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GAS BURNER

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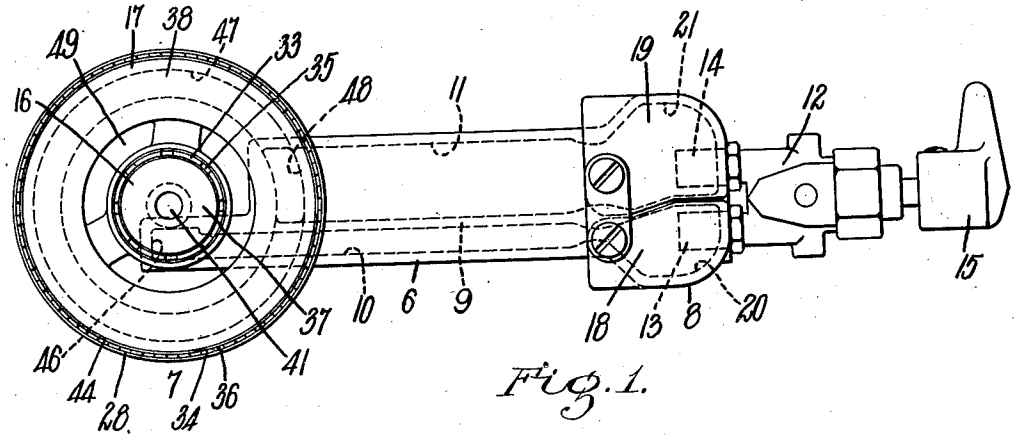


Fig. 1.

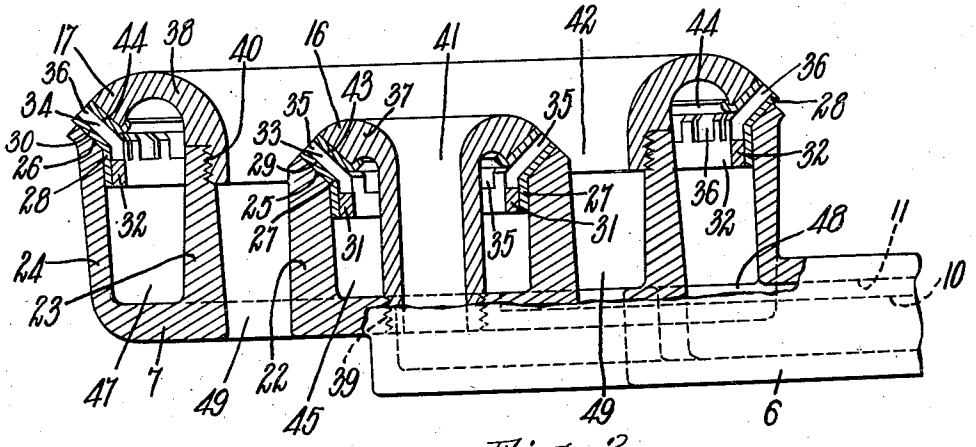


Fig. 2.

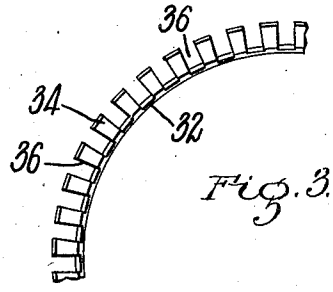


Fig. 3.

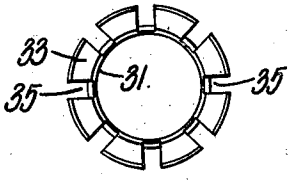


Fig. 4.

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GAS BURNER

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Application February 18, 1935, Serial No. 6,928

3 Claims. (Cl. 158—116)

This invention relates to an improvement in gas burners.

The object of the invention is to provide a device of the character mentioned having an inner or simmering burner and an outer or main burner embodied therein, said burners being so positioned with relation to each other that the jets of flame from the simmering burner will contact with and act to heat the wall of the main burner and thereby preheat the gaseous fuel within said main burner as said fuel passes therethrough.

Another object of the invention is to provide an annular air passage between the simmering burner and the main burner through which secondary air may pass to merge with the jets of flame from both burners, said secondary air being effectively preheated in said passage before it merges with said jets of flame.

Still another object of the invention is to provide an improved jet construction for the burners whereby the corrosive effects of electrolytic action will be eliminated and flare backs prevented when the gaseous fuel is ignited, and whereby said burner may be easily and quickly taken apart if replacements are required, or if it is necessary to clean the jet portions thereof.

The invention as a whole contemplates a burner construction which will produce an extremely hot and effective flame which will contact with a cooking utensil located thereabove in a manner to transmit a maximum amount of heat thereto when considering the small amount of fuel gas consumed. Simultaneously there will be a perfect and complete combustion of the CO in the fuel gas and the several volatile illuminates of the fuel gas will be thoroughly oxidized.

The invention consists in a gas burner as set forth in the following specification and particularly as pointed out in the claims thereof.

Referring to the drawing:—

Fig. 1 represents a plan view of a gas burner embodying our invention.

Fig. 2 is an enlarged vertical sectional elevation of the burner portion of the device taken approximately on the longitudinal median line thereof.

Fig. 3 is a plan view of a portion of the duct ring for the main burner.

Fig. 4 is a plan view of the duct ring for the simmering burner.

Like numerals refer to like parts throughout the several views of the drawing.

In the drawing, 6 represents a hollow body member constructed of cast iron or any other suitable material and having a burner portion 7 formed at one end thereof and a combined primary air and fuel inlet portion 8 formed at the other end thereof. The body member 6 is divided by means of a longitudinally extending partition 9 into separate passageways 10 and 11 through which the gaseous fuel is conducted from the inlet portion 8 to the burner portion 7. The gaseous fuel is delivered from a suitable source of supply to a valve 12 of well-known type, which is provided with discharge nozzles 13 and 14 which project into the passageways 10 and 11 respectively in front of suitably formed venturies respectively provided in said passageways. The amount of gaseous fuel discharged by the valve 12 through the nozzles 13 and 14 is controlled in a well-known manner by means of a handle 15, the operation of which from a closed position first causes the gaseous fuel to be discharged from the nozzle 13 into the passageway 10 which communicates with an inner or simmering burner 16 located at the center of the burner portion 7, while a continued movement of said handle causes additional gaseous fuel to be discharged from the nozzle 14 into the passageway 11 which communicates with an outer or main burner 17 located adjacent to the periphery of the burner portion 7. The simmering burner 16 may be operated separately, or both the burners may be operated in unison by manipulating the handle 15 of the valve 12 in the proper direction, but the main burner 17 cannot be placed in operation without at the same time also having the simmering burner 16 in operation. This function of the valve 12 is well known to those skilled in the art.

Air in correct volume is admitted to the passageways 10 and 11, in order that it may merge with the gaseous fuel discharged from the nozzles 13 and 14 respectively by regulating the positions of plates 18 and 19 respectively positioned above openings 20 and 21 respectively provided for said passageways. The plates 18 and 19 are secured to the body member 6 at the end portion 8 thereof by means of suitable screws which also function as pivots upon which the plates may rock during their opening and closing movements.

The burner portion 7 embodies therein a plurality of circular, concentrically positioned upstanding flanges 22, 23, and 24, the innermost flange 22 being embodied in the structure of the simmering burner 16, and the intermediate flange 23 and outermost flange 24 being embodied in the structure of the main burner 17. The flanges 22 and 24 at their upper extremities are countersunk to provide tapering surfaces 25 and 26 respectively which are preferably inclined at an angle of 45 degrees to a horizontal plane although this angle may be varied if it is so desired. The inclined surfaces 25 and 26 are provided with funnel shaped facing members 27 and 28 respectively, thereby providing seats 29 and 30 respectively for funnel shaped jet members 31 and 32 respectively. The facing members 27 and 28 may be secured to their respective flanges in any

suitable manner. The jet members 31 and 32 have conical flanges 33 and 34 respectively embodied therein which are slotted at 35 and 36 respectively to provide a plurality of ducts through which the gaseous fuel may flow and in order that there may be a multiplicity of jets of flame provided around the peripheries of the burners 16 and 17. The jet members 31 and 32 are clamped securely in position upon their respective seats by means of burner heads 37 and 38 respectively, the head 37 being secured to the bottom of the burner portion 7 by having screw-threaded engagement therewith at 39 and the head 38 being detachably secured to the flange 23 by having screw-threaded engagement therewith at 40. The simmering burner head 37 has a secondary air passage 41 extending vertically therethrough and the main burner head is constructed as a ring and has an opening 42 extending therethrough.

The burner heads 37 and 38 are provided with frusto-conical shaped facing members 43 and 44 respectively which are secured thereto in any suitable manner and which bear against the flanged portions of the jet members 31 and 32 respectively. The facing members 27, 28, 43, and 44 and jet members 31 and 32 are constructed of a suitable non-corrosive sheet metal capable of withstanding excessive heat and of resisting electrolytic action tending to cause rust or other forms of corrosion and said facing members form effective upper and lower walls for the ducts of the jet members 31 and 32. The burner heads 37 and 38 are constructed of a suitable non-corrosive metal or they may be sherardized in a well known manner to resist corrosion.

The simmering burner 16 has a fuel chamber 45 provided therein formed between the flange 22 and the head 37 and the passageway 10 discharges fuel into the chamber at 46. The main burner 17 has a fuel chamber 47 provided therein formed between the flanges 23 and 24 and beneath the head 38 and the passageway 11 discharges fuel into the chamber at 48. A passageway 49 for secondary air is provided between the flanges 22 and 23 in order that air may pass upwardly between said flanges and merge with the jets of flame issuing from the burners 16 and 17.

The simmering burner 16 is located at a slightly lower level than the main burner 17 and in a position where the jets of flame issuing from the ducts 36 will contact with the surface of the main burner head 38 and heat said head to such an extent that the gaseous fuel within the fuel chamber 47 will be effectively preheated before it is ignited as it issues from the ducts 36. At the same time the secondary air passing upwardly through the passageway 49 will contact with the hot surfaces of the flanges 22 and 23 and this air will be effectively preheated before it merges with the flame issuing from the burners 16 and 17. This preheating of both the gaseous fuel and the secondary air will result in a perfect and complete combustion of the gaseous fuel and an extremely hot and efficient flame will be produced.

By constructing the jet members 31 and 32 as illustrated and described these members may be easily and quickly removed for cleaning when such operation is necessary, and these members may furthermore be replaced at small expense if replacements are necessary. The jet construction of this invention will effectively prevent flare backs when the gaseous fuel is ignited. The thickness of the material of the flanged portion of the jet members 31 and 32 determines the height of the fuel ducts 35 and 36 respectively.

We claim:

1. A gas burner comprising a body member having a plurality of circular, upstanding concentrically arranged flanges embodied therein, certain of said flanges having frusto conical surfaces provided thereon and certain of said flanges having a passage for secondary air located therebetween, a facing member on each of said conical surfaces forming a seat thereon, a funnel shaped jet member mounted upon each of said seats and having a plurality of radial slots provided therein, burner heads detachably secured to said body member and co-operating therewith to form fuel chambers therein, facing members interposed between said jet members and said burner heads, said burner heads being adapted to clamp the jet members against their respective seats, whereby fuel ducts are formed at said slots between the facing members, said ducts communicating with their respective fuel chambers and the ducts from one chamber being adapted to discharge jets of flame across said passage for secondary air to preheat said air and adjacent to the wall of an adjacent fuel chamber whereby the fuel therein will also be preheated as it passes therethrough prior to combustion, and means to supply gaseous fuel to said fuel chambers.

2. A gas burner comprising a body member having a plurality of parallel upstanding flanges embodied therein, certain of said flanges having seat portions provided thereon and certain of said flanges having a passage for secondary air located therebetween, a funnel shaped jet member mounted upon each of said seat portions and having a plurality of radial slots provided therein, burner heads detachably secured to said body member and co-operating therewith to form fuel chambers therein, said burner heads clamping said jet members upon their respective seat portions, whereby fuel ducts are formed at said slots, said ducts communicating with their respective fuel chambers and the ducts from one chamber being adapted to discharge jets of flame across said passage for secondary air to preheat said air and adjacent to the wall of an adjacent fuel chamber whereby the fuel therein will also be preheated as it passes therethrough prior to combustion, and means to supply gaseous fuel to said fuel chambers.

3. A gas burner comprising a body member having a plurality of concentric upstanding flanges embodied therein, certain of said flanges being provided with inclined surfaces and certain of said flanges having a passage for secondary air located therebetween, burner heads detachably secured to said body member and co-operating therewith to form fuel chambers, said burner heads having inclined surfaces embodied therein adapted to co-operate with the inclined surfaces of said flanges to form jet passages therebetween, said jet passages communicating with said fuel chambers and the jet passages from one fuel chamber being adapted to discharge jets of flame across said passage for secondary air to preheat said air and adjacent to the wall of an adjacent fuel chmber, whereby the fuel therein will also be preheated as it passes therethrough prior to combustion, and means to supply gaseous fuel to said fuel chamber.

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