

SEALED BLOWER-TYPE STOVE WITH IGNITION STRUCTURE FOR THE BASE FLAME



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BACKGROUND OF THE INVENTION

5 1. Field of the Invention

The present invention relates to an ignition structure for a sealed blower-type stove, in particular for a blower-type gas stove used professionally in restaurants and food businesses having a gaseous fuel inlet pipe and an igniter stick, in which a base flame is present in the stove and the igniter stick is concealed inside
10 the head portion to avoid the burning flame and thereby effectively prevent damage of the igniter stick by heat.

2. Description of the Related Art

Generally, gas stoves are classified according to the combustion principle into the open-type stove which is noted in the gas stoves for household use or those
15 used by sidewalk vendors, in which the flame is of less strength, and the sealed-type (enclosed) stove which is of higher strength (has stronger flame) widely used in the kitchen of hotels and restaurants which is designed as a kitchen range, in which air is supplied through a single pipe by the blower, and the gaseous fuel is likewise supplied into the stove by a single pipe. The air supplied by the blower and the
20 gaseous fuel are mixed in the burner zone and produce a strong flame after being ignited, for rapid cooking of food.

The following drawbacks are noted in the prolonged use of such stove or range: Since such stove is a sealed-type gas stove, there has always been basically no sufficient space for designing a base flame in the stove. Thus, the ignition
25 operation is quite inconvenient. For instance, when igniting the main flame for the first time, the supplied level in the air pipe and gas pipe must be adjusted to obtain a mixed ratio of air and gas in the burner zone. Thereafter, a long igniter stick which extended into the head portion is used to ignite the mixed fuel therein. After



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igniting the main flame, since the flame is too strong, it cannot be conveniently turned off in the process of cooking by the chef, during the period of temporary respite such as when washing the pots and pans, changing the cooking vessels, ... etc., and the flame remains turned on strongly. Once the strong flame is turned off, 5 the process of ignition has to be repeated. This is not only a waste in effort and time in operation, but when an abnormal condition occurs, such as when the flame might be either too strong or too small when the fuel ratio is not right, the ratio of the mixture has to be adjusted again, which consumes and wastes time. In view of this, one can only imagine the waste in energy source of such stove which uses 10 gaseous fuel.

In an attempt to overcome the above-described drawback, the inventor has designed the base flame structure to be in the head portion of the stove. Though it was designed that the igniting device for the base flame be in the head portion, the flame is too strong and the needle probe of the igniting device is burned to damage 15 within a short time.

The present invention provides a sealed blower-type gas stove having an ignition structure for the base (permanent) flame, which is an improvement directed to the above-mentioned drawbacks of the prior art.

20 SUMMARY OF THE INVENTION

Accordingly, an object of the present invention is to provide a sealed blower-type stove having a ignition structure for the base flame, a gas pipe for the base flame and a concealed-type electronic high voltage igniter stick provided in the middle part of the stove, so that the base flame of the stove can be easily ignited and 25 in turn, the base flame in the process of use of the stove can be turned on or off any time thereby extensively saving on the gaseous fuel.

Another object of the present invention is to provide a sealed blower-type stove having an ignition structure for the base flame which, due to the needle probe

(the arc- or spark-generating end) of the igniter stick being hidden inside the stove, burning and other damage caused thereto by the flame may be avoided.

To realize the above objects, the present invention provides a sealed blower-type stove with ignition structure for the base flame which comprises an air
5 passage, a gas passage and a base flame ignition structure provided at a central position of the stove, the base flame ignition structure including:

a longitudinally disposed base flame gas pipe having a front section formed into a head portion, and a gas-ejecting opening provided at a position on the neck portion of said head portion; and

10 a longitudinally disposed electronic igniter stick provided on a side of said gas pipe, having an arc (spark) generating end located at a position on an outer side end of said gas-ejecting opening, sparks being generated on said gas-ejecting opening by the arc-generating end thereby igniting the gaseous fuel discharged from the gas-ejecting opening and causing the base flame to burn at
15 a suitable position on the generally upper and around the peripheral portion of said head portion.

BRIEF DESCRIPTION OF THE DRAWINGS

Other features and advantages of the present invention will become
20 apparent in the following detailed description of the preferred embodiment with reference to the accompanying drawings, in which:

Figure 1 is an exploded view of the stove according to the present invention;

Figure 2 is a partial sectional view of the stove according to the present
25 invention;

Figure 3 is a cross sectional view of the stove according to the present invention; and

Figure 4 shows a sectional view of a specific embodiment of the stove

according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to figure 1 in conjunction with figure 2, a sealed blower-type
5 stove according to a preferred embodiment of the present invention is shown to be a
sealed-type stove 10 consisting of air passages 12 and a main gas passage 14,
characterized in that an ignition structure 20 for generating a base (permanent)
flame 60 is disposed in the generally central position of the stove 10.

The ignition structure 20 comprises a longitudinally arranged gas pipe or
10 gas tube 22 for the base flame having a front section formed into a head portion 252,
and a gas-ejecting opening 221 is provided at a suitable position on the head portion
252.

A longitudinally arranged electronic igniter stick 25 is disposed on a side
of the gas tube 22. The electrical arc- (spark-) generating end 251 of the igniter
15 stick 25 is positioned at a suitable distance from the outer side of the open end of the
gas-ejecting opening 221. Sparks are generated on the opening 221 by the
arc-generating end 251, igniting the gaseous fuel discharged from the opening 221,
thereby the base flame 60 burns at the generally upper portion and at a suitable
position around the periphery of the head portion 252.

20 In accordance with the above-described main features of the present
invention, the gas tube 22 is preferably integrally formed with the stove 10, and the
head portion 252 is threadedly connected to the threaded open end at the upper
portion of the gas tube 22. The outer periphery around the head portion 252 is
formed into a ringed passage 253 through which the opening 221 discharges the
25 gaseous fuel, so that the gaseous fuel burns into flame forming a burner zone 40 for
the base flame 60 on the upper portion and peripherally around the head portion
252.

In accordance with the above-described main and secondary features of

the presence invention, the arc-generating end 251 of the igniter stick 25 is in an inclined position, and is disposed on the lower side portion of the head portion 252, so as to effectively avoid the burner zone 40 of the base flame 60.

In accordance with the above-described main and secondary features, the advantageous effects and exemplary embodiments in the practice of the present invention are as follows:

(1) As shown in figures 2 and 3, the main combustion principle of the blower-type stove 10 is that the air is supplied at high pressure by the blower through the pipe 30 into the air passages 12 and is ejected by a plurality of air-discharging holes 121. The main gaseous fuel enters via the gas passage 14 and is discharged by the gas-discharging holes 141. The air and gas are mixed in the burner zone 40 and ignited into fire by the base flame 60. A significant effect is accomplished in this regard, *i.e.*, the present invention has an ignition structure 20 for the base flame. The manner of operation thereof consists of turning on the switch of the gas pipe 22 of the base flame 60 and at the same time initiating the electronic ignition system, prior to opening the air passages 12 and the gas passage 14, so that the arc-generating end 251 of the igniter stick 25 produces sparks. At this same time the gaseous fuel for the base flame 60 is ejected out via the gas pipe 22 and through the gas-ejecting holes 221 and rises along the ringed passage 253, and in the course of rising is ignited by the arc-generating end 251, causing the burning flame of the base flame 60 to be concentrated and distributed in the somewhat upper part and around the periphery of the head portion 252. Then the air and gas are passed through the passages 12,14 and are mixed at the burner zone 40. Further, because the base flame 60 is present from start to end, at the time when the high-pressure main air and main gas are discharged, they are at once ignited by the base flame and form high-strength, burning main flame 80. When the main flame 80 is turned off, the base flame 60 may be selectively maintained at the ignited state. When the main flame 80 need be ignited again, it is only

necessary to operate the switch to turn on the gas and air and the main flame 80 can be re-ignited.

(2) The ignition structure 20 of the present invention is characterized by the arc-generating end 251 of the igniter stick 25 which is in a slanting position corresponding to a suitable distance from the gas-ejecting opening 221. The arc-generating end 251 is a needle probe consisting of a high-pressure resistant and heat-resistant conductive wire of metal material. Thus, when the gas is ejected out of the opening 221 and rises through the ringed passage 253, the arc-generating end 251 produces sparks which rapidly ignite the gaseous fuel for the base flame 60, causing the base flame 60 to burn at the upper or around the surrounding of the head portion 252. A significant effect is accomplished in this respect, *i.e.*, the arc-generating end 251 is concealed at the lower side portion of the of the head portion 252, and will not be subjected to the heat of the burning flame and thereby damaged.

Furthermore, the electronic igniter stick 25 is inserted inside the blower-type stove 10, and the rear section thereof is in the form of a rectangular piece 258 which may be threadedly secured and positioned, using a U-shape sleeve 26 and bolts 27, at the projection 15 extending from the lower portion of the bottom of the stove 10, making the positioning of the electronic igniting stick 25 stable and firm.

(3) With reference to figure 4, a specific embodiment of the present invention is illustrated, in which a fire-resistant brick 85 is provided at the upper part of the stove 10 for use as a height elevating pad, and a frying pan 86 is placed on the fire-resistant brick 85. The conventional sealed blower-type stove cannot be designed with an ignition structure for the base flame 60 on the stove, whereas the present invention can be designed with the ignition structure 20 provided on the stove 10 without the drawback of the igniter stick 25 being damaged by high heat. Therefore, in the present invention, the base flame 60 can be effectively ignited on

the blower-type stove which is supplied with high-pressure air, and in turn, as necessitated on the spot, the strongly burning flame on the blower-type stove can be turned off any time, leaving only the base flame 60 burning as a small flame. In this way, not only can the gaseous fuel be economized extensively but the operation
5 is simple and easy. It is thus manifested that the particular position and arrangement and the unique design of the gas pipe 22, the head portion 252 and the igniter stick 25 of the present invention provide a base flame ignition system for the sealed blower-type stove.

While the present invention has been described in connection with what is
10 considered the most practical and preferred embodiment, it is understood that this invention is not limited to the disclosed embodiment but is intended to cover various arrangements included within the spirit and scope of the broadest interpretation so as to encompass all such modifications and equivalent arrangements.

WHAT IS CLAIMED IS:

1. A sealed blower-type stove with ignition structure for the base flame comprising an air passage, a gas passage and a base flame ignition structure provided at a central position of the stove, the base flame ignition structure including:
 - a longitudinally disposed base flame gas pipe having a front section formed into a head portion, and a gas-ejecting opening provided at a position on the neck portion of said head portion; and
 - a longitudinally disposed electronic igniter stick provided on a side of said gas pipe, having an arc (spark) generating end located at a position on an outer side end of said gas-ejecting opening, sparks being generated on said gas-ejecting opening by the arc-generating end thereby igniting the gaseous fuel discharged from the gas-ejecting opening and causing the base flame to burn at a suitable position on the generally upper and around the peripheral portion of said head portion.
2. A sealed blower-type stove with ignition structure for the base flame as claimed in claim 1, wherein said gas pipe is preferably integrally formed with the blower-type stove, and said head portion is threadedly connected to the threaded upper end of the gas pipe by a connector, and wherein a ringed passage is formed on the periphery of said head portion, the gaseous fuel being emitted by the gas-ejecting opening through said ringed passage, to form a burner zone at the upper portion and peripheral portion of said head portion.
3. A sealed blower-type stove with ignition structure for the base flame as claimed in claim 1, wherein the arc-generating end of the igniter stick is formed in an inclined position at the lower portion of a side of said head portion so as to effectively avoid the base flame burner zone.