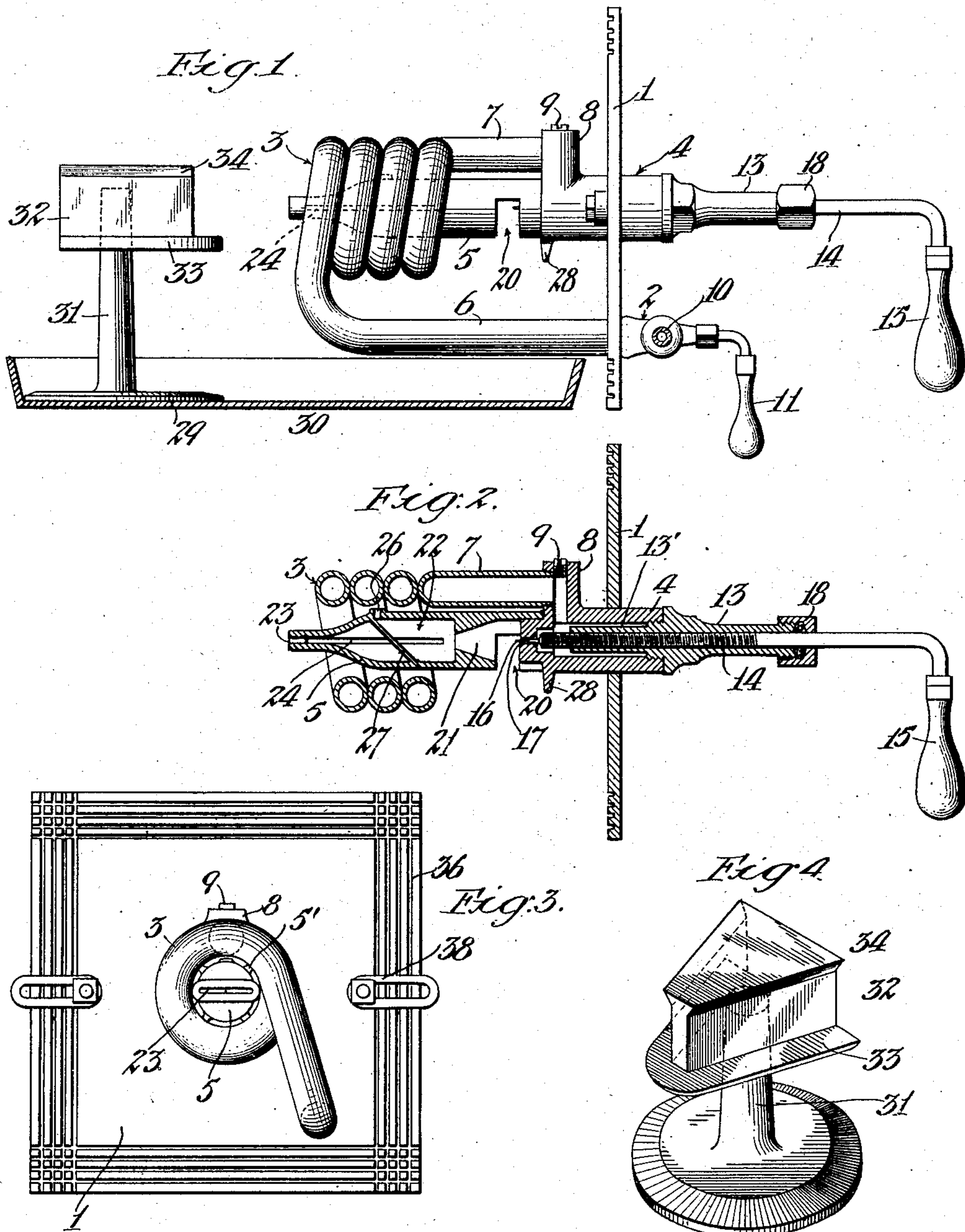


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GAS GENERATING OIL BURNER.
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973,804.

Patented Oct. 25, 1910.



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UNITED STATES PATENT OFFICE.

THOMAS MUEHLEISEN, OF SAN DIEGO, CALIFORNIA.

GAS-GENERATING OIL-BURNER.

973,804.

Specification of Letters Patent.

Patented Oct. 25, 1910.

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To all whom it may concern:

Be it known that I, THOMAS MUEHLEISEN, a citizen of the United States, residing at San Diego, in the county of San Diego and State of California, have invented a new and useful Gas-Generating Oil-Burner, of which the following is a specification.

The main object of the present invention is to provide a burner which will generate and burn gas from hydrocarbon oil without deposition of carbon in the burner.

Another object of the invention is to provide a gas generating oil burner wherein the supply of oils is automatically controlled in response to the demands of the burner, as regulated by manual controlling means.

A further object of the invention is to provide a burner of this character which will be substantially noiseless in operation.

Another object of the invention is to provide improved means for deflecting the heat of the burner in any desired direction.

A further object of the invention is to provide improved means for attaching the burner in a stove.

In the accompanying drawings illustrating the invention: Figure 1 is a side elevation of the burner, showing the firing pan in section. Fig. 2 is a vertical, longitudinal section of the burner. Fig. 3 is an end elevation of the burner, the firing pan being removed. Fig. 4 is a perspective of the deflecting means.

The burner comprises a suitable plate or supporting member 1 adapted to be attached to a stove, for example, an oil supply valve 2, a retort 3 connected to said oil supply valve, a regulating valve 4 connected to said retort, and a burner head 5 extending from and supported on said regulating valve and extending within said retort.

The retort 3 is formed as a helical coil surrounding the burner head 5, one end of the helix being bent to extend in a straight leg 6 parallel to the axis of the helix, the further end of this leg being connected to the oil supply valve 2. The other end of the helix is formed as a straight leg 7 extending parallel to the axis of the helix and screwing into a hollow lug 8 extending upwardly from the body of the regulating valve member 4. Said hollow lug 8 may have a removable screw plug 9 for access thereto. The incoming leg 6 of the generat-

ing retort is below the body of the retort so that the oil supply connection to the retort is at a lower level than the retort itself.

The oil supply valve 2 may be of any suitable construction and is provided with an oil supply connection or pipe 10 leading to any suitable source of oil supply and with an operating handle 11 whereby the valve may be opened and closed. The regulating valve 4 consists of a tubular casing or valve, in the outer end of which screws a plug 13 through which works the screw threaded stem 14 of the needle valve, said stem being provided with an operating handle 15 and with a needle 16 seating in a perforation 17 in the forward end of the valve chamber 4. A gasket 18 may be provided for the stem 14.

The burner head 5 is attached to the forward end of the valve member or chamber 4 and extends forwardly therefrom and is provided directly in front of said chamber or member 4 with a transverse slot or open bottomed recess 20 into which the outlet 17 of the valve chamber 4 opens, and directly in front of the said transverse slot said burner head is provided with a forwardly convergent or tapering recess 21 communicating at its forward end with the interior chamber or mixing chamber 22 in the burner head. The front end of the said burner head is flattened out and widened to form a wide discharge slit 23 forming the main outlet for the burner. In addition to said main outlet, said burner may be provided with one or more auxiliary outlets for furnishing a flame for heating the retort 3. For this purpose saw kerfs or slits 24 may be formed in the sides of the burner head 5, or an opening 26 may be formed in the top of said burner head with an inclined deflector strip 27 directly beneath said opening to force the gas therethrough, or as shown in the drawing both of these expedients may be used to provide auxiliary jets for heating the retort.

It will be noted that the main retort is out of the path of the main heating flame from the outlet 23 and is heated practically by the auxiliary jets only. Regulating valve 4 is provided with a depending apron or lip 28 below the outlet 17 of the needle valve to spread the oil dripping therefrom in starting the burner, and prevents the oil from

running backward upon the burner. Burner head 5 preferably has lugs 5' to fit within the coil 3.

30 designates a firing pan which extends under the burner to catch the drip from the outlet 17 in starting. A base 29 resting on said firing pan is provided with a standard 31 on which rests a deflector 32 of substantially triangular form in horizontal cross section, said deflector having a horizontally extending flange 33 around its lower edge and an upwardly and outwardly beveled flange 34 at each side thereof along its upper edge.

To facilitate attachment of the plate 1 to the stove, said plate is preferably provided with a series of grooves 36 adjacent to each edge thereof so as to render it readily frangible along the lines of these grooves, whereby it can be fitted to different sizes of stove openings by breaking off the peripheral portions of the plate along one or the other of the grooves. The burner is attached to the stove by removing the usual side door for the firing pan, and after bringing the plate 1 to proper size, as stated, said plate is clamped against the side of the stove by means of clamps, as indicated at 38.

In starting the burner in operation oil is turned on at valve 2, thereby filling the retort with oil and causing oil to flow through the outlet 17 of the regulating valve. Said oil drips over the lip 28 and into the firing pan 30 where it is ignited. The heat of the oil burning in the firing pan quickly heats the oil in the retort 3 so as to generate vapor therefrom and said vapor issuing through the opening 20 into the interior chamber or mixing chamber 22 of the burner head from this chamber. A part of the mixture passes through the outlet 23 to produce the main burner flame and another portion passes through the auxiliary outlet 24 or 26 to form the auxiliary flame for heating the retort. Inasmuch as the retort is not subjected to direct heat of the main burner flame, it is possible to maintain the retort at a temperature considerably below that of the main burner flame and thereby prevent any carbonizing or breaking up of the oil, the heat furnished by the auxiliary jets being just sufficient to cause the oil to expand into vapor without breaking up the oil or causing it to deposit carbon. The main burner flame issuing from the outlet 23 impinges against the deflector 32 and by the flanges 33 and 34 of said deflector it is directed laterally to one side or the other according to the position of the deflector. Thus by turning said deflector on its support 31 so that the end thereof nearest the burner points toward the front of the stove, the flame is caused to be deflected toward the rear of the fire box so as to heat the oven, or by turning the deflector so that its said portion points toward

the rear, the flame is deflected toward the front, thereby heating more effectively the front portion of the top of the stove. The flanges 33 and 34 upon the deflector serve to concentrate and direct the flame in the direction desired, and prevent the breaking or scattering of the blast as it is delivered from the end of the burner 23. After the oil valve 2 has once been opened and the retort has been brought into effective operation so that the vapor is being generated as fast as required, the regulation is effected by the presence of the generated vapors in the retort upon the supply of oil in the pipe outside the zone of the flame or heat. It is to be understood that as the gas is released from outlet 17 a corresponding supply of oil is brought into supply pipe 6 which is then generated into vapor. I have found that a pressure of two pounds to the square inch upon the oil supply is sufficient to furnish gas for my burner, but a pressure of four pounds or more may be employed. The flame and gas supply is regulated solely by the handle 15 without changing the position of the oil supply valve after the retort is heated, since the condition of pressure produced within the retort operates to automatically hold back the oil or to allow flow of oil, according to whether the regulating valve is closed or open.

An important feature of the burner is that the oil supply connection is below the retort and the incoming leg 6 is below the coiled portion of the retort on which the heat is directed so that after the burner is once in operation there is no possibility of oil dropping into the hot portion of the retort by gravity, but the vapor rises from the oil surface in a continuous and steady manner, doing away with pulsations and noise. The fact that the air inlet is inside the fire-box also contributes to rendering the burner noiseless. This fact is also of advantage in that it supplies hot air to the burner and therefore produces more complete combustion. The flattening of the forward end of the burner head also tends to render the flame noiseless and also is of advantage in that it tends to deflect the combustible mixture laterally to the auxiliary outlets. The burner is particularly adapted for use with low grade oils, such as coal oil and distillates. The plug 13 which closes the outer end of the regulating valve casing is preferably provided with a forward tubular extension 13' extending into proximity to the needle valve outlet 17, so as to provide for absolute centering of the needle valve by giving a long, true bearing for the screw.

What I claim is:

1. An oil burner comprising an oil supply connection provided with a valve, a retort having an inlet connected to said

valve, a regulating valve connected to the outlet of said retort, a combined burner head and mixing chamber connected to said regulating valve and extending therefrom within the retort, said burner head and mixing chamber having a main outlet for producing a main burner flame and auxiliary outlets for directing auxiliary heat onto the retort, and a deflector in said mixing chamber to force the gas through said auxiliary outlets, said retort being out of the path of the main burner flame, so that the retort is subjected only to sufficient heat to vaporize the oil without carbonizing it.

2. An oil burner comprising an oil supply connection provided with a valve, a horizontally disposed inlet pipe connected to the valve and having its inner end bent upwardly and formed into a coil comprising a retort above the inlet pipe, and a longitudinally disposed combined burner head and mixing chamber within said retort having

a connection with said retort provided with a regulating valve, said burner head and mixing chamber being flattened at its forward end and provided with a main outlet opening in the flattened portion and having auxiliary openings in the sides of the burner head and mixing chamber for directing a portion of the flame on said retort, said burner head being also provided with an opening at the rear thereof within which said regulating valve is fitted and having its inner walls converging toward said mixing chamber, part of said walls being cut away to form an air inlet between said regulating valve and said mixing chamber.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 16th day of August 1909.

THOMAS MUEHLEISEN.

In presence of—

A. P. KNIGHT,
FRANK L. A. GRAHAM.