June 4, 1957 H. D. DUFAULT ET AL 2,794,497

GAS BURNER

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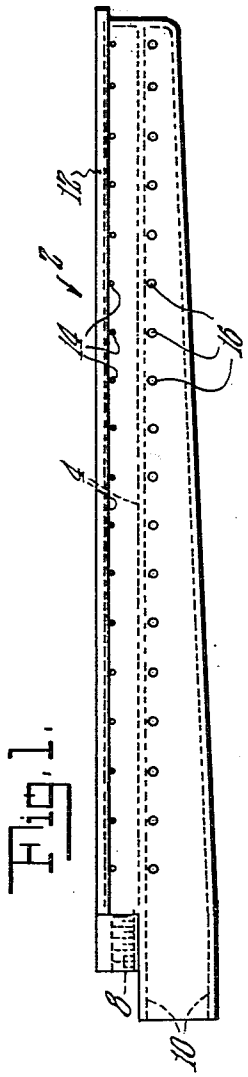


Fig. 1.

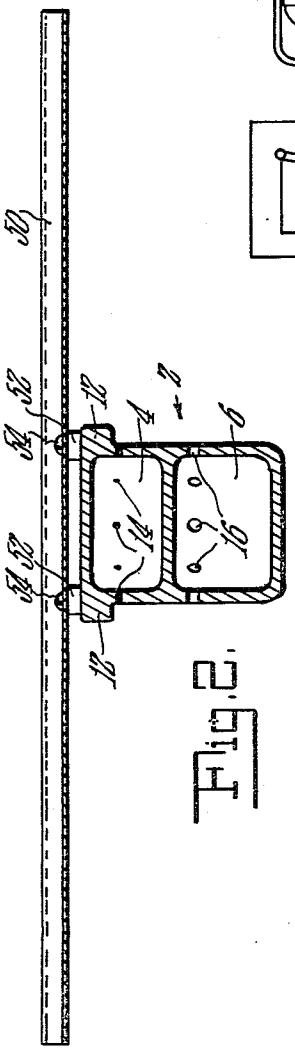


Fig. 2.

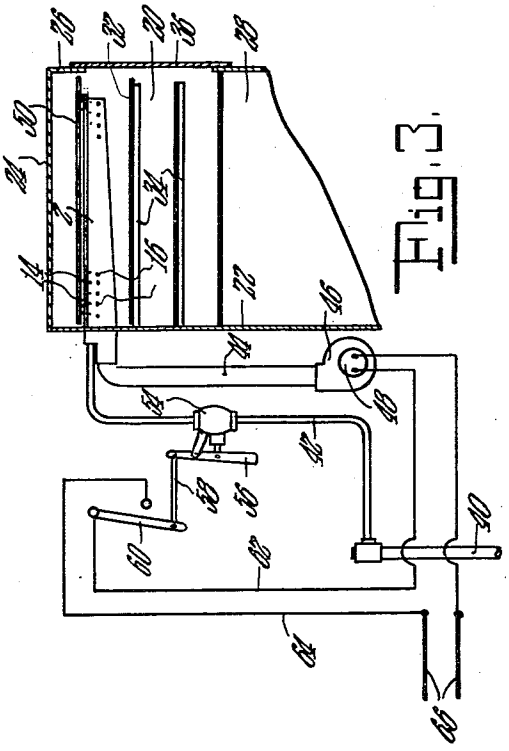


Fig. 3.

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GAS BURNER

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2 Claims. (Cl. 158—99)

This invention relates to new and useful improvements in gas burning apparatus and the principal objects of the invention are directed to gas burning apparatus which is arranged and adapted particularly for broiling purposes.

For efficient broiling purposes, it is necessary that heat be directed downwardly onto the material being broiled and to that end the apparatus of this invention is constructed and arranged so as to provide a large area of downwardly directed heat where the heat is substantially uniform throughout the heating area.

For the most satisfactory broiling operation heat is provided by a luminous flame and, according to this invention, a plurality of long luminous flame jets are provided which are surmounted by heat reflecting means. The flame jets are supplied with properly distributed secondary air for the utmost efficiency.

According to the invention in a general way, a burner bar is provided having separate gas and air channels with gas and air ports leading from said channels. Raw gas is supplied to the gas channel, and air under more or less pressure is supplied to the air channel. For manufacturing reasons the gas and air may be provided in an integral unit or they may be secured together units.

The gas and air ports are relatively arranged so that sufficient air is discharged so as to support combustion and to provide the desired elongated side-by-side luminous tongues of flame which are rather thin as distinguished from fat, bushey, tongues.

The burner is so arranged that a multiplicity of the flame tongues extend over a considerable area and by providing reflecting means over the flame tongues there is a larger heating area which is particularly desired for broiling purposes.

The apparatus is adapted for use in the broiling compartment of a range or the like or in a compartment constructed for broiling purposes and, as a feature of the invention, means is provided for supplying secondary air according to the quantity and pressure desired and necessary for the luminous flame operation of the apparatus.

All of the above cited objects, we accomplish by means of such structure and relative arrangement of parts thereof, as will fully appear by a perusal of the description below and by various specific features which will be hereinafter set forth.

To these above and other ends and with the foregoing and various other and ancillary features and advantages and objects of our invention as will become more readily apparent as the description proceeds, our invention consists in certain features of novelty, in a mode of operation, and in the combination, organization, and arrangement of parts as will be hereinafter more particularly pointed out in the claims hereunto annexed and more fully described and referred to in conjunction with the accompanying drawings wherein:

Fig. 1 is a side elevational view of a burner embodying the novel features of the invention;

Fig. 2 is a transverse sectional elevational view through the burner shown in Fig. 1 and having a reflecting plate associated therewith; and

Fig. 3 is a sectional elevational view through a compartment for broiling purposes having the apparatus of the invention associated therewith.

Referring now to the drawings more in detail the invention will be fully described.

An elongated burner bar is shown at **2** which has separate upper gas and lower air channels **4** and **6** therealong. The bar is formed to close the channels at one end thereof and opposite ends of the channels are adapted at **8** and **10** to receive gas and air supply connections.

A continuous flange portion **12** extends outwardly along opposite side and end of the bar, as shown. The bar **2** in one way is formed so that the air channel thereof gradually narrows from the inlet to its closed end, as shown, but such features may not be necessary or desired in all cases.

A plurality of gas ports **14** in spaced relation are provided along the sides of the bar **2** beneath the flange **12** which extend from the gas channel **4**. Other ports **16** for air discharge in spaced relation are provided along the bar which extend from the air channel **6**.

The ports **14** and **16** are provided along opposite sides and the closed end of the burner and, as shown, the gas and air ports are in vertical alignment. The size and spacing of the ports will be determined by the specific conditions that are to be met and the relative arrangement of the gas and air ports may be varied.

A compartment **20** is shown in Fig. 3 which is formed by walls **22**, **24**, **26**, and **28** which may represent the walls of a range or the like. A shelf is represented by **32** for a broiling pan and may be supported by run ways **34**. A door is represented by **36**.

The burner bar **2** is supported in the upper portion of the compartment **20** and its open end may extend through the wall **22**.

A gas supply line is represented by **40** which is connected by a conduit **42** to the gas channel of the burner bar. An air duct **44** connects the air channel of the burner bar to the supply means such as a small blower, fan, air turbine, or the like, indicated by **46** which is operated by a motor **48**.

A reflecting member **50** is disposed over the burner bar **2**. This will take the form of a corrugated plate formed from stainless steel or the like. Said plate **50** may be secured in spaced relation to the upper side of the burner bar by spacers **52** and screws **54** or the like.

According to the invention it is desired that gas and air be delivered to the burner simultaneously. To that end a valve **54** in the gas line **42** of the lever type having an operating lever **56** movably outwardly to open position is provided.

The lever **56** is connected by member **58** to arm **60** of a switch as shown so that as the valve is opened the switch is closed. Connections **62** and **64** connect the switch to one side of a power supply line **66** which of course may be a suitable source of D. C. or A. C. energy and to the motor **48**. The motor is connected by **68** to supply line **66**.

Thus as the burner is supplied with gas and air elongated luminous tongues are provided at opposite sides of the burner **2** and the reflector **50** directs heat downwardly as desired.

The control apparatus for the gas and air may take various forms it being desired to provide sufficient secondary air at such a pressure as will sustain, as near as possible, complete combustion and provide a multiplicity of elongated luminous tongues at opposite sides and end of the burner.

The invention may be embodied in other specific forms without departing from the essential characteristics thereof. Hence, the present embodiments are therefore to be considered in all respects merely as being illustrative and not as being restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description and all modifications and variations as fall within the meaning and purview and range of equivalency of the appended claims are therefore intended to be embraced therein.

What it is desired to claim and secure by Letters Patent of the United States is:

1. Gas burner apparatus for horizontal disposition in the compartment of a range for broiling purposes comprising, a unitary body having elongated horizontal and vertically spaced lower and intermediate and upper walls connected at opposite sides by longitudinal vertically disposed side walls and at outer ends by a vertical end wall providing separate longitudinally extending lower air and upper gas channels having air and gas inlets at rear ends thereof, said lower and intermediate wall relatively converging from rear to outer ends thereof, longitudinally extending side flanges projecting laterally outwardly from upper portions of said side walls, said side walls provided with a horizontal row of relatively spaced gas ports from said gas channel disposed below and adjacent said side flanges and with a horizontal row of longitudinally spaced air ports from said air channel disposed vertically below said gas ports, said gas and air ports arranged to direct jets of gas and air horizontally outwardly.

2. Gas burner apparatus for horizontal disposition in the compartment of a range for broiling purposes comprising, a unitary body having elongated horizontal and vertically spaced lower and intermediate and upper walls connected at opposite sides by longitudinal vertically disposed side walls and at outer ends by a vertical end wall providing separate longitudinally extending lower air and upper gas channels having air and gas inlets at rear ends thereof, said lower and intermediate wall relatively converging from rear to outer ends thereof, longitudinally extending side flanges projecting laterally outwardly from upper portions of said side walls, said side walls provided with a horizontal row of relatively spaced gas ports from said gas channel disposed below and adjacent said side flanges and with a horizontal row of longitudinally spaced air ports from said air channel disposed vertically below said gas ports, said gas and air ports arranged to direct jets of gas and air horizontally outwardly, a reflector plate disposed above said upper wall having longitudinal side portions extending horizontally outwardly along said body.

References Cited in the file of this patent

UNITED STATES PATENTS

424,852	Bradley	Apr. 1, 1890
1,883,541	Campbell et al.	Oct. 18, 1932
1,916,983	McKee	July 4, 1933
2,526,748	Hill	Oct. 24, 1950
2,668,527	Chambers	Feb. 9, 1954
2,755,851	Dow et al.	July 24, 1956