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C. J. RODMAN

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BURNER.

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*Fig. 1.*

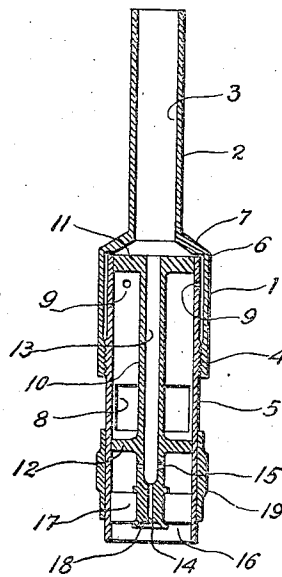
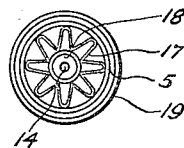


*Fig. 2.*



WITNESSES:

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## UNITED STATES PATENT OFFICE.

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## BURNER.

Application filed January 25, 1924. Serial No. 688,382.

My invention relates to burners, more particularly to vapor and gaseous fuel burners.

It is among the objects of my invention to provide fuel burner heads which shall be efficient in facilitating combustion of artificial or natural gases premixed with air, which shall be adapted to pre-heat the gas-air mixture before it is ignited and which shall comprise a simple and mechanically, durable structure that may be readily attached to a base, a hose line or supply line to facilitate its use.

My invention provides a burner head having a main orifice for passing the gas centrally therethrough and the head is further provided with a pre-heating chamber in which a small portion of the fuel is burnt to heat the main orifice through which it passes to the burner end of the head. I also provide a convenient pilot about the orifice to properly ignite and distribute the flame.

In the accompanying drawing constituting a part hereof and in which like reference characters designate like parts:

Fig. 1 is a vertical sectional view of a burner head embodying the principles of my invention, and

Fig. 2 is an end elevational view of such burner showing the general shape of the pilot which is disposed around the orifice.

Referring to Fig. 1, the burner head therein illustrated comprises a sleeve or tubular member 1 having a constricted rear end portion 2 which is provided with an inlet opening 3. The expanded or enlarged end of the member 1 is provided with an internal screw thread 4 which is adapted to engage a correspondingly threaded outer body portion of a sleeve 5 to permit adjustment of the end 6 of the sleeve 5 relative to the shoulder 7 of the sleeve 1. The member 5 is provided with air openings 8 and a plurality of perforations 9 that communicate with the space provided between members 1 and 5.

A cylindrical gas delivery or feed pipe 10 having a flanged end 11 constituting its base and a flanged portion 12 near its opposite end, which constitutes a baffle wall, is secured in the sleeve 5 as shown. The pipe 10 is provided with a main orifice or central opening 13 which terminates in a constricted discharge opening 14 at its extreme end, and a plurality of perforations or ports 15 communicating with the end chamber 16 of the

burner head. A distributor 17, Fig. 2, is disposed within the chamber 16 around the pipe 10 to uniformly distribute the flame of the gas around the end of the nozzle 18 to improve the combustion of the fuel. A ring member 19 is disposed around the outer surface of the sleeve 5 to reinforce the end of the burner.

The function of the burner head is briefly as follows: The constricted end 2 is connected in any suitable manner to a supply line leading to a supply of vapor or gaseous fuel, said line having means for regulating the flow in accordance with the volume of fuel required. The member 5 may be adjusted by rotating the same to advance the body against, or away from, the shoulder 7 to regulate the inlet opening communicating with the space between the sleeves 1 and 5. The gas flowing through this inlet opening is admitted through the perforations 9 into the combustion chamber around the pipe 10. It will be readily understood that gas in the combustion chamber may be ignited by inserting a lighted match through the openings 8.

The burning of a gas in the combustion chamber heats the member 10 to pre-heat gas passing toward the opening 14. The flow of gas through the pipe 10 is retarded by the constricted opening 14 of the nozzle 18, and some of the gas flows through the ports 15 into the chamber 16 where it takes the form of an annulus encircling the pipe 10. As this annulus of gas flows outward, it passes through the distributor 17 and it is broken up into a number of small streams which are distributed about the main gas stream delivered through the discharge opening 14. In this manner, the desired mixing of heated gas with the air may be effected to aid combustion.

By means of the adjustment for regulating the flow of gas into the pre-heating chamber, the main delivery pipe 10 may be heated to any desired degree within limits, to vary the temperature of the pre-heated gas delivered from the nozzle 18. The advantage of this pre-heating feature is obvious since it materially aids in the combustion of the gaseous fuel.

It is evident from the above description of my invention that a burner head made in accordance therewith provides an efficient and economic burner for liquid or gaseous

fuel and further provides a simple and inexpensive device which is readily adjustable to various kinds of uses.

Although I have described a specific embodiment of my invention it will be obvious to those skilled in the art that various modifications may be made in the details of construction without departing from the principles herein set forth.

I claim as my invention:—

1. In a burner, in combination, a fuel pipe provided with a fuel discharge for delivering fuel for burning, spaced annular plates carried by the pipe, a sleeve disposed on the annular plates for forming a combustion chamber for the burning of fuel to heat the pipe, said sleeve having perforations therein for air and fuel, a second sleeve for receiving the first sleeve to form a fuel channel to supply fuel to the combustion chamber through said fuel perforations, said sleeves being adjustably connected thereby to provide for the control of the flow of fuel to the combustion chamber.

2. A burner comprising, in combination, a tubular member having an enlarged end, a sleeve provided with perforations for air and fuel mounted in the tubular member, said sleeve being spaced from the tubular member to provide a fuel channel, a fuel pipe having a discharge opening for delivering fuel for burning mounted in the sleeve, annular plates for supporting the fuel pipe

in the sleeve, said sleeve and plates being adapted to form a combustion chamber for the burning of fuel to heat the pipe, said combustion chamber communicating with the fuel channel through the perforations in the sleeve, said sleeve being adjustable in the tubular member to control the flow of fuel to the combustion chamber, and means for spreading the flame at the discharge opening.

3. A burner comprising, in combination, a tubular member having an enlarged end, a sleeve provided with perforations for air and fuel mounted in the tubular member, said sleeve being spaced from the tubular member to provide a fuel channel, a fuel pipe having a discharge opening for delivering fuel for burning mounted in the sleeve, annular plates for supporting the fuel pipe in the sleeve, said sleeve and plates being adapted to form a combustion chamber for the burning of fuel to heat the pipe, said combustion chamber communicating with the fuel channel through the perforations in the sleeve, said sleeve being adjustable in the tubular member to control the flow of fuel to the combustion chamber, and a corrugated distributor disposed adjacent the discharge opening to improve combustion.

In testimony whereof, I have hereunto subscribed my name this 17th day of January 1924.

CLARENCE J. RODMAN.