

No. 778,577.

PATENTED DEC. 27, 1904.

J. L. HAGUE.
OIL GAS BURNER.

APPLICATION FILED JAN. 26, 1903.

Fig. I.

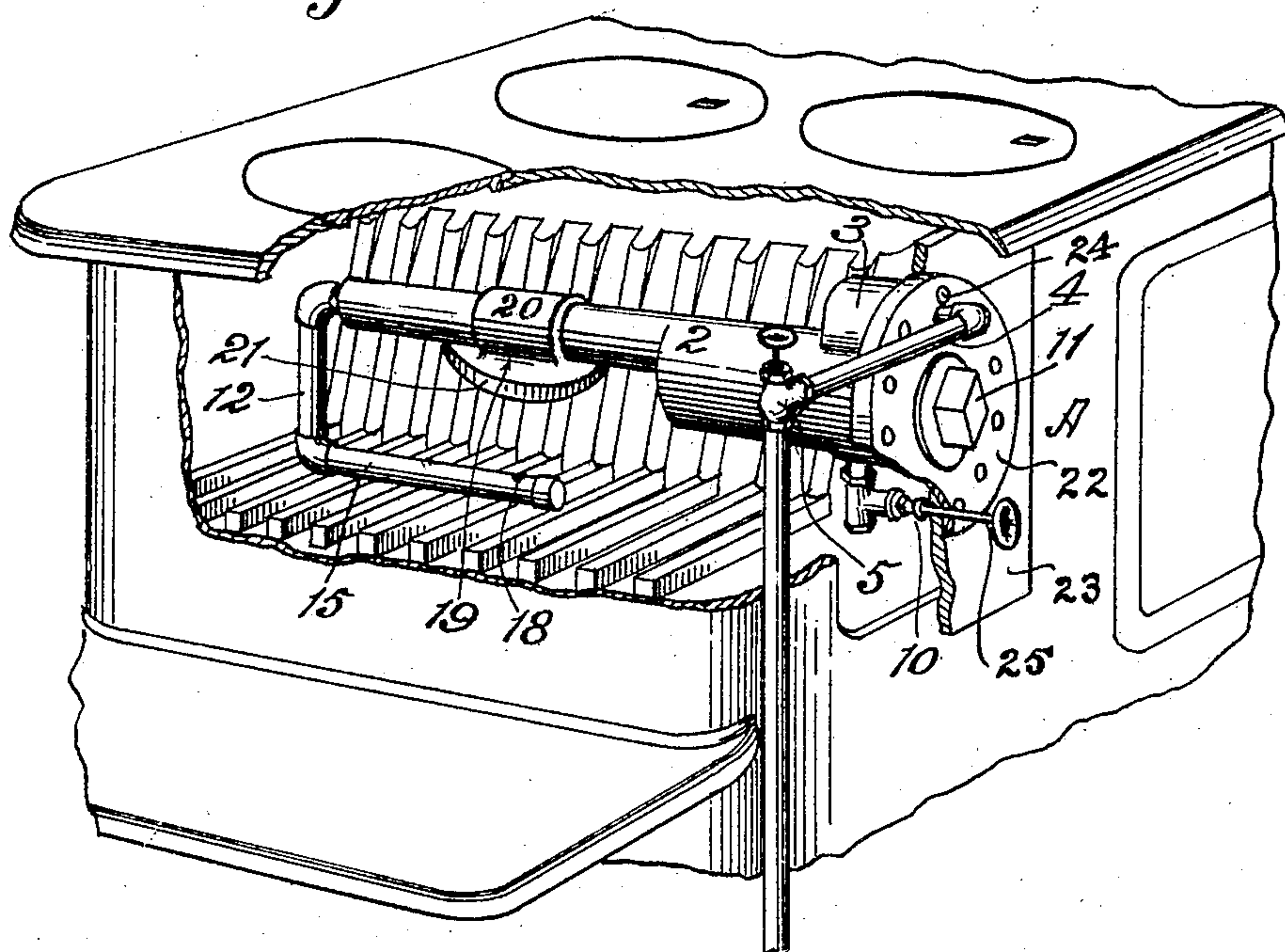
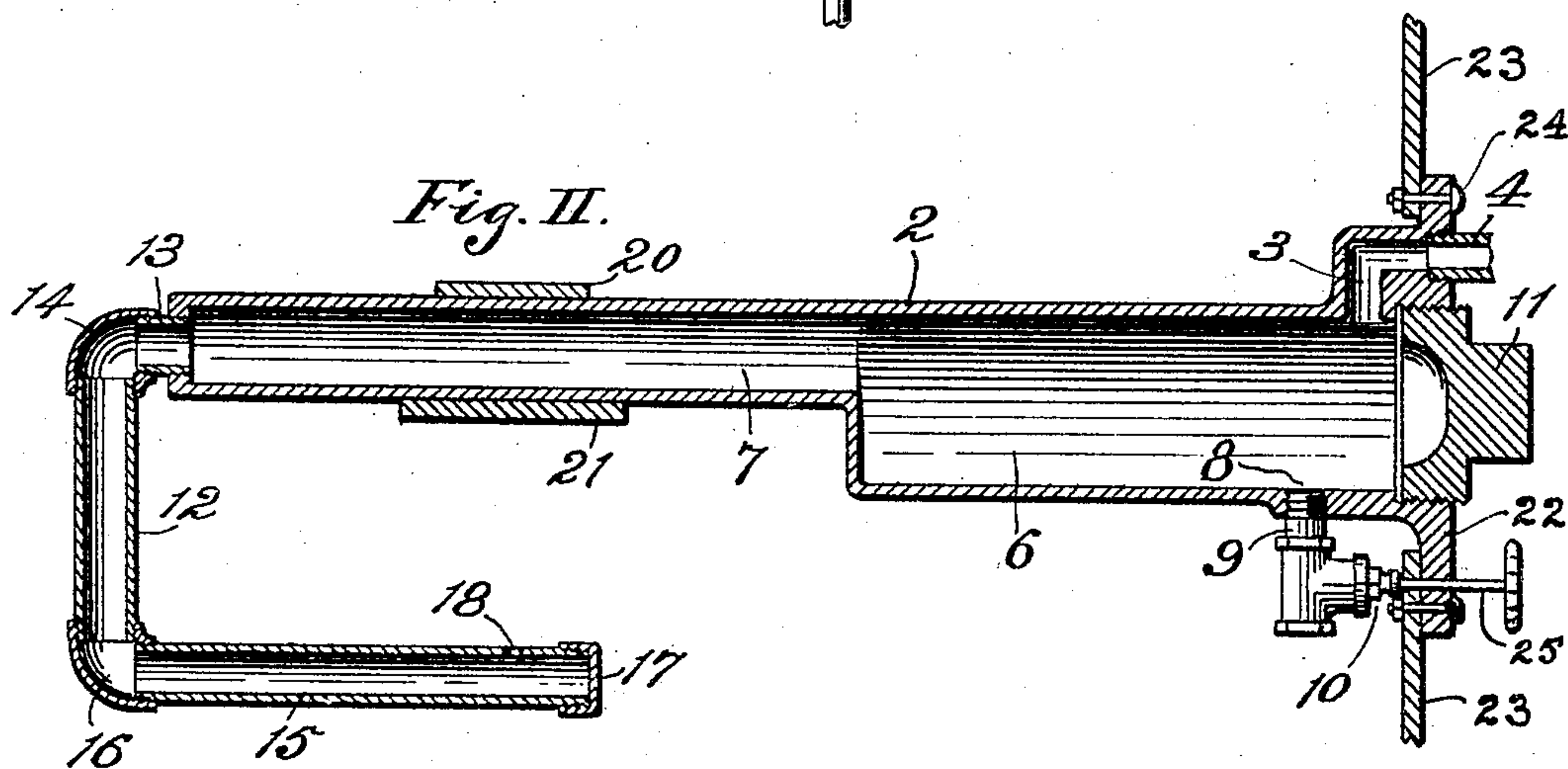


Fig. II.



Witnesses:

C. C. Holly
Frederick D. Hyman

Inventor:

John Leslie Hague

by Townsend Bros.
his atty

UNITED STATES PATENT OFFICE.

JOHN LESLIE HAGUE, OF LOS ANGELES, CALIFORNIA, ASSIGNOR OF ONE-HALF TO FRANK MONAGHAN, OF SANTA ANA, CALIFORNIA.

OIL-GAS BURNER.

SPECIFICATION forming part of Letters Patent No. 778,577, dated December 27, 1904.

Application filed January 26, 1903. Serial No. 140,648.

To all whom it may concern:

Be it known that I, JOHN LESLIE HAGUE, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a certain Improved Oil-Gas Burner, of which the following is a specification.

This invention relates to burners adapted for burning heavy hydrocarbons; and its general object is to provide a simple, cheap, and efficient device whereby heavy crude asphaltum oils may be vaporized and the vapor burned and the heavy residuum drained from the burner.

A further object is to provide in such a burner a vaporizing-chamber comprising a primary chamber into which the crude oil is introduced and a secondary or superheating chamber to which the volatilized portion of the oil conducted from the heavy involatile portions and from which the vapor is conducted to be burned, and to provide means for withdrawing or draining the heavy involatile and residuum portions from the primary chamber.

Other and further objects and ends in view will hereinafter appear from the detail description of construction and operation.

The invention consists, in general, in a horizontal vaporizing-chamber comprising a primary volatilizing-chamber into which the crude or heavy oil is introduced and a secondary or superheating chamber leading from the upper portion of said primary chamber and through which the volatilizable portions of the oil pass and are superheated as they pass therethrough to the burner-jet.

The invention consists, further, in providing means for draining the involatile portions from said primary chamber and in means for directing the burning vapor against said vaporizing-chamber and in means for suitably spreading the flame to thoroughly heat said chamber.

The invention consists, further, in the constructions hereinafter described, and particularly pointed out in the claims, and will be more readily understood by reference to the

accompanying drawings, forming part of this specification, in which—

Figure I is a fragmental perspective view of a stove equipped with an oil-gas burner embodying my invention. Fig. II is a longitudinal sectional view of an oil-gas burner embodying my invention, the same being shown detached from the stove.

As shown in the drawings, A represents a stove or range, a portion of the top plate and fire-pot being broken away to show the burner in position.

2 represents a horizontal pipe or tube having a lateral inlet-duct 3, connected with a suitable supply-pipe 4. A valve 5 is preferably interposed in this pipe to regulate the supply of oil to the burner. The tube or pipe 2 is formed in two portions of varying diameters, the forward or volatilizing chamber 6 communicating directly with the superheating-chamber 7 from the upper portion of said volatilizing-chamber, so that a receptacle is formed into which the heavy involatile portion of the oil is deposited, from which the residuum or heavy involatile portions may be drained through an outlet 8, a drain-pipe 9 being connected thereto and a valve 10 interposed in said pipe to control the drain from the chamber 6.

The end of the pipe 2 is closed by a removable plug 11, by removing which access can be had to the chamber 6 to clean the same, if necessary. Moreover, the chamber 7 being in line with the removable plug 11 access can also be had to said chamber 7 to clean same when said plug is removed. A pipe 12 is connected to the other end of the pipe or tube 2 by a nipple 13 and union or elbow-coupling 14, and this pipe is in turn connected with the pipe 15, by a union or elbow-coupling 16. The end of the pipe 15 is closed by a cap 17.

18 represents the vapor discharge or outlet from the pipe 15, which, as shown, is preferably parallel with the tube or pipe 2, but may be adjusted by revolution in the union 16 or by revolution of the union 14.

19 represents a spreader provided on the tube or pipe 2, and against which the burning

vapor from the outlet 19 is adapted to strike, being thereby directed to all sides. This spreader is preferably provided with a loop 20, adapted to slip on the pipe 2, and a flat flange 21, forming the spreading portion. The spreader is thus adjustably mounted on the pipe or tube 2 and may be turned to direct the flame as desired.

In order that the plug 11 may not be seriously affected by the heat of the fire, it is desirable that it should be outside the fire-box, and to further protect this joint it is desirable that the outer member of the joint should be heavy or thick. I attain both these ends and at the same time provide a convenient support for the whole burner by making the larger or volatilizing-chamber end of the tube 2 with a heavy flange 22, which is fastened to the wall 23 of the fire-box in any suitable manner, as by bolts 24, so that the outer end of this chamber is exposed on the outside of the fire-box when the plug is removed, and said plug and its screw-joint are outside of the fire-box. I have found that when a plug of this character is located within the fire-box or fire-pot it is liable either to be oxidized tightly into place, so that it cannot be removed, or to become so loose on account of the greater expansion of the outer member of the joint that gas will escape at the joint. The described construction also enables the entire burner device to be supported from the wall of the fire-box by flange 22. In practice the residue accumulating at the bottom of chamber 6 is so heavy or thick that it will not flow except when warmed, and it is important that the drainage-outlet should be capable of being opened when the device is hot and a pressure exists in the retort acting to expel the residue. I therefore extend the operating-handle 25 of the drain-valve 10 through the wall of the fire-box so to be accessible from the outside while the burner is in operation. By supporting the superheater and burner tubes on the vaporizing-chamber, which in turn is supported by flange-support 22, I am enabled to more readily maintain the superheater and burner at the high temperature required, the device being attached to the stove by the portion thereof that is naturally lowest in temperature.

The flame from the jet 18 heats the fire-pot and projecting against the tube or pipe 2 heats the same. As the heavy oil enters the chamber 6 the volatilized portion rises and passes through the chamber 7 to the outlet. The heavy involatile portions are precipitated to the bottom of chamber 6, from whence they may be drawn off through the drain-pipe 9. By thus constructing the vaporizing-chamber in two sections any precipitation from the oil is prevented from passing into the chamber 7 or pipes 12 and 15. Any carbonization will take place in chamber 7 and

can be readily cleaned out by removing the plug 11.

It will be noted that the jet from the opening 18 impinges directly upon the spreader 19 and the greatest heat is applied to the superheating-chamber 7. A portion of the reflected heat from the spreader or deflector 19 strikes walls of the chamber 6, thus applying thereto a modified heat which will not cause such precipitate vaporization as to cause carbonization in the chamber 6, which would occur in a vexatious degree were the jet to impinge directly upon the walls of the chamber 6.

Having described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. An oil-gas burner comprising a horizontal tube, said tube having two portions of different diameters, the portion of larger diameter forming the volatilizing-chamber and provided with an inlet, and the portion of smaller diameter forming a superheating-chamber, said superheating-chamber communicating with said volatilizing-chamber above the center thereof, and a discharge-pipe connected with said superheating-chamber and provided with an outlet adapted to impinge its stream against the walls of said chamber, said vaporizing-chamber being provided with a drain-outlet, and means in connection therewith for controlling the passage of involatile portions therethrough.

2. An oil-gas burner comprising a horizontal tube, said tube having two portions of different diameters, the portion of larger diameter having a volatilizing-chamber and an inlet, a removable plug for one end of said chamber, the portion of smaller diameter having a superheating-chamber communicating with said volatilizing-chamber toward the top thereof and in line with the removable plug aforesaid, a discharge-pipe connected with said superheating-chamber and provided with an outlet adapted to impinge its stream against the walls of said chambers.

3. An oil-gas burner comprising a horizontal tube, said tube having two portions of different diameters, the portion of larger diameter having a volatilizing-chamber and an inlet, a removable plug for one end of said chamber, the portion of smaller diameter having a superheating-chamber communicating with said volatilizing-chamber toward the top thereof and in line with the removable plug aforesaid, a discharge-pipe connected with said superheating-chamber and provided with an outlet, and a spreader between said outlet adapted to spread the stream from said outlet.

4. An oil-gas burner comprising a horizontal tube, said tube having two portions of different diameters, the portion of larger diameter having a volatilizing-chamber and an inlet, a removable plug for one end of said chamber opposite the chamber portion of smaller

diameter, the portion of smaller diameter having a superheating-chamber communicating with said volatilizing-chamber toward the top thereof, a discharge-pipe connected with said
5 superheating-chamber and provided with an outlet, and a spreader adjustably suspended from said horizontal tube adapted to divert the stream from said outlet against the walls of said chambers.

10 5. An oil-gas burner comprising vaporizing and superheating chambers formed of a tube having a flange at one end, a removable plug closing said end of the tube, and a burner-pipe connected to the other end of the tube,
15 in combination with a fire-box to which the said flange is attached to support the entire burner device, the aforesaid plug being located outside the fire-box.

20 6. In combination with a fire-box, an oil-gas burner comprising vaporizing and superheating chambers formed of a tube, within the fire-box and opening at one end to the outside of

the fire-box and having a flange at one end, a removable plug closing said end of the tube, and a burner-pipe connected to the other end 25 of the tube.

7. In combination with a fire-box, an oil-gas burner, comprising a vaporizing-chamber, a superheating-chamber connected therewith at the upper part thereof, a burner-pipe con- 30 nected with the superheating-chamber, a drain-outlet from said vaporizing-chamber, and a valve controlling said drain-outlet and having operating means extending outside the fire-box.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, at Los Angeles, in the county of Los Angeles and State of California, this 20th day of January, 1903.

JOHN LESLIE HAGUE.

Witnesses:

FREDERICK D. LYON,
JULIA TOWNSEND.