

No. 747,434.

PATENTED DEC. 22, 1903.

F. W. JAEGER.
OIL BURNER.

APPLICATION FILED NOV. 25, 1902.

NO MODEL.

FIG. 1.

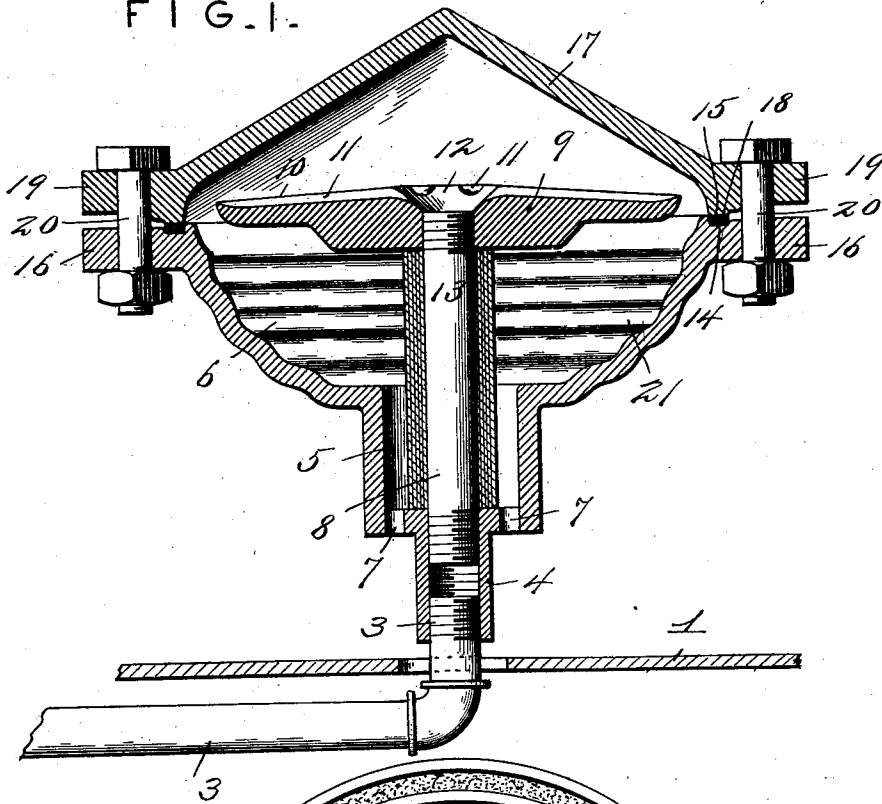
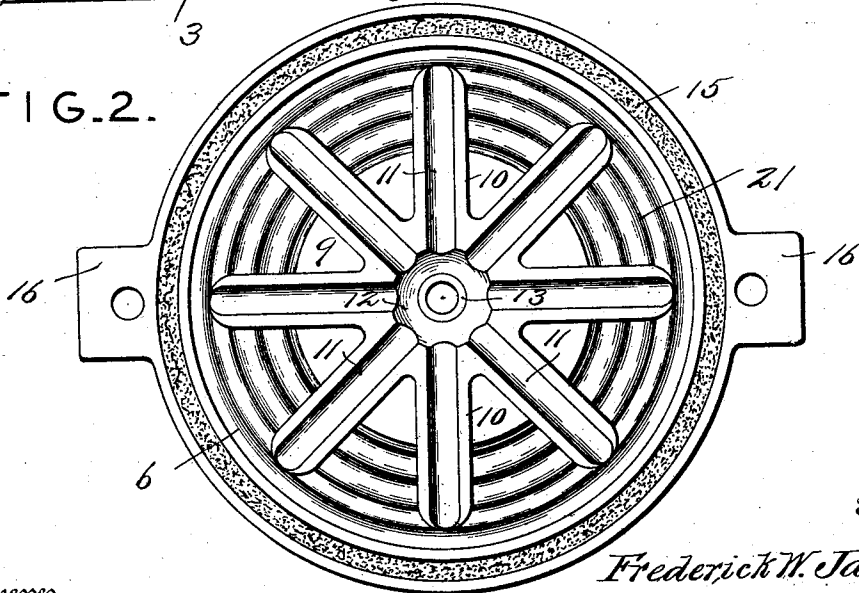


FIG. 2.



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OIL-BURNER.

SPECIFICATION forming part of Letters Patent No. 747,434, dated December 22, 1903.

Application filed November 25, 1902. Serial No. 132,809. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK WILLIAM JAEGER, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented new and useful Improvements in Oil-Burners, of which the following is a specification.

This invention relates to an oil-vaporizing burner of that class in which oil-gas is generated and mixed with a certain amount or percentage of air and adapted to burn a low grade of refined oil, ordinarily known as a "distillate" oil and of a low gravity, or any ordinary petroleum-oil generating an oil-gas which will burn with an intense heat and a clear flame. The burner is easily attached to any type of stove, range, furnace, boiler, or wherever wood or coal is used for heating and cooking. In disposing the improved device in a stove, range, or other heating means it is placed in an upright position in the fire-box or combustion-chamber after removing the grate and replacing the latter with a draft-plate having a central opening therein over which the improved burner is held.

The improved burner meets all the requirements for liberating hydrogen gas from oil by bringing the latter as an entirety into direct contact with the hot surface of a hermetically-sealed retort or vaporizing-dome. The flame when the burner is in operation is circular in form and located at the lower end of the burner, and the function of the draft-plate is to supply the oxygen and permit it to be absorbed by the hydrogen of the oil and produce an intense heating-flame. The air and gas can be proportionately supplied to each other at will, and the supply of oil is under the control of a needle-valve to raise and lower the flame by the regulation of the flow of oil, and thereby maintain a steady uniform heat at any temperature desired.

In the drawings, Figure 1 is a transverse vertical section of the burner on an enlarged scale. Fig. 2 is a top plan view of the lower portion of the burner with the vaporizing dome or retort removed.

Similar numerals of reference are employed to indicate corresponding parts in both views.

The numeral 1 designates a draft-plate constructed of suitable metal and of such dimensions as to accurately fit within a fire-box or combustion-chamber of a stove, range, or other analogous device and having an opening through the center thereof. The complete vaporizing-burner is held at a suitable elevation above the plate 1 by means of an oil-feeding pipe 3, which passes down centrally through the plate and outwardly from the stove, furnace, range, or other device at any suitable point and connects with an oil-supply tank at a convenient location. At a suitable point within the oil-supply pipe, exteriorly of the range, stove, or other heating device, is a needle-valve of usual construction, which is operated to control the flow of oil through the said supply-pipe. The supply-pipe 3 extends upwardly a suitable distance and connects with an interiorly-screw-threaded collar 4, depending from the lower extremity of a gas-supply chamber 5, forming a part of a vaporizing-chamber 6 of shell-like form. The bottom of the chamber 5 is formed with a series of gas-outlet openings 7, and rising from the collar 4 and extending centrally through the chambers 5 and 6 is an oil-feeding pipe 8, having a distributor or spreader 9 secured on the upper end thereof and comprising a series of radial arms 10 with grooves or gutters 11 in the upper sides thereof, communicating at their inner terminals with a central recess 12. The arms 10 have their upper surfaces inclined downwardly toward their outer ends, and the upper end of the oil-feeding pipe 8 is completely opened to the recess 12. The feeding-pipe 8 is wrapped with an asbestos wick or strip 13 to serve as a means for starting the burner and will be more fully hereinafter explained. The asbestos wick or strip also serves as a means for gathering and holding accumulations from the oil which are liberated by combustion and prevent such accumulations from running downwardly and clogging the lower end of the gas-supply chamber or running over the oil-supply pipe. In the upper edge of the vaporizing-chamber a circular groove 14 is formed to provide a

packing-seat for the reception of an asbestos ring 15, and at diametrically opposite points ears 16 project outwardly from the upper edge of said chamber and are apertured to receive connecting devices. Disposed over the upper open end of the chamber 6 is a retort or vaporizing-dome 17 of inverted conical form and formed with a lower depending rib 18, extending entirely therearound, of the same width as and adapted to be firmly pressed against the packing-ring 15 to establish a tight joint between the mixing-chamber and the retort or dome. The retort or dome also has diametrically disposed apertured ears 19, and therethrough and through the ears 16 connecting-bolts 20 are inserted and hold the vaporizing-chamber and the retort or dome in immovable joined relation. The arms 10 of the distributor or spreader are of less diametrical extent than the interior of the vaporizing-chamber and the retort or dome, and said distributor or spreader is held at such elevation as to be in operative proximity to the inner surface of the retort or dome. To render the mixing-chamber 6 more effective in its operation, it is circumferentially corrugated, as at 21, to form a series of troughs or gutters to receive the oil and retard its downward flow to such an extent as to insure a rapid preliminary vaporization, particularly in starting the burner.

In starting the burner the needle-valve in the supply-pipe is opened to permit a small quantity of oil to flow outwardly over the arms 10 of the distributor or spreader, it being understood that the oil-supply tank will be located at such an elevation that the oil in seeking a level corresponding to that in the tank will flow over the arms of the distributor or spreader in the manner stated. The needle-valve is then closed, and the oil from the arms passes down to the under side of the distributor or spreader and is absorbed or flows over the asbestos surrounding the oil-feeding pipe 13. A torch or other igniting medium is then applied close to the bottom of the chamber 5 to ignite the oil on the asbestos 13 through the openings 7 and that which remains in the gutters 11 of the arms 10. The combustion of this initial supply of oil thoroughly heats the entire burner and places it in a condition for rapid vaporization, and after a certain length of time the needle-valve is again opened and the oil permitted to flow into the heated burner, where it is vaporized, and the gas passes down to the chamber 5 and out through the openings 7, where it absorbs the oxygen fed through the plate, and the mixture becomes ignited and forms a circular white flame about the lower end of the burner. The combustion of the gas at the lower end of the burner establishes a suction which draws the air through the plate 1, and the liberated oxygen mixes with the hydrogen of the oil and sets up a flame of in-

tense heating qualities. The heating capacity of the burner is regulated, as before indicated, by the amount of oil permitted to run into the burner, and as the latter is practically closed thorough vaporization and combustion of the oil will ensue and an intense heat will be regulated.

It will be understood that the proportions and dimensions of the several parts of the burner may be varied at will to accommodate different applications, and it is proposed to use metal in the construction of the several members which are affected by the intense heat of such degree of hardness as to render the same virtually refractory, and thereby prolong the practical use of the improved device.

Having thus described the invention, what is claimed as new is—

1. In a heating device of the class set forth, a draft-plate with a single opening through the center thereof, a closed vaporizing-burner supported above the draft-plate and having a connection with an oil-supply and a gas-chamber with bottom outlets, the connection with the oil-supply passing upwardly through the chamber and said outlets forming the sole means of escape of the gas from the heating device, an oil-distributor held within the burner at an elevation above the gas-chamber and to which the oil directly feeds, said distributor being provided with radial arms having grooves extending longitudinally thereof, and an asbestos wrapping around said means for supporting the oil-distributor, a space being formed between the outer surface of the asbestos wrapping and the adjacent wall of the burner of the heating device whereby the vaporized oil or gas is permitted to flow downwardly toward and out through the bottom outlets of the gas-chamber.

2. A heating device of the class set forth, comprising a hollow closed vaporizing-burner with lower gas-outlet openings, the latter forming the sole communicating means to the exterior of the burner, an oil-feeding pipe extending upwardly into the interior of the burner and having an asbestos wrapping thereon, a distributor held on the upper extremity of the feeding-pipe and having radial arms over which the oil flows to the wrapping on the pipe holding said distributor, the said arms being regularly spaced apart and having a combined diameter less than the interior diameter of the portion of the burner where they are positioned, and means for supplying oil to the burner.

3. A heating device of the class set forth, comprising a draft-plate for arrangement over a grate and having a central opening therein, a shell-like vaporizing-chamber formed with a series of circumferential corrugations and having a depending gas-chamber with outlet-openings in the bottom thereof, directly over the opening in the draft-plate and forming the

5 sole means of communication with the exterior space around the burner, a dome securely fastened and forming a tight joint with the upper edge of the vaporizing-chamber, thereby providing a closed vaporizing-burner, an oil-feeding pipe extending upwardly through the gas and mixing chambers, an oil-distributor held on the upper end of said pipe and

having a series of radial arms, and means for supplying oil to the burner.

In testimony whereof I affix my signature in presence of two witnesses.

FREDERICK WILLIAM JAEGER.

Witnesses:

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