Feb. 9, 1926.

1,572,833

G. BAKER

BURNER CONSTRUCTION

Filed June 9, 1925

2 Sheets-Sheet 1

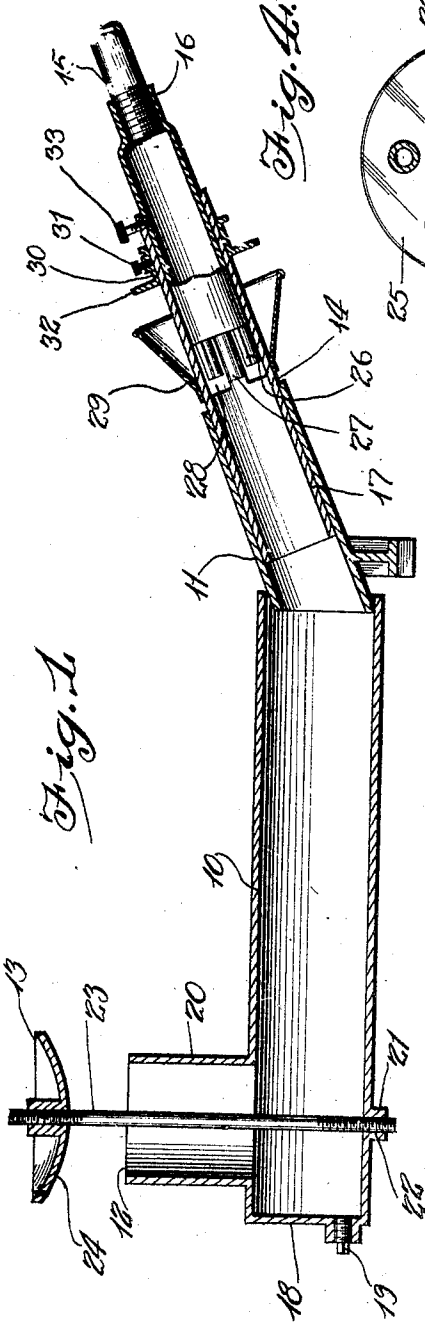


Fig. 1.

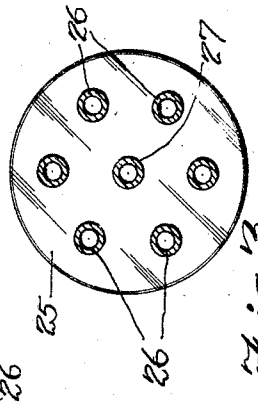


Fig. 4.

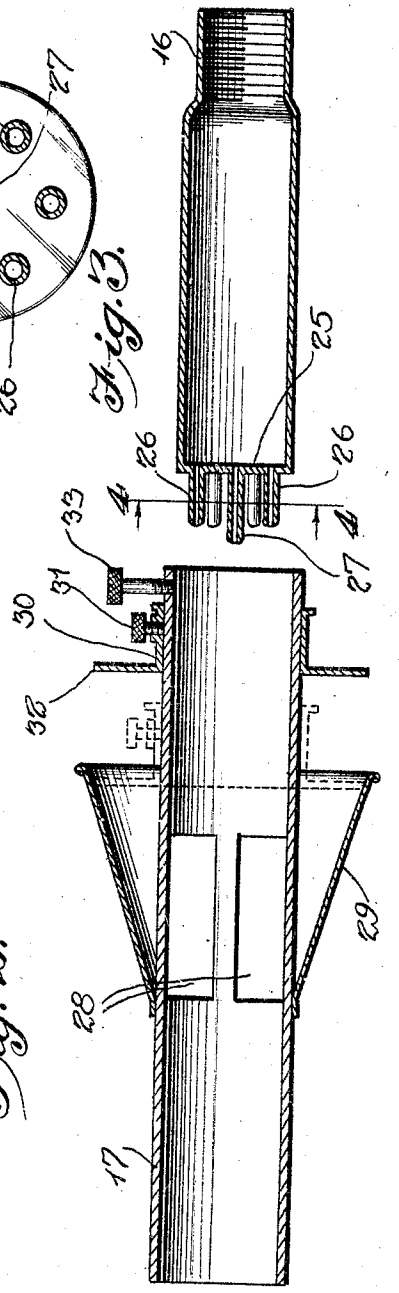


Fig. 3.

Fig. 2.

INVENTOR.
George Baker.

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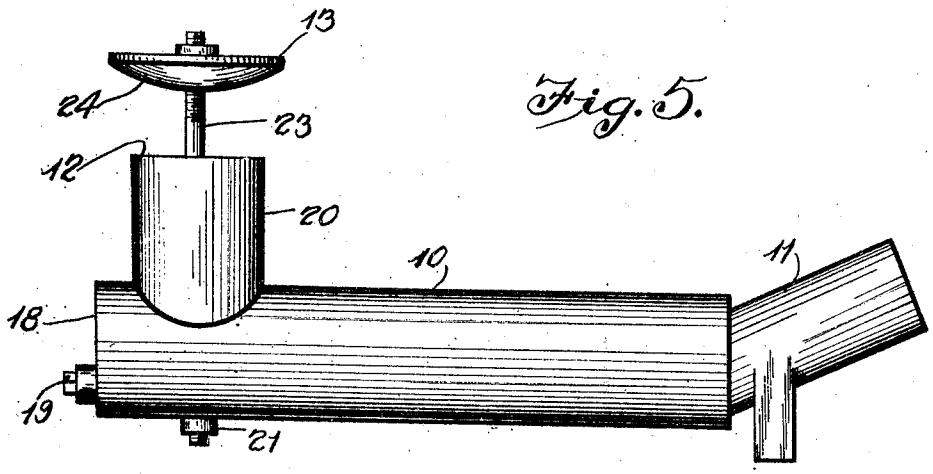


Fig. 5.

Fig. 6.

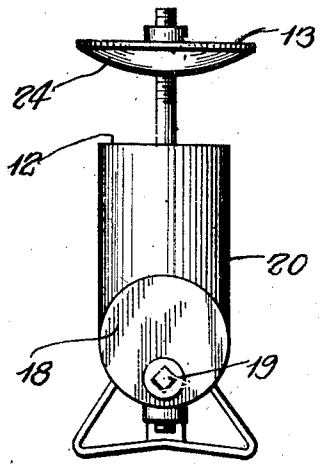


Fig. 7.

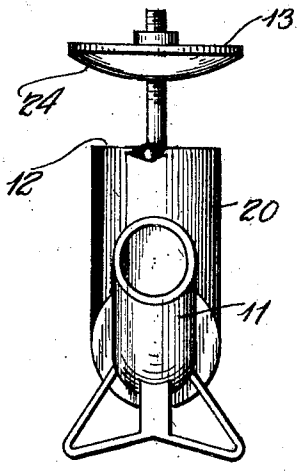
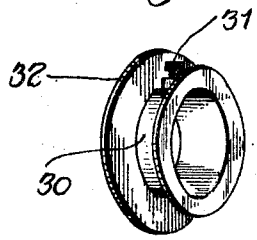


Fig. 8.



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Patented Feb. 9, 1926. 1,572,833

UNITED STATES PATENT OFFICE.

GEORGE BAKER, OF PERSHING, OKLAHOMA, ASSIGNOR OF ONE-THIRD TO LEE McCRORY AND ONE-THIRD TO REES J. JONES, JR., BOTH OF PAWHUSKA, OKLAHOMA.

BURNER CONSTRUCTION.

Application filed June 9, 1925. Serial No. 36,029.

To all whom it may concern:

Be it known that I, GEORGE BAKER, a citizen of the United States, residing at Pershing, in the county of Osage and State of Oklahoma, have invented certain new and useful Improvements in Burner Constructions, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to burner constructions and more particularly to a gas burner construction especially adapted for use in conjunction with natural gas or other sources of gas supply where the pressure of the gas is subject to fluctuation and wherein accordingly some means are necessary for a ready adjustment of the amount of air intermingled with the gas as it is fed to the burner proper.

An important object of the invention is to provide in combination with a fixed gas drum and a fixed mixing unit a connection for these elements which is adjustable and which, by its adjustment, determines the proportion of air mingled with the gas for combustion.

A still further object of the invention is to provide a construction of this character wherein further means are provided upon the movable member for still further reducing or cutting off the amount of air supplied to the burner.

A further and important object of the invention is to provide a structure of this character which is such that it may be readily assembled and readily placed in position within the heater in which it is to be employed.

These and other objects I attain by the construction shown in the accompanying drawings, wherein for the purpose of illustration is shown a preferred embodiment of my invention and wherein:—

Figure 1 is a longitudinal sectional view through a burner constructed in accordance with my invention;

Figure 2 is an enlarged detailed sectional view taken longitudinally of the air admission control sleeve;

Figure 3 is an enlarged section taken through the burner drum;

Figure 4 is a further enlarged section taken on the line 4—4 of Figure 3;

Figure 5 is a side elevation of the mixing chamber;

Figure 6 is a rear elevation of the mixing chamber;

Figure 7 is a front elevation thereof; and

Figure 8 is a perspective of the control collar removed from the sleeve.

Referring now more particularly to the drawings, the numeral 10 generally designates a mixing chamber which is fixed and has an inlet 11 and an outlet 12. The outlet may be provided with a flame spreader 13, the construction and mounting of which will hereinafter be more fully set forth. Arranged in alignment with the inlet 11 is a gas drum 14 having jets, hereinafter to be more fully described. This drum is held in fixed position by the gas line 15 communicating with the inlet 16 thereof. Slidably engaged with the outer surface of the gas drum and with the inner surface of the tubular inlet 11 of the combustion chamber is a sleeve 17 which, together with its associated parts, constitutes the air inlet control means.

The combustion chamber 10 is preferably in the form of a cylindrical casing with one end of which the inlet 11 communicates, the opposite end being closed, as indicated at 18. This end adjacent the bottom of the casing is provided with a removable plug 19 by means of which the mixing chamber may be drained, if this is found to be necessary. The combustion chamber has at its upper side a tubular extension 20 forming the outlet 12 and on its bottom in axial alignment with this opening, a boss 21 is produced having a threaded opening 22 formed therethrough with which is engaged the threaded lower end of a standard 23, the upper end of which is likewise threaded for the reception of the spreader disk 13. This spreader disk preferably has its lower face convexed, as indicated at 24. The inlet 11 is preferably arranged at an angle to the mixing chamber and inclines upwardly therefrom toward its free end.

The gas drum is in the form of a cylinder of less external diameter than the internal diameter of the inlet 11 and has at its inner end a wall 25 from which is supported a plurality of nozzles 26 paralleling the axis of the drum and projecting outwardly therefrom. These nozzles 26 are arranged upon a circle slightly less than the internal diameter of the drum. A further nozzle 27 is

provided of greater length than the nozzles 26 and which is arranged upon the axis of the drum. The purpose of the extension of the nozzle 27 is to provide a centrally directed jet creating a suction about the sides of the nozzles 26 which will tend to draw the streams of these nozzles toward such central jet.

The sleeve 17 has one end thereof telescopically engaging the interior of the inlet and the opposite end the thereof telepscopically engaging the exterior of the drum. Intermediate its ends, the sleeve is provided with a series of perforations 28 elongated upon the longitudinal axis of the sleeve. Secured to the exterior surface of the sleeve at the chamber inlet end of the perforations 28 is the inner or smaller end of a conical flange 29, the outer end of which extends beyond the outer ends of the perforations 28. Slidably mounted upon the sleeve 17 is a collar 30 having a set-screw 31, by means of which it may be secured in adjusted positions. This collar at the end thereof facing the larger end of the flange 29 has an outstanding flange 32 which, when in one position of the collar, will engage against the inner face of the flange 29 and seal the opening between the outer end of this flange and the sleeve and prevent the passage of air to the perforations 28. The sleeve 17 is further provided with a set screw 33 for engagement with gas drum 14 so that this sleeve may be held in adjusted positions.

In the use of the burner, the set-screw 33 is loosened and the sleeve 17 adjusted until a proper flow of air in proportion to the gas entering the burner is admitted. It will be obvious that the sleeve may be positioned so that the drum will partially cover the openings 28, thus reducing the amount of air admitted in proportion to the openings which are covered. Positioning of the nozzles with relation to the openings likewise serves to control the amount of air which is drawn into the sleeve for mixture with the gas. The air and gas pass to the mixing chamber where the mixture thereof is completed and this mixture finally passes from the outlet 12 and impinges against the the spreader disk 13 by means of which it is deflected to form a circular flame. In event the mixture becomes too lean and in first lighting the burner, the collar 30 is adjusted so that its flange 31 cuts off the air from admission through the openings 28, thus preventing "bucking" or back firing of the flame through the manifold.

It will be obvious that the construction hereinbefore set forth is capable of a certain range of change and modification without materially departing from the spirit of my invention and I accordingly do not limit myself to such specific structure except as hereinafter claimed.

I claim:—

1. In combination with a fixed mixing chamber having an inlet and a gas drum aligned with said inlet, a sleeve slidably fitting the inlet of the mixing chamber and said drum, and having means whereby it may be secured in adjusted positions with relation thereto, said sleeve having openings formed in the wall thereof elongated longitudinally of the axis of the sleeve.

2. In combination with a fixed mixing chamber having an inlet and a gas drum aligned with said inlet, a sleeve slidably fitting the inlet of the mixing chamber and said drum, and having means whereby it may be secured in adjusted positions with relation thereto, said sleeve having openings formed in the wall thereof elongated longitudinally of the axis of the sleeve, the sleeve having secured thereto upon its exterior and at the end of the openings next adjacent the inlet of the mixing chamber the smaller end of a conical flange the outer end of which is directed toward the drum engaging end of the sleeve, said sleeve being of greater length than the openings.

3. In combination with a fixed mixing chamber having an inlet and a gas drum aligned with said inlet, a sleeve slidably fitting the inlet of the mixing chamber and said drum, and having means whereby it may be secured in adjusted positions with relation thereto, said sleeve having openings formed in the wall thereof elongated longitudinally of the axis of the sleeve, the sleeve having secured thereto upon its exterior and at the end of the openings next adjacent the inlet of the mixing chamber the smaller end of a conical flange the outer end of which is directed toward the drum engaging end of the sleeve, said sleeve being of greater length than the openings and means adjustable upon the sleeve for regulating the admission of air between the outer end of the conical flange and said sleeve.

4. In combination with a fixed mixing chamber having an inlet and a gas drum aligned with said inlet, a sleeve slidably fitting the inlet of the mixing chamber and said drum, and having means whereby it may be secured in adjusted positions with relation thereto, said sleeve having openings formed in the wall thereof elongated longitudinally of the axis of the sleeve, the sleeve having secured thereto upon its exterior and at the end of the openings next adjacent the inlet of the mixing chamber the smaller end of a conical flange the outer end of which is directed toward the drum engaging end of the sleeve, said sleeve being of greater length than the openings and a collar slidably mounted upon the sleeve in opposition to the larger end of the flange and having a flange which, when in one position of the collar, engages the first named flange in-

teriorly to prevent the passage of air between said flange and the sleeve to said opening and means for securing said collar in adjusted positions.

5. In combination with a fixed mixing chamber having an inlet, a fixed gas drum aligned with the inlet comprising a cylindrical casing having an inlet at one end and at its opposite end wall a plurality of longitudinally extending projecting nozzles arranged upon a circle concentric with the drum, said end wall having a further nozzle of greater length than the first named nozzles and arranged axially of the drum, a sleeve slidably fitting the inlet of the mixing chamber and said drum and having means whereby it may be secured in adjusted positions with relation thereto, said sleeve having openings formed in the wall thereof elongated longitudinally of the axis of the sleeve.

In testimony whereof I hereunto affix my signature.

GEORGE BAKER.