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L. C. HUFF

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GAS BURNER

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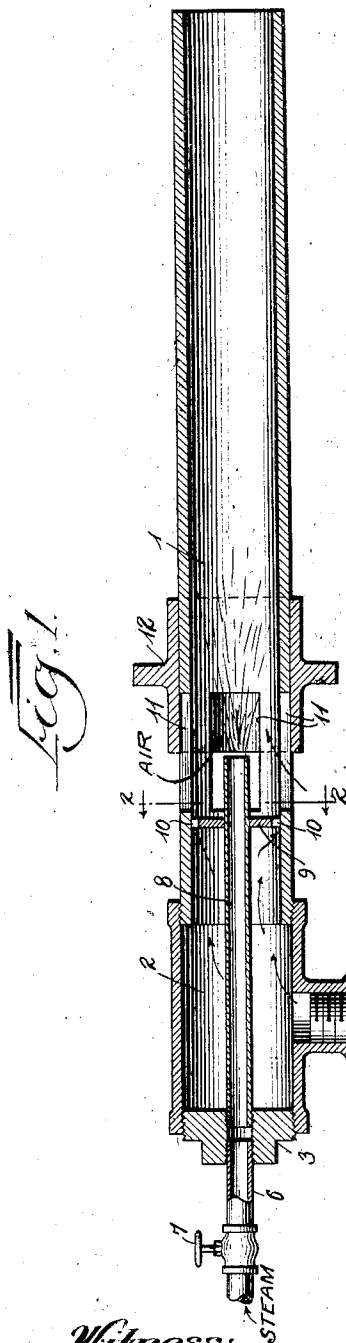
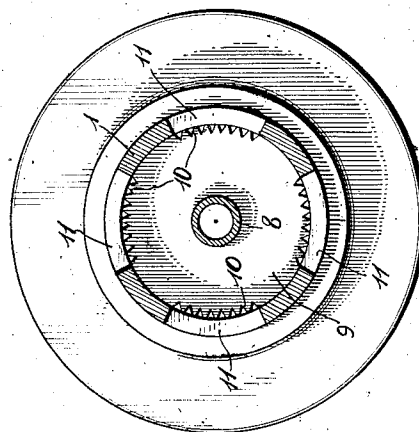


Fig. 2.



Witness:
Stephen M. Weber

Inventor:
Lyman C. Huff.
By *Frank L. Belknap*
Att'y.

UNITED STATES PATENT OFFICE

LYMAN C. HUFF, OF CHICAGO, ILLINOIS, ASSIGNOR TO UNIVERSAL OIL PRODUCTS COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF SOUTH DAKOTA

GAS BURNER

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My invention relates to a new and improved gas burner of the induced draft type and contemplates the provision of a gas burner that will give an even and continuous supply of heat and a burner which will effectively and efficiently atomize the fuel and which will be found economic in fuel consumption. More specifically the invention contemplates the provision of a gas burner adapted for use in furnaces wherein exceedingly high temperatures are employed and to provide a burner of simple construction which can be economically manufactured and easily installed.

In the drawings Fig. 1 is a longitudinal sectional view of a burner constructed in accordance with my invention and Fig. 2 is a cross sectional view of the burner taken on the line 2—2 of Fig. 1.

The burner comprises an elongated mixing tube 1 carrying at one end a gas receiving chamber 2, which chamber is effectively closed by the end plug 3. A gas supply line 4 controlled by a valve 5 communicates with the chamber 2. A steam line 6 controlled by valve 7 extends into a central bore in the end plug 3 and delivers steam to the central steam injecting pipe 8 having one end mounted in the central bore of the end plug 3 and carrying near its discharge end an annular partition member 9. This partition member 9 is adapted to separate the operative portion of the mixing tube 1 from the gas receiving chamber 2. The partition member 9 is provided at spaced intervals about its periphery with the independent series of saw tooth serrations 10, the function of which will be later discussed.

The mixing tube 1 is provided slightly in advance of the partition member 9 and in alignment with the discharge end of the gas injecting pipe 8 with a plurality of annularly spaced air inlet openings 11. Carried by the mixing tube 1 is a slidable collar 12 for regulating the admission of air through the openings 11. The openings 11 are in alignment with the serrated sections of the periphery of the partition member 9.

Describing now the operation of the burner, gas is supplied through the gas inlet line 4 to the gas chamber 2. Steam is injected under pressure into the burner through the injection pipe 8 while air is admitted to the mixing tube through the openings 11. The arrangement of the serrated sections in the partition member 9 causes the incoming gas from chamber 2 to be admitted to the mixing tube in a substantially thin annular stream. The fact that the openings 11 are in alignment with the serrated sections of the partition member 9 causes the air which is admitted to the mixing tube, to pass through the thin annular stream of gas and both the gas and air are effectively subjected to the action of the steam jet admitted through the pipe 8, because the commingled stream of air and gas substantially encircles the jet at the point where the steam is admitted to the mixing tube, thus causing a thorough atomizing of the fuel, which is delivered to the combustion chamber through the mixing tube.

It will thus be seen that a burner is provided wherein due to the volume of gas in the chamber 2 and the construction of the partition member 9, a continuous substantially annular stream of gas is admitted to the burner to encircle the steam jet and to commingle with the air which is admitted to the mixing chamber at right angles to the flow of such thin annular stream of incoming gas. This method of introducing the gas and air to the burner enables economic operation of the burner because of the low fuel consumption.

What I claim as my invention is:

1. A gas burner of the class described for producing an induced draft comprising an elongated mixing tube, a steam jet extending through the rear end of said tube and terminating a substantial distance from the front end of the tube, a partition wall disposed in said tube to the rear of the discharge end of said jet, said partition being provided at spaced intervals along its periphery with groups of saw tooth serrations, means for supplying gas to said tube to the rear of said partition member to flow in a substantially annular stream through said

serrations, and means for admitting air to said tube in advance of said partition member.

2. A gas burner comprising an elongated cylinder closed at one end, a partition member dividing said cylinder into a gas receiving chamber and a mixing tube, a plurality of air vents located circumferentially about said cylinder and slightly in advance of said partition member, a plurality of groups of annularly spaced openings in said partition member for permitting gas to flow from said gas chamber to said mixing tube in a substantially annular stream, means for injecting steam into said mixing tube at a point in transverse alignment with said air vents and means for admitting gas to said gas chamber.

3. A gas burner of the class described for producing an induced draft, comprising an elongated mixing tube, a steam jet extending through the rear end of said tube and terminating a substantial distance from the front end of the tube, a partition wall disposed in said tube to the rear of the discharge end of said jet, a plurality of annularly spaced air inlet openings in said tube in advance of said partition member, said partition member being provided at intervals along its periphery with groups of recesses, said recesses being in longitudinal alinement with said annularly spaced air inlet openings.

4. A gas burner of the class described comprising in combination, a mixing tube, a pipe disposed within said tube and adapted to discharge induction medium under pressure into said tube adjacent the rear end thereof, an air inlet opening in said tube through which air is drawn by the draft induced by said pipe, means for admitting regulated quantities of combustible medium to the tube ahead of the air inlet, a partition having a serrated periphery contacting the inner wall of said tube and adapted to direct the combustible medium in a thin laminated annular stream in an unobstructed path across the air inlet opening, whereby the incoming air has to pass through said annular stream to get out of the tube.

LYMAN C. HUFF.