Dec. 17, 1935. B. CRISENBERRY 2,024,510

GAS BURNER

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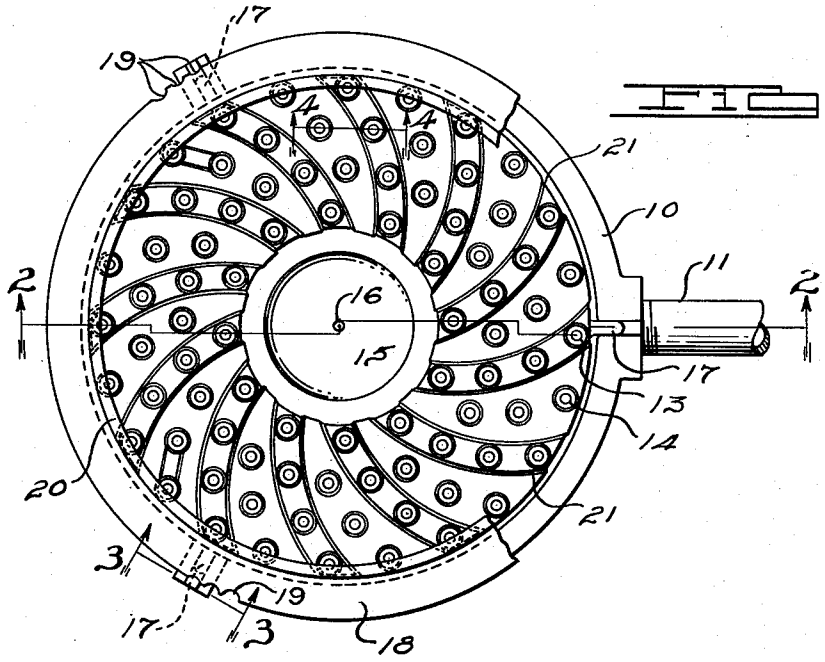


Fig. 1.

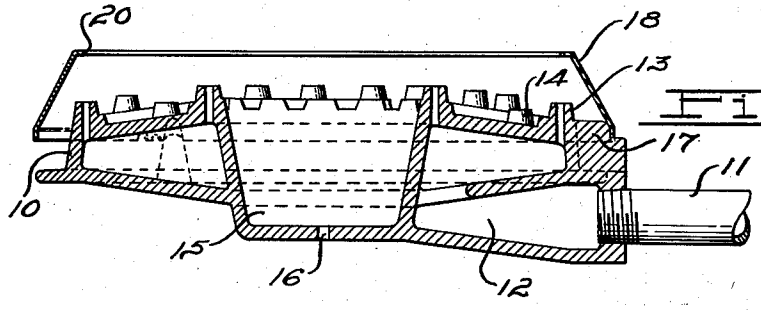


Fig. 2.

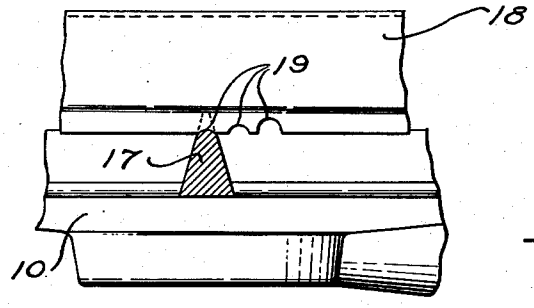


Fig. 3.

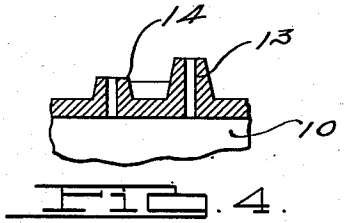


Fig. 4.

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7 Claims. (Cl. 158—116)

My invention relates to a gas burner, and more particularly to a burner adapted for use in gas ranges and the like, a burner embodying my invention being particularly adapted to increase the efficiency of the burner by decreasing the amount of gas consumed and assuring a perfect combustion of the gas passing into the burner.

Prior to my invention the burning of gas in burners, gas ranges and the like, has been accomplished by the use of a primary air supply mingling with the gas passing through the jets in the burner, and a secondary air supply which passes around the jets in the burner and supports the combustion of the gas and the intermingling primary air. Normal air pressure being approximately fifteen pounds per square inch, the velocity of the secondary air is much higher than is required to support a perfect combustion of the gas and the intermingled primary air. The use of the secondary air at normal atmospheric pressure results in an incomplete combustion of the gas employed, the scattering of the heat generated in the burner before its heat value has been absorbed or expended on the object to be heated, and a cooling of the tips of the jets of the burner so as to cause a liberation of the carbon monoxide gas.

It is therefore an object of my present invention to provide a gas burner in which the primary air is introduced under substantially atmospheric pressure, but in which the secondary air is baffled in such a manner as to be admitted to the burner only in regulated amounts and at regulated pressures.

It is a further object of my present invention to provide a gas burner in which the direction of flow of secondary air is definitely controlled to direct the heat generated by the burner to the object which is to be heated.

It is a further object of my present invention to provide a gas burner which may be adjusted to provide varying amounts of secondary air to meet the varying demands of the burner.

These and various other objects, features of arrangement, construction and operation, are plainly shown and described and will be best understood by reference to the accompanying drawing, in which:

Fig. 1 is a top plan view with parts broken away;

Fig. 2 is a staggered sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is an enlarged fragmentary side elevational view taken on the line 3—3 of Fig. 1;

Fig. 4 is a fragmentary sectional view taken on the line 4—4 of Fig. 1.

Similar reference numerals refer to similar parts throughout the several views.

Referring to Fig. 1, a gas burner embodying my invention is formed of a cast iron body portion 10, in which is screw-threaded a pipe 11 to admit gas and primary air to the interior chamber 12 (Fig. 2), from which it passes through a plurality of high jets 13 and a plurality of lower jets 14 for combustion purposes. The circular portion of the body 10 is formed with a closed well 15 in which a small opening 16 is provided. A plurality of lugs 17 are provided on suitable portions of the body 10 and serve as supports for the baffle ring 18. The baffle ring 18 as shown in Fig. 3 is provided with a plurality of notches 19 of varying depths at points adjacent its point of contact with the supports 17. The ring 18 as shown, extends completely around the outer circumference of the burner embodying my invention and is flanged inwardly at its top portion to provide a ring 20, the inner circumference of which is directly above the opening in the outer ring of gas jets 13 and 14.

The high jets 13 are formed on flanges 21 which extend from the circular well 15 to the outer circumference of the burner on a spirally extending line. The jets formed integrally with the ridges 21 also are placed on spiral lines extending from the center of the well 15 to the outer circumference of the burner. The low jets 14 also extend on spiral lines extending from the center of the well 15 to the outer circumference of the burner, but as shown in Fig. 2 are not as high as the jets 13.

The operation of a burner embodying my invention is as follows:

The supply of gas and intermixed primary air passes through the pipe 11 to the interior chamber 12 within the body 10 of the burner. This intermixed air and gas passes through the jets 13 and 14 and is ignited at the ends of each of the jets. There are thus provided two types of flames in this burner. Both flames are short intensely hot flames, but due to the varying heights of the jets 13 and 14, the flames from the high jets 13 are relatively nearer the object to be heated than are the flames from the low jets 14. The supply of secondary air passes through the opening between the body 10 of the burner and the lower edge of the baffle ring 18. The face of the opening between the body 10 of the burner and the baffle ring 18 is regulated by the plurality of slots 19 provided in the lower edge of the

ring 18. As shown in Fig. 3, the depths of the slots 19 are such that the ring 18 is raised or lowered relative to the body 10 of the burner by contacting the various slots 19 with the supports 17. For burning the burner with an intense flame, it is essential that the maximum amount of secondary air be admitted between the ring 18 and the body 10 of the burner. This is accomplished by placing the ring 18 on the burner in such a position that the slot 19 of least depth contacts with the top of the supports 17. If a low flame is desired, a lesser supply of secondary air is required and so the deepest slot 19 is selected to contact with the support 17, thus restricting the opening between the ring 18 and the body 10 of the burner.

As the secondary air is admitted through the opening between the ring 18 and the body 10 of the burner, a swirling motion is imparted to it by reason of the arrangement of the ridges 21 and the placement of the jets 13 and 14 on lines extending spirally from the center of the well 15 to the outer circumference of the burner. I have found that by so placing these ridges 21 and the jets 13 and 14, this swirling motion imparted to the secondary air results in a creation of a diminished pressure area adjacent the well 15, and so tends to suck the flames from the jets 13 and 14 toward the central portion of the burner in such a manner that the heat is centralized at a point adjacent the center portion of the burner instead of being dissipated and scattered as in conventional types of burners.

An opening 16 is provided in the bottom of the well 15 in order to permit a drainage of the well 15.

In this specification I have employed certain language for the purpose of describing my invention. It is not my intention to limit my invention by the language so employed otherwise than in accordance with the following claims.

I claim:

1. A gas burner including a continuous circular body portion, a gas chamber formed therein, a plurality of gas jets communicating with said chamber and having varying heights relative to the face of said burner and placed on lines extending spirally from a point adjacent the center of the burner to its outer edge, and a baffle plate extending around the outer circumference of the body portion of said burner and controlling the entire amount of secondary air admitted to the burner.

2. A gas burner including a body portion having a gas chamber formed therein, a face portion, a plurality of spiral ridges extending on the face thereof, a plurality of jets communicating with the gas chamber formed in said ridges, a plurality of jets formed in the space between said ridges, all of said jets being placed on lines extending spirally from a point adjacent the center of the burner to the outer edge thereof.

3. A gas burner including a body portion having a gas chamber formed therein, a face portion, a plurality of spiral ridges extending on the face thereof, a plurality of jets communicating with the gas chamber formed in said ridges, a plurality of jets formed in the space between said ridges, all of said jets being placed on lines extending spirally from a point adjacent the center of the burner to the outer edge thereof, and a baffle plate extending around the outer circumference of the body portion of said burner and controlling the amount of secondary air admitted to the burner.

4. A gas burner including a body portion having a gas chamber formed therein, a face portion, a plurality of spiral ridges extending on the face thereof, a plurality of jets communicating with the gas chamber formed in said ridges, a plurality of jets formed in the space between said ridges, all of said jets being placed on lines extending spirally from a point adjacent to the center of the burner to the outer edge thereof, and a movable baffle plate extending around the outer circumference of the body portion of said burner and adjustable relative to said burner to control the amount of secondary air admitted to the burner.

5. A gas burner including a body portion having a gas chamber formed therein, a central well, a face portion, a plurality of gas jets of varying heights relative to said face portion and communicating with said gas chamber, and means for controlling the amount and direction of secondary air admitted around said jets, and including a plurality of ribs extending on spiral lines running from a point adjacent the well of said burner to its outer circumference.

6. A gas burner including a body portion having a gas chamber formed therein, a central well, a face portion, a plurality of gas jets of varying heights relative to said face portion and communicating with said gas chamber, and means for controlling the amount and direction of secondary air admitted around said jets, and including a ring extending around the outer circumference of said burner and a plurality of ribs raised from the face portion thereof and extending on spiral lines running from the well to a point adjacent the outer circumference of said burner.

7. A gas burner including a body portion having a gas chamber formed therein, a face portion, a plurality of spiral ridges extending on the face thereof, a plurality of jets communicating with the gas chamber formed in said ridges, a plurality of jets formed in the space between said ridges, all of said jets being placed on lines extending spirally from a point adjacent the center of the burner to the outer edge thereof, and an adjustable baffle plate extending around the outer circumference of the body portion of said burner and controlling the amount of secondary air admitted to the burner.

BENJOHN CRISENBERRY.