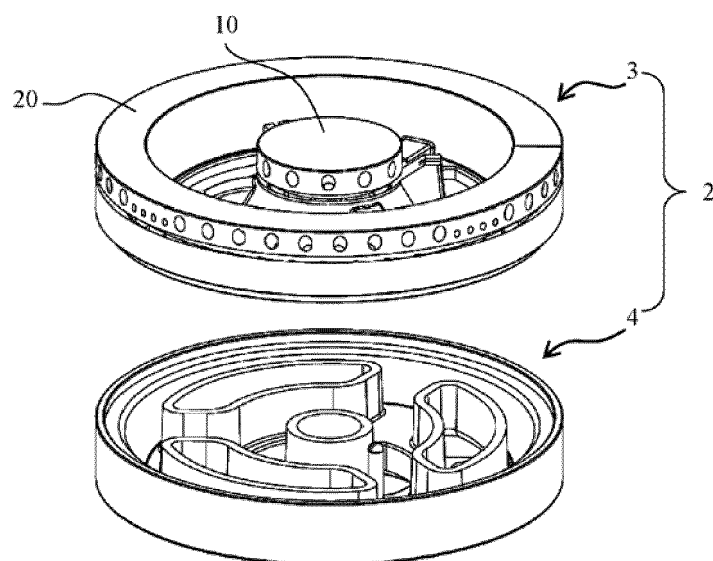


FIG. 7

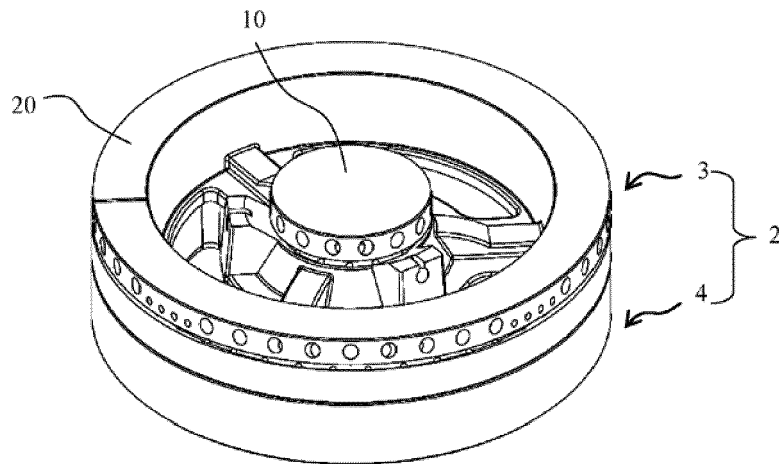


FIG. 8

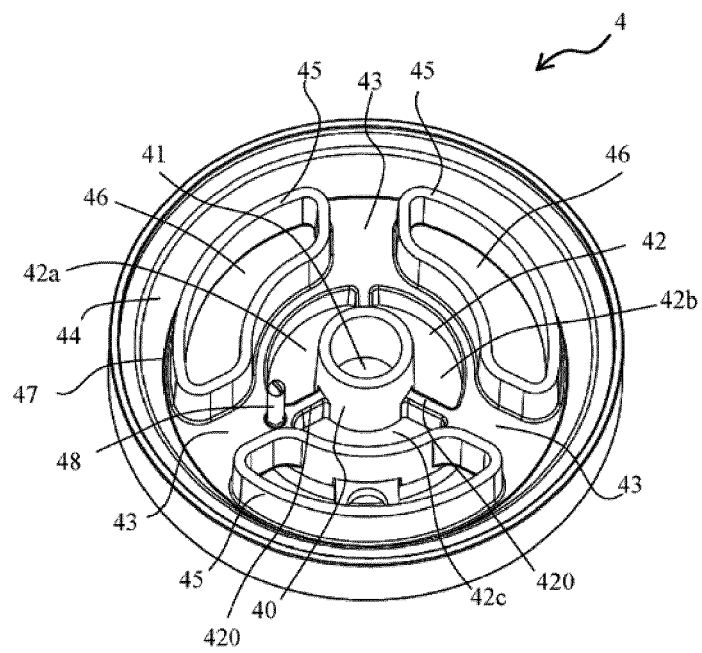


FIG. 9

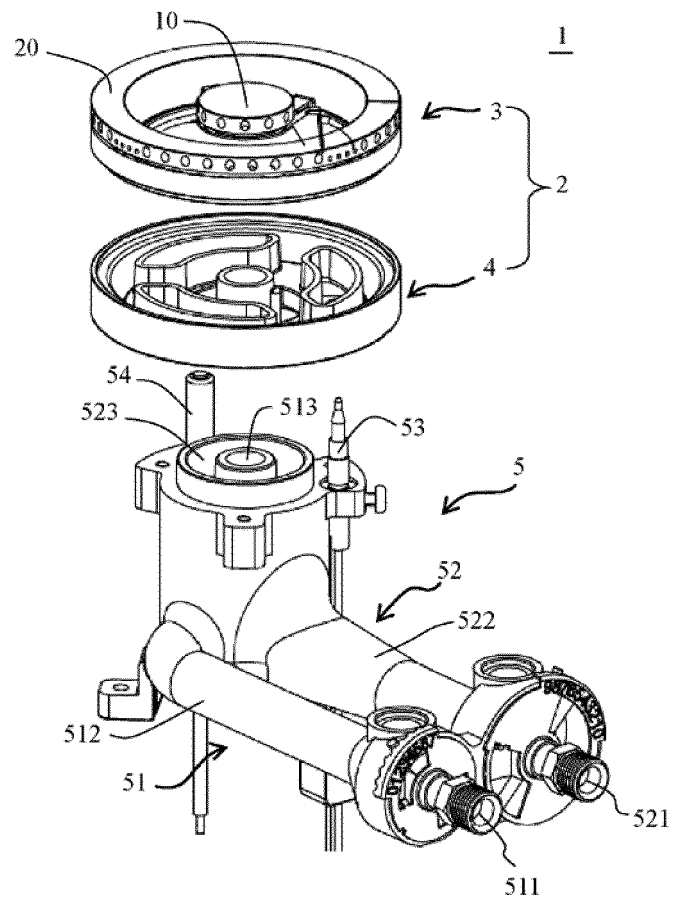


FIG. 10

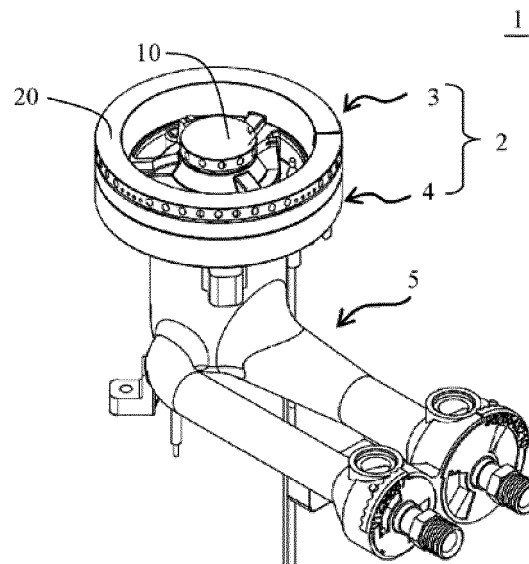


FIG. 11

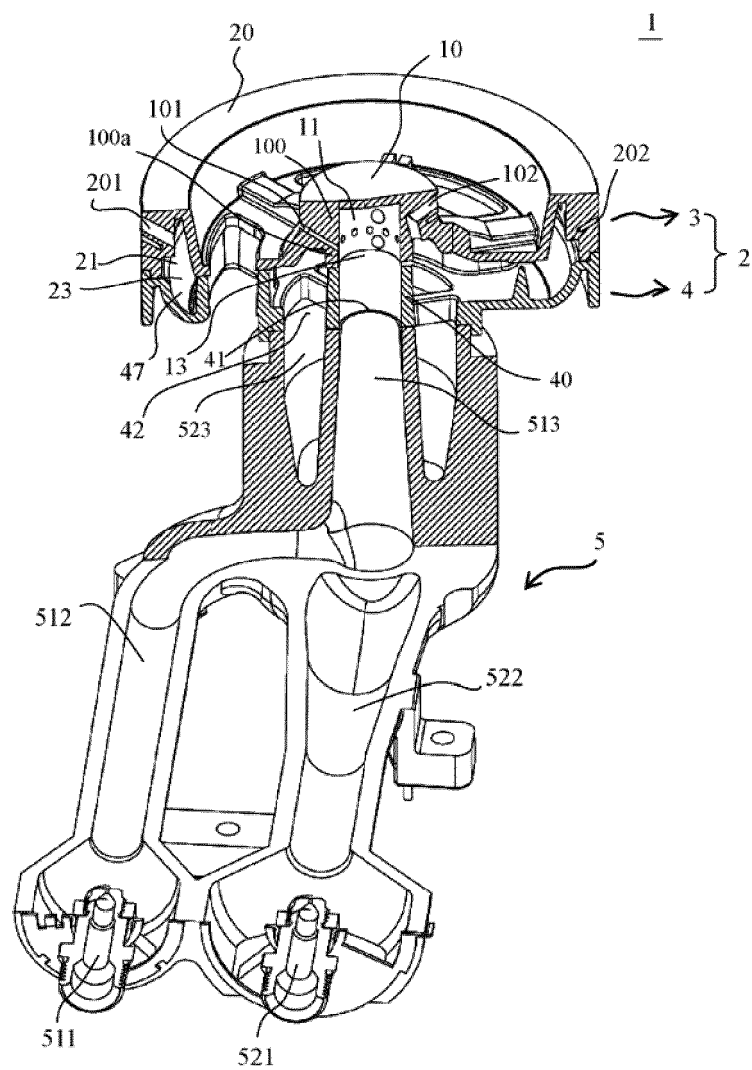


FIG. 12

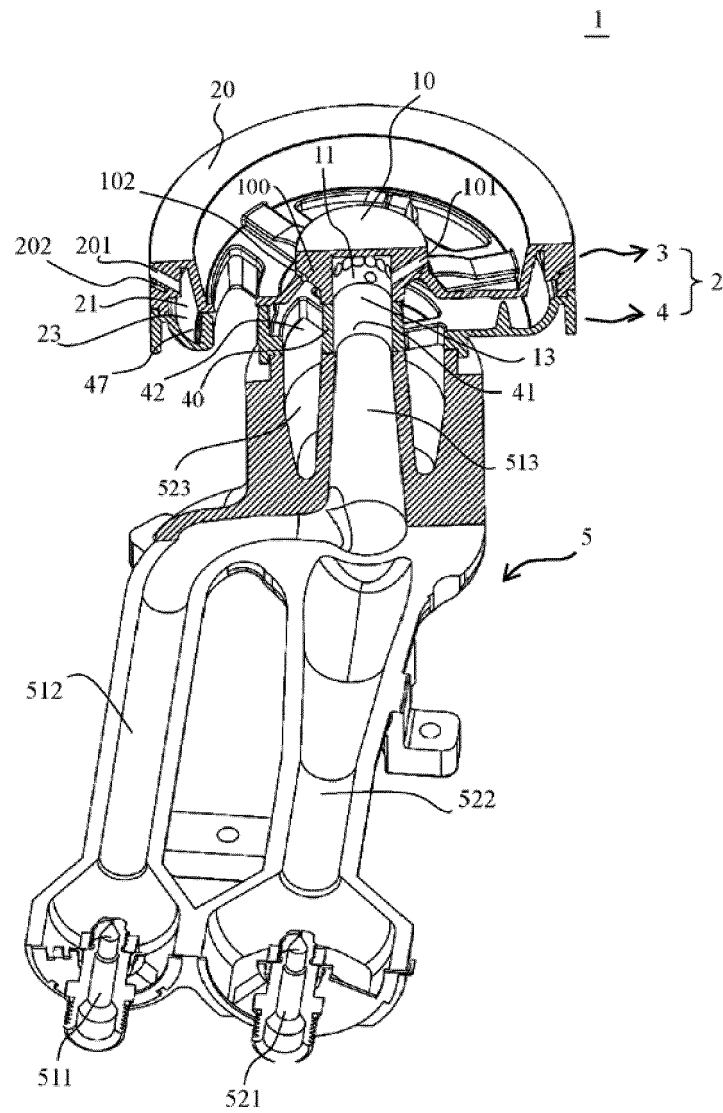


FIG. 13



## EUROPEAN SEARCH REPORT

Application Number  
EP 18 17 2353

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| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                      |                                                       |                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|-----------------------------------------|
| Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Citation of document with indication, where appropriate, of relevant passages                                                                        | Relevant to claim                                     | CLASSIFICATION OF THE APPLICATION (IPC) |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | WO 2006/077086 A1 (OHG DEFENDI S R L [IT]; PAESANI CARLO [IT])<br>27 July 2006 (2006-07-27)<br>* page 5, line 11 - page 7, line 10;<br>figures 1-4 * | 1,6,7,9, 11-15                                        | INV.<br>F23D14/06                       |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | US 6 132 205 A (HARNEIT UWE [US])<br>17 October 2000 (2000-10-17)<br>* column 6, line 27 - column 7, line 26;<br>figures *                           | 1-15                                                  |                                         |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | EP 0 552 135 A2 (SMEG SPA [IT])<br>21 July 1993 (1993-07-21)<br>* column 2, lines 38-54; figure 2 *                                                  | 1-15                                                  |                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                      |                                                       | TECHNICAL FIELDS SEARCHED (IPC)         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                      |                                                       | F23D                                    |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                      |                                                       |                                         |
| Place of search<br>The Hague                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                      | Date of completion of the search<br>28 September 2018 | Examiner<br>Coli, Enrico                |
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