

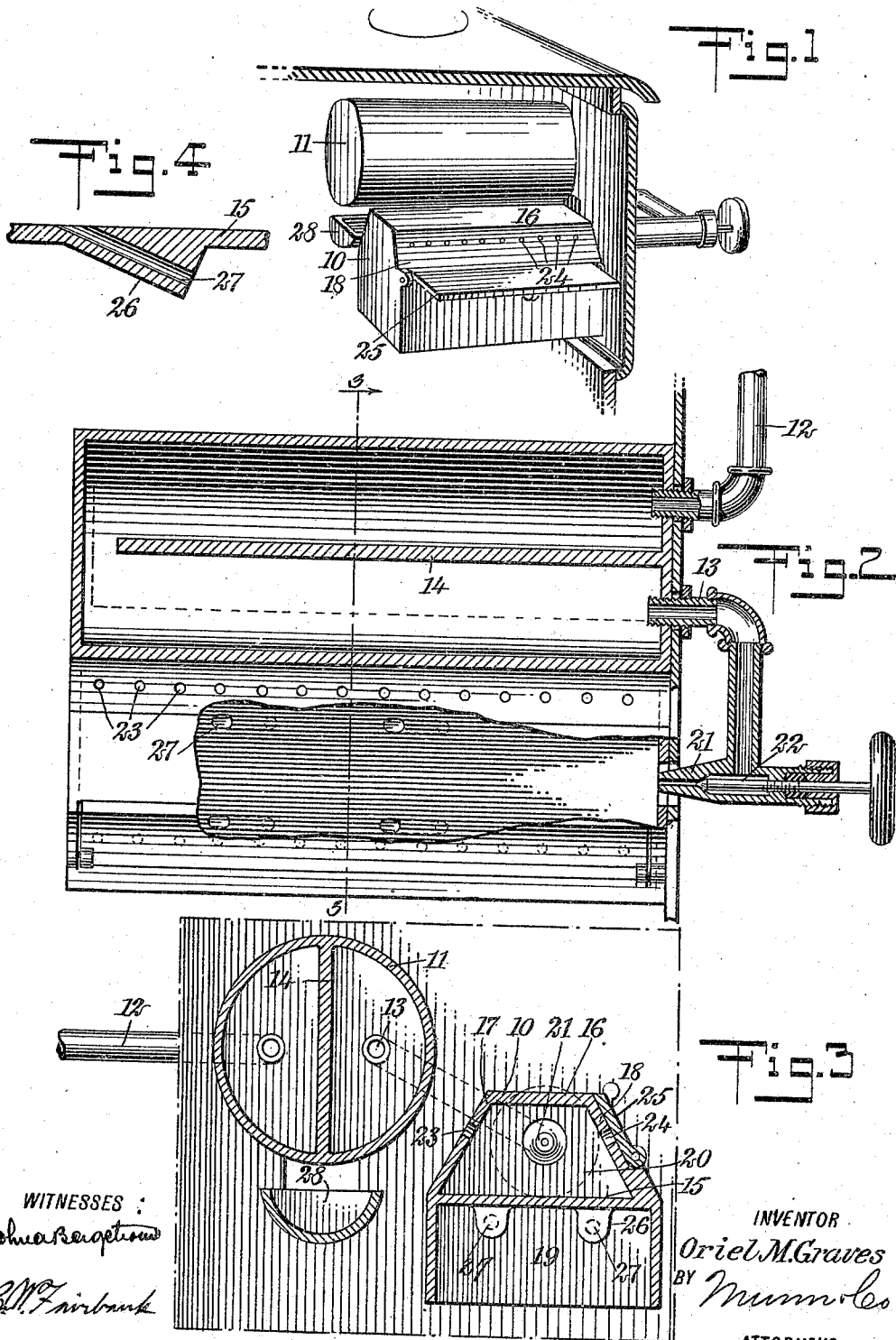
O. M. GRAVES.

BURNER.

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957,857.

Patented May 10, 1910.



UNITED STATES PATENT OFFICE.

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BURNER.

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Specification of Letters Patent.

Patented May 10, 1910.

Application filed March 5, 1909. Serial No. 481,264.

To all whom it may concern:

Be it known that I, ORIEL M. GRAVES, a citizen of the United States, and a resident of Spokane, in the county of Spokane and State of Washington, have invented a new and Improved Burner, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in burners for fluid fuel, and more particularly to a type of burner designed for the use of a liquid fuel and which operates to vaporize the fuel and burn it in a gaseous form.

One object of the invention is to so construct the vaporizing chamber that the liquid will be compelled to travel lengthwise of the chamber and back again before going to the vaporizing nozzle of the burner proper.

A further object of the invention is to provide certain improvements in the construction of the burner, whereby the draft may be controlled and whereby the heat generated may be partially utilized in heating the vaporizer.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures, and in which—

Figure 1 is a perspective view of a burner mechanism constructed in accordance with my invention, a portion of a stove being shown in section; Fig. 2 is a horizontal section through the vaporizer, a portion of the burner proper being broken away; and Fig. 3 is a transverse section on the line 3—3 of Fig. 2; and Fig. 4 is a detail showing the construction of the air inlet to the combustion chamber of the burner.

In the specific form illustrated in the accompanying drawings, I employ a burner proper 10 and a vaporizer 11, adjacent each other and within the casing of the stove. The vaporizer 11 is preferably cylindrical in form, with its axis parallel to the general direction of the burner, and supported on a slightly higher elevation. The vaporizer is provided with an inlet conduit 12 at one end thereof and an outlet conduit 13 leading from the same end. Within the vaporizer is a partition 14, extending longitudinally thereof and connected to one end of the vaporizer intermediate the inlet and outlet of the latter and spaced a short distance from the opposite end of the vaporizer. The liquid is caused to enter the vaporizer

through the conduit 12, travel the full length thereof at one side of the partition, and then return the full length of the vaporizer at the other side of the partition to the outlet 13.

The burner proper includes a casing of a length substantially equal to the length of the vaporizer, and preferably having a flat bottom wall 15, a flat top wall 16, and inclined side walls 17 and 18. The sides of the burner may extend downwardly below the bottom wall 15, so as to form an air chamber 19, from which the air may pass upwardly into a mixing chamber 20 within the burner. The outlet conduit 13 from the vaporizer is connected to a nozzle 21 delivering into the mixing chamber 20 at one end thereof, and within this connection is a needle valve 22, whereby the flow of the vaporized liquid to the burner may be controlled. The inclined side 17 of the burner lies adjacent to but spaced from the side of the vaporizer, and is provided with a series of discharge openings 23. In the opposite inclined side 18, there are a plurality of corresponding openings 24, and hinged to the outer surface of said inclined side and below said opening is a damper plate 25, which when in operative position, covers the last-mentioned openings and prevents the escape of the combustible gases therefrom. The damper plate is hinged along its lower edge, so that it may be readily swung away from said openings to permit the burner to operate at its maximum capacity.

The bottom wall 15 of the burner is provided with a plurality of bosses 26, through which extend passages 27, inclined toward the end of the burner opposite to the delivery nozzle 21. These passages 27 constitute the air inlets to the mixing chamber, and their size and number will depend upon the character of the fuel employed and the pressure and volume at which it is delivered.

In order to heat the vaporizer to start the device in operation, I provide a trough or tray 28, extending longitudinally of the vaporizer below the same, and access may be gained to this tray through an opening in the wall of the stove intermediate the ends of the vaporizer and tray. The fuel is first admitted to the vaporizer and a small quantity of liquid fuel, together with a wick, if desired, are placed in the tray 28 and ignited. The heat from this burning material causes the liquid fuel within the vaporizer

to be converted into a vapor or gas, and upon the opening of the needle valve, the burner may be lighted at the openings 23 and 24 and then the operation of heating the vaporizer will be automatically continued independently of the tray. It will be noted that the openings 23 discharge directly toward the vaporizer, so that the latter is kept heated even though the burner be turned comparatively low. The flame and gases of combustion may escape from the burner slowly through the openings 23, or by opening the damper, they may also escape through the openings 24.

Various changes may be made in the construction of my improved device and within the scope of the appended claims, without departing from the spirit of my invention.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. In combination, a vaporizer having a partition extending longitudinally thereof and spaced from one end, an inlet and an outlet for said vaporizer at the opposite end and upon opposite sides of said partition, a burner adjacent said vaporizer and having

a mixing chamber provided with an air inlet, said burner having a plurality of outlet openings extending along the length thereof and adjacent said vaporizer, a second row of openings opposite to said vaporizer, and a damper plate for controlling said last-mentioned openings.

2. In combination, a vaporizer, a burner disposed adjacent thereto and having a series of outlet openings adjacent said vaporizer, and a second set of outlet openings opposite to said vaporizer, and a needle valve delivering to the interior of said burner adjacent one end thereof, said burner having a series of air inlet passages through the lower wall thereof and each inclined at an angle and delivering the air toward the end of the burner opposite to said needle valve.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ORIEL MUNSON GRAVES.

Witnesses:

O. A. KUCK,
A. A. MOORE.