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GAS FEEDING DEVICE

Filed Feb. 21, 1931

Fig. 1.

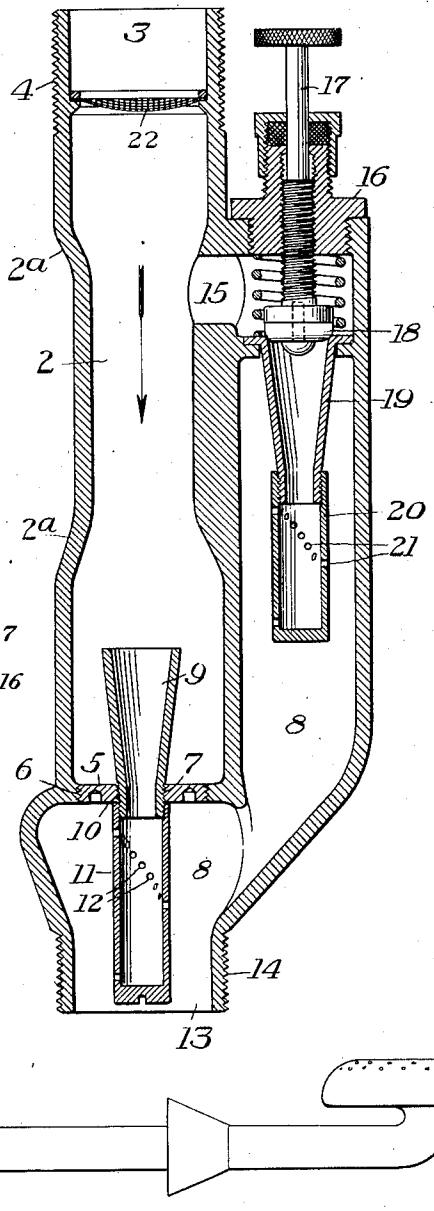


Fig. 2.

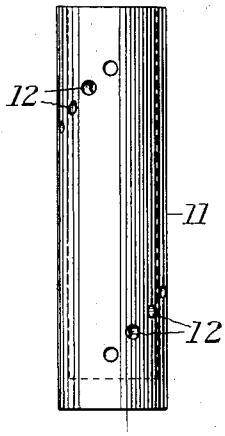


Fig. 3.

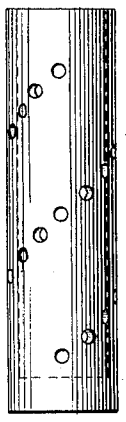


Fig. 4.

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GAS FEEDING DEVICE

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11 Claims. (Cl. 158—99)

Our invention relates to gaseous fuel feeding devices and has for its object the provision of a gas feeding device which will so regulate and feed the gas as to result in a saving of gas consumed and produce better ignition at the burner.

A further object of our invention is to provide a structure which will accomplish the above object and which is provided with means whereby additional gas other than that required under normal operating conditions may be fed to the burner in the same manner that the bulk of the gas is fed.

In the accompanying drawing, we have shown for purposes of illustration only a preferred embodiment of our invention, and in which—

Figure 1 is a sectional view through the structure which we provide;

Figure 2 is an elevational view of the cylindrical perforate tube shown in Figure 1;

Figure 3 is an elevational view of a cylindrical tube having two spiral rows of perforations; and

Figure 4 is a diagrammatic view of the structure which we provide, shown in combination with an ordinary gas burner.

The structure shown in the drawing comprises a substantially cylindrical chamber 2 having an inlet opening 3 at one end thereof. The walls of the chamber 2 are threaded as at 4 adjacent the inlet opening in order that the structure can be connected to the ordinary gas line. The walls of the chamber 2 are curved inwardly as at 2a so as to form a constricted passageway therein.

At one end thereof the chamber 2 is provided with a closure plate 5 which is threaded for cooperation with the threaded portion 6 of the walls of the chamber 2. The closure plate 5 is provided for the purpose of partially closing the one end of the chamber 2. The closure plate 5 is provided with a centrally disposed threaded opening 7, through which the gas passes as it enters the chamber 8.

A substantially cone-shaped member 9, open at both ends, is provided. This member 9 is provided with threads 10 adjacent the small end thereof, and is threaded in the opening 7 in the closure plate. The gas, in passing through the chamber 2, is directed through the opening 7 in the closure plate 5 by means of this cone-shaped member 9, and the velocity thereof increased as it passes therethrough.

A substantially cylindrical tube 11 is provided in the chamber 8 and is internally threaded so as to cooperate with the threaded portion of the member 9 which protrudes through the plate 5. This tube 11 is provided with a plurality of small openings or perforations 12 which are spirally arranged around the tube. Both the number and size of the openings 12 may be varied. In Figure 3 we have shown a form of tube having two rows of spirally arranged openings.

In normal operation the gas is fed into chamber 2 through the inlet opening 3 and travels through chamber 2 in the direction of the arrow. The gas then enters the cone-shaped member 9 and is carried thereby into the cylindrical tube 11. As the gas passes through the cone-shaped member 9, the velocity thereof is very materially increased and the gas is traveling at the increased speed as it enters the tube 11. The gas is then discharged from said tube through the spirally arranged openings 12 into the chamber 8. The gas is discharged into the chamber 8 at a high velocity and is permitted to expand in said chamber. The gas then passes out of chamber 8 through an opening 13, thence to the burner.

The walls of chamber 8 are provided with threads 14 adjacent the opening 13 so that the structure may be placed in the usual gas line.

The amount of gas obtainable through the perforations 12 in the tube 11 is limited. Additional gas may at times be required, consequently we provide means whereby this additional gas may be obtained. An opening 15 is provided in one of the walls of the chamber 2. Gas is prevented from passing through this opening into chamber 8 under normal operating conditions by means of a valve indicated generally by the reference character 16. When additional gas is required, the stem 17 of the valve is rotated, which raises the plunger 18 and allows gas to pass from chamber 2 through opening 15 through the cone-shaped member 19, which is substantially similar to the cone-shaped member 9. The gas then passes into the tube 20 and through perforations 21 into the chamber 8. From there it passes through the outlet opening 13, thence to the burner.

In the main chamber 2, ahead of the opening 15, we provide a screen 22. The apparatus just described may be used either with or without the screen with an appreciable saving in the amount of gas consumed by the burner. However, we have found the provision of such a screen desirable and have obtained better results by its use.

While we have shown and described a preferred embodiment of our invention, it is to be understood that it is not limited thereby but may be otherwise embodied or practiced within the scope of the appended claims.

We claim:

1. Apparatus for feeding gaseous fuel comprising a chamber having an inlet opening and an outlet opening, a second chamber adjacent the first mentioned chamber and interconnected therewith by said outlet opening, means adjacent said outlet opening for increasing the velocity of the fuel being fed, and means for discharging the same into said second chamber through a plurality of small openings, whereby the velocity of the fuel is further increased as it enters said second chamber.

2. Apparatus for feeding gaseous fuel comprising a chamber having an inlet opening and an outlet opening, a second chamber adjacent the first mentioned chamber and interconnected therewith by said outlet opening, a substantially cone-shaped member open at both ends cooperating with the outlet opening, and a substantially cylindrical tube having a plurality of small openings therein and closed at one end adapted to cooperate with said outlet opening, whereby the fuel being fed is discharged into said second chamber through a plurality of small openings and the velocity thereof thereby increased.

3. Apparatus for feeding gaseous fuel comprising a chamber into which the fuel is fed, the walls of said chamber forming a constricted passageway therein, an end closure plate for said chamber having an outlet opening therein, a second chamber adjacent said opening, and a substantially cylindrical tube having a plurality of spirally arranged openings therein and closed at one end adapted to receive fuel discharged through the opening in said closure plate and discharge the same into said second chamber at an increased velocity.

4. Apparatus for feeding gaseous fuel comprising a chamber having an inlet opening and an outlet opening, a substantially cone-shaped member open at both ends located in said chamber adjacent the outlet opening and adapted to increase the velocity of the gas being fed, a second chamber adjacent the outlet opening of the first mentioned chamber, and perforate means adjacent said outlet opening whereby the fuel is discharged from the first mentioned chamber into said second chamber through a plurality of small openings at a further increased velocity.

5. Apparatus for feeding gaseous fuel comprising a chamber having an inlet opening and an outlet opening, a substantially cone-shaped member open at both ends located in said chamber adjacent the outlet opening adapted to increase the velocity of the gas being fed, a second chamber adjacent the outlet opening of the first mentioned chamber, and a substantially cylindrical tube having a plurality of small openings therein and closed at one end in said second chamber adjacent said outlet opening, whereby the fuel is discharged from the first mentioned chamber into said second chamber through a plurality of small openings at a further increased velocity.

6. Apparatus for feeding gaseous fuel comprising a chamber having an inlet opening and a plurality of outlet openings, a second chamber adjacent the first mentioned chamber and interconnected therewith by means of said outlets, and means adjacent each outlet opening for increasing the velocity of the fuel being fed and for discharging the same into said second chamber through a plurality of small openings.

7. Apparatus for feeding gaseous fuel comprising a chamber having an inlet opening and a plurality of outlet openings, a second chamber adjacent the first mentioned chamber and interconnected therewith by means of said outlets, and means having a plurality of small openings therein adjacent each outlet opening and so located that fuel being discharged into said second chamber is discharged thereinto through said plurality of small openings.

8. Apparatus for feeding gaseous fuel comprising a chamber having an inlet opening and a plurality of outlet openings, a second chamber adjacent the first mentioned chamber and interconnected therewith by means of said outlets and a substantially cylindrical tube adjacent each outlet opening, said tubes being closed at one end and having a plurality of small openings therein through which openings fuel is discharged into said second chamber.

9. Apparatus for feeding gaseous fuel comprising a chamber having an inlet opening and an outlet opening in opposite ends thereof, the walls of said chamber intermediate said openings forming a constricted passageway intermediate the ends of said chamber, a substantially cone-shaped member open at both ends mounted in said chamber adjacent the outlet opening thereof and having its small opening cooperating with said outlet opening, a second chamber adjacent said outlet opening, and a substantially cylindrical tube having a plurality of small openings therein mounted in said second chamber adjacent the outlet opening of said first chamber into which gaseous fuel is discharged from said outlet opening, said gaseous fuel then passing into said second chamber through said openings in said tube at an increased velocity.

10. Apparatus for feeding gaseous fuel comprising a chamber having an inlet opening and an outlet opening in opposite ends thereof, a substantially cone-shaped member open at both ends mounted in said chamber adjacent the outlet opening thereof and having its small opening cooperating with said outlet opening, a second chamber adjacent said outlet opening, and a substantially cylindrical tube having a plurality of small openings therein mounted in said second chamber adjacent the outlet opening of said first chamber and into which gaseous fuel is discharged from said outlet opening, said gaseous fuel then passing into said second chamber through said small openings in said tube at an increased velocity.

11. Apparatus for feeding gaseous fuel comprising a chamber having an inlet opening and an outlet opening in opposite ends thereof, a substantially cone-shaped member open at both ends mounted in said chamber adjacent the outlet opening thereof and having its small opening cooperating with said outlet opening, a second chamber adjacent said outlet opening, and a substantially cylindrical tube having a plurality of spirally arranged openings therein mounted in said second chamber adjacent the outlet opening of said first chamber and into which gaseous fuel is discharged from said outlet opening, said gaseous fuel then passing into said second chamber through said spirally arranged openings in said tube at an increased velocity.

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