Nov. 16, 1926. 1,607,104

W. M. SHAW

LOW PRESSURE GAS BURNER

Filed Dec. 7, 1925

Fig. 1

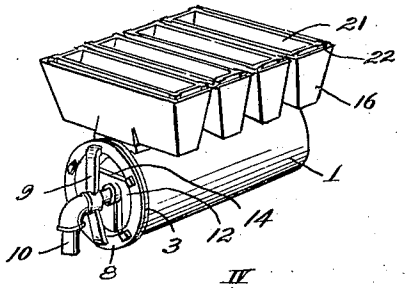


Fig. 3

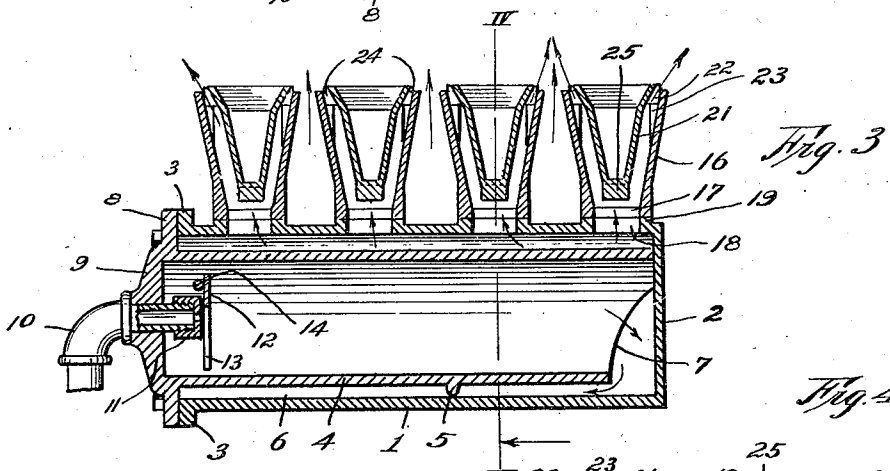
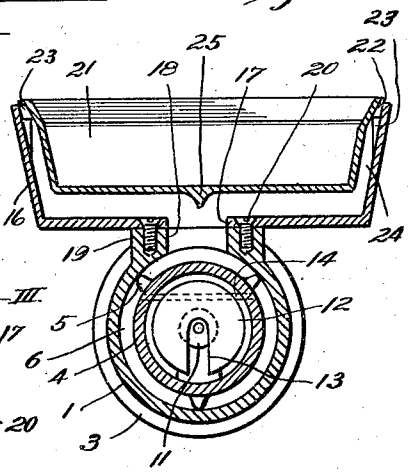


Fig. 4



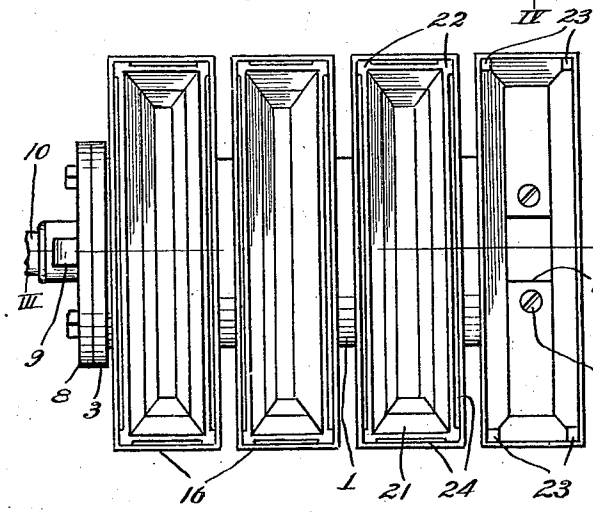


Fig. 2

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Witness:
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UNITED STATES PATENT OFFICE.

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LOW-PRESSURE GAS BURNER.

Application filed December 7, 1925. Serial No. 73,722.

This invention relates to gas burners for heaters, such as stoves and furnaces, and has for its object to produce a simple, efficient, and economical burner, which can be easily and quickly applied in position without necessitating any modification or change in the heater.

More specifically my object is to produce a burner composed of units whereby varying capacity of heat generation may be secured to accommodate particular heaters, and by which a flame body of maximum depth in proportion to the volume of gas used, is attained. A still further object is to provide an automatic valve for effecting an increase or decrease in the volume of air entering the mixing chamber of the burner in proportion to the pressure of gas supplied to such chamber.

With the objects named in view, the invention consists in certain novel and useful features of construction and organization of parts as hereinafter described and claimed; and in order that it may be fully understood, reference is to be had to the accompanying drawing, in which:—

Figure 1 is a perspective view of one of the burner units embodying the invention.

Figure 2 is an enlarged top plan view of the burner as shown in Figure 1, the flame spreader of the right-hand burner being omitted.

Figure 3 is a section on the line III—III of Figure 2.

Figure 4 is a section on the line IV—IV of Figure 3.

In the said drawing, where like reference characters identify corresponding parts in all of the figures, 1 indicates a tubular casing closed at one of its ends as at 2 and being formed at its opposite open end with an outwardly projecting peripheral flange 3. Slipped within the casing 1 is a second casing 4 of smaller diameter and open at its opposite ends and held in centered relation with respect to the first-named casing by means of a series of spacing lugs 5 to form a mixing chamber 6. It will be noted that the casing 4 is in contact with the closed end 2 of the outside casing 1, and that at said contacting end the inside casing is cut away as at 7 to provide a passageway whereby the mixed air and gas in said casing 4 may escape downwardly into the mixing chamber 6 as will hereinafter appear.

The external end of the inside casing 4 is formed with a circumferential flange 8 which is bolted or otherwise tightly clamped against the flange 3 of the exterior casing in order to make an air-tight joint at this point. The exterior end of the casing 4 is formed with a bridge or web member 9 formed with an opening for engagement with a gas feed pipe 10 equipped at its end and just within the inside casing 4 as shown in Figure 3, with a jet cap 11 of the Bunsen type.

It will be apparent that when gas escapes from the jet 11 it will rush rearwardly within the inside casing 4 and will draw air into said casing from the open external end thereof, and in order to provide automatic regulating means for said air, a circular plate 12 formed with a slot 13 as shown clearly in Figure 4, is freely hinged and supported on a pin 14 carried by the internal casing 4. When gas under pressure enters the casing, the consequent suction created will suck in great quantities of air and effect the swinging of said automatic valve 12. The mixed air and gas will pass through the opening or cutaway portion 7 in the internal casing 4 and will enter the mixing chamber 6 between the two casings where a thorough and efficient mixture will be effected.

The burner members which are adapted to be bolted down on the outside casing of the mixing chamber each comprise a rectangular box member 16 tapering outwardly from bottom to top and formed in the bottom with a central gas entry opening 17. The top of the outer casing 1 is formed with a plurality of similar spaced openings 18 each formed with side flanges 19. The opening in the bottom of each burner box 16 is centered with one of the openings 18 in the mixing chamber, and the box is securely fastened in place by means of screws 20, see Figure 4.

In order to spread the combustible mixture entering from the mixing chamber through the bottom of the box, each box is provided with a flange spreader 21 of rectangular form and tapering from bottom to top and slightly less in length and width than said boxes. The spreaders are formed at their corners with supporting and spacing lugs 22 which are adapted to rest on supporting lugs 23 formed in the corners of the boxes. When the spreaders are in position a gas escape slot or passage 24 is formed around the entire edge of the box as shown most clearly in Figure 2, and in this connec-

tion it will be noted by reference to Figures 1 and 4 that the spreaders 21 preferably have their top edges slightly above the planes of the edges of the boxes, as this arrangement has been found to effect a better spreading action and to throw the flame outward at an angle from the burner rather than perpendicular. The bottom of each spreader 21 is also preferably formed with a downwardly projecting deflector 25 centered over the openings in the bottoms of the burner boxes, to deflect the combustible mixture to both ends of the burner boxes.

When a unit has been assembled as desired and as illustrated in Figure 3, it will be apparent that the combustible mixture burning along the edges of the burners will be projected outwardly and upwardly in all directions. As the edges of adjacent burner boxes are spaced slightly apart, the heat of combustion will effect an upward current of air as shown by the arrows and this upward current will not only provide a sufficient quantity of air at these points for full combustion but will also materially assist in preventing the cross flames from impeding each other and will result in long flames impinging on the walls of the furnace or the like.

From the above description, it will be apparent that I have produced a device of the character described which possesses all of the features of advantage set forth as desirable, and while I have described and claimed the preferred embodiment of the same, I reserve the right to make all changes properly falling within the spirit and scope of the appended claims.

I claim:

1. In a gas burner, the combination of a mixing chamber, a series of rectangular burner boxes formed with outwardly and upwardly inclined walls at all of their sides and having their upper adjacent edges spaced slightly apart to form air conduits, and an outwardly and upwardly inclined spreader within each of said boxes and spaced therefrom, the upper edges of said spreaders being in a plane above the upper edges of the boxes.

2. In a gas burner, the combination of a mixing chamber, a series of rectangular burner boxes formed with outwardly and upwardly inclined walls at all of their sides and having their upper adjacent edges spaced slightly apart to form air conduits and extending beyond the mixing chamber at their ends, and an outwardly and upwardly inclined spreader within each of said boxes and spaced therefrom, the upper edges of said spreaders being in a plane above the upper edges of the boxes.

In witness whereof I hereunto affix my signature.

WALTER M. SHAW.