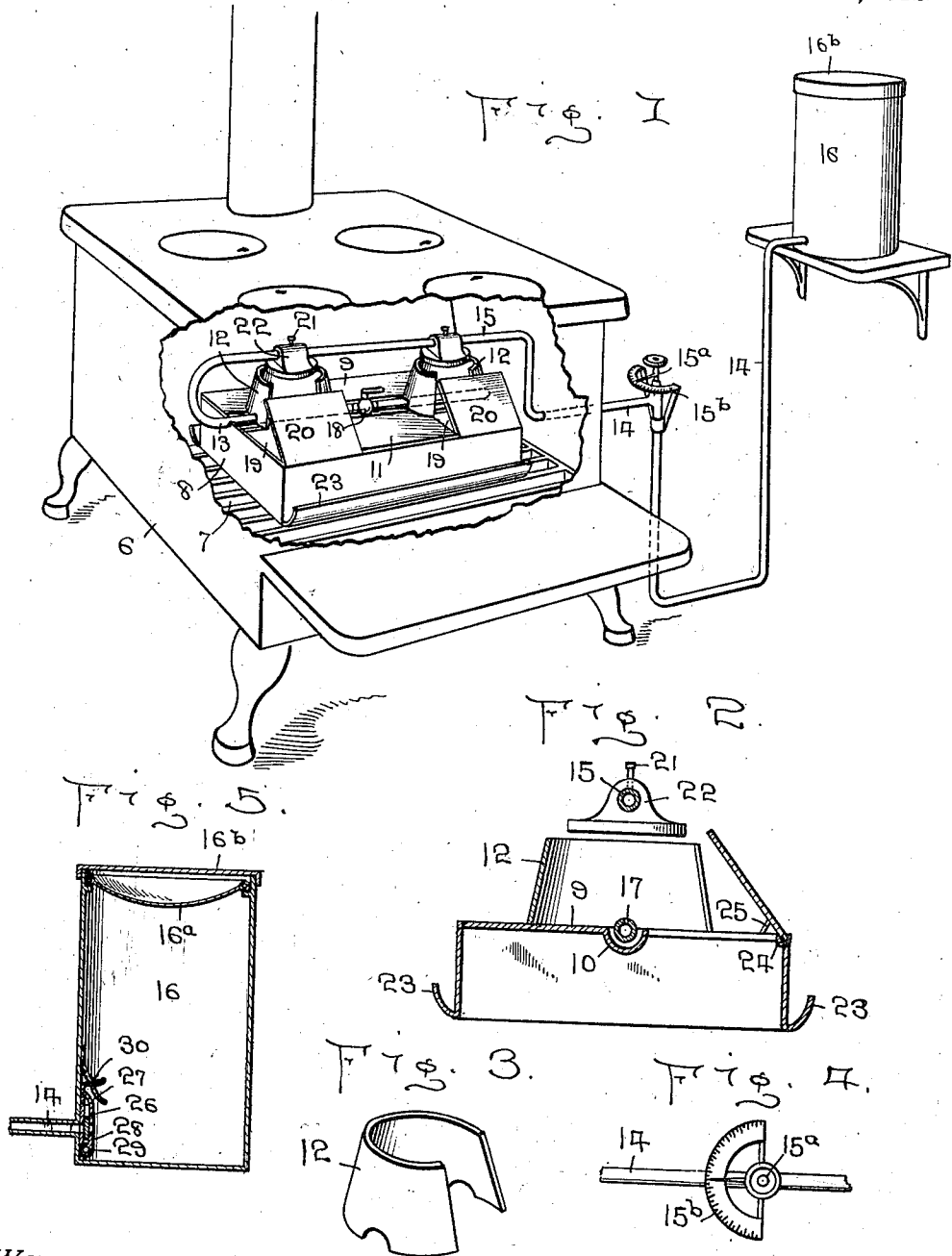


E. E. HICKERSON.
 COMBINED GAS GENERATOR AND BURNER.
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COMBINED GAS GENERATOR AND BURNER.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ELMER E. HICKERSON, a citizen of the United States, residing at McComb, in the county of Hancock and State of Ohio, have invented certain new and useful Improvements in Combined Gas Generators and Burners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a combined gas generator and burner, and it particularly relates to a device of this character designed to be used in connection with a cooking stove of ordinary construction.

An object of the invention is to provide a device of this character which may be fitted into the firebox and seated upon the grate of stoves of different sizes, or having different sized fireboxes, with equal efficiency.

A further object is to provide a device of this character having a bottomless air chamber on which the gas burners are located and from which, or through which they receive the necessary oxygen for combining with the gas.

A still further object is to provide a combined fuel supply pipe and generator pipe and burner pipe, all in one piece, and thereby combining economy and efficiency in the construction thereof.

A still further object is to provide a mixing chamber surrounding the gas jet and having an open side through which the flame may be inspected, and if necessary adjusted, without removing or disarranging any of the parts.

A still further object is to provide a valve for regulating the flow of liquid fuel through the pipes, and an indicator associated therewith for gauging the flow of fuel.

A still further object is to provide a fuel supply tank communicating with the supply pipe and having a novel clasp or clamping device, therein for holding a piece of filtering material.

Other objects and advantages will be hereinafter set forth and pointed out in the claims.

In the accompanying drawings which are made a part of this application, Figure 1 represents a stove with the burner applied and having a section broken out through which the burner may be seen. Fig. 2 is a

vertical sectional view through the generating and burner pipes and through one of the mixing chambers. Fig. 3 is a perspective detail view of one of the mixing chambers removed. Fig. 4 is a detail plan view of the gauge or indicator, and, Fig. 5 is a vertical sectional view taken centrally through the fuel supply tank and a section of the supply pipe.

Referring more particularly to the drawings in which similar reference numerals designate corresponding parts throughout the several views, 6 indicates a stove of ordinary construction and 7 indicates the grate bars thereof. A bottomless air chamber 8 is seated upon the grate bars and has the cover 9 formed with a trough 10 and a tongue 11. A pair of arcuate mixing chambers 12 are seated on the cover and secured thereto by any proper means. The mixing chambers are apertured at their base while the air chamber has a corresponding aperture at two opposite edges, and in these apertures is seated the burner pipe 13. This burner pipe comprises one member of a combined fuel supply pipe and generator pipe and burner pipe, the supply pipe being designated 14 and the generator pipe 15. This combination consists of a length of pipe bent over so as to constitute the two horizontal sections 13 and 15, while the fuel supply pipe extends through an aperture in the side of the stove 6 and communicates with the fuel supply tank 16, which may be supported in any convenient manner above the level of the burners.

The generator pipe section lies directly over the burner pipe section, the latter having one or more jet openings, as indicated at 17, which are disposed centrally within the mixing chambers. A cut-off valve 18 is located between the jets 17 so that one or both of the burners may be used, as desired. The cover 10 is provided with openings 19 at each side of the tongue 11, and over these openings are located deflector plates 20 which are inclined in the direction of the mixing chambers. The mixing chambers are open at their top, also at the side next to the deflector plates.

Secured to the generator pipe 15, by any proper means such as, for instance, set screws 21, are the spreaders 22, centrally located over the gas jets and adapted to spread the flame when the gas from said jets is burning. The sides of the air chamber 8

may be provided with yielding flanges 23, which may be bent up or down, as desired in order to close the spaces between the exterior walls of the air chamber and the interior walls of the stove, or fire box, and thereby direct the major part of the air, passing through the grates, through the air chamber.

The deflector plates 20 may be hinged onto the air chamber as at 24, and may be provided with a stop 25 which rests upon the end wall of the air chamber for holding the deflector in its normal position. When, however, it is desired to inspect, clean or repair the gas jets, the deflector may be easily drawn away from the gas jets and thereby provide ample working room.

The oil tank 16 is preferably provided with a strainer 16^a and with the usual tightly fitted cover 16^b. The fuel supply pipe 14 communicates with said supply tank at a point near the bottom thereof, and a piece of suitable filtering material 26 is placed over the aperture by which the tank and pipe communicate.

It is well known that the perfect operation of oil or gas burners depends largely upon the use of clean fuel, and also depends largely upon a plentiful supply of said clean fuel. It is known moreover, that where a small piece of fibrous material is employed as the filtering element, the same soon becomes practically impenetrable because of the accumulation of sediments therein and thereon, and consequently, in order to provide for always having the oil flow freely through the pipe, it will be necessary to renew the filtering element quite often. I provide for quickly and easily renewing the filtering element, by means of the mechanism shown in Fig. 5, in which two apertured members 27 and 28, are hinged together at 29 and are provided with a spring clasp 30. These elements constitute a clasp member which is secured to the inner wall of the supply tank and has its apertures in registration with the outlet aperture of the tank, and by swinging the member 28 outward, the filtering element 26 may be quickly placed and the member 28 may be quickly snapped back into the position shown.

In operation, liquid fuel passes from the supply tank through the supply pipe, and the quantity thereof is regulated by the valve 15^a and the gauge 15^b, and the oil continues its course thence and flows through the jets 17 and fills or partly fills the priming trough 10, whereupon the supply is cut off by means of the valve 15^a, and the fuel within the trough is ignited, thereby heating the pipe sections 13 and 15 to such an

extent that if the oil is immediately thereafter admitted into said pipes the heat upon the latter generates gas within the pipes, and the burning of the gas from the jets keeps the generator pipe 15 continually hot enough to continue the generation of the gas so long as fuel is admitted through the pipe.

Of course it is necessary to properly supply and mix oxygen with the gas, and this is provided for by the particular construction and relation of elements, in which the air passes upward between the grate bars, through the air-chamber and through the openings 19 into the mixing-chamber, the deflectors 20 causing the air to pass into said chamber through the side opening thereof.

I do not limit the invention to the exact details of construction herein shown and described, but the invention is limited only by a reasonable interpretation of the appended claims.

What I claim is:—

1. In a gas generator, a combined oil supply pipe and gas generator pipe having a heat spreader thereon, a burner pipe having a jet opening therein, a mixing chamber seated between the first said pipe and the burner pipe and partially surrounding the jet opening, said mixing chamber being open at one side, and an inclined deflector located adjacent to the jet opening and opposite to the open side of the mixing chamber for causing air to pass into said chamber through said open side.

2. In a gas generator, a combined oil supply pipe and gas generator pipe, a burner pipe having a jet opening, a bottomless air chamber on which the burner pipe is seated, a mixing chamber having an open side and being seated upon the burner pipe and upon the air chamber, the first said pipe communicating with the burner pipe, said jet opening being within the mixing chamber and adapted to direct a flame against the first said pipe, and a deflector hinged on the air chamber and being inclined upwardly toward the open side of the mixing chamber for directing the passage of air thereinto, said deflector having a stop for holding it in proper relation to the mixing chamber independently thereof, said deflector plate being adapted to be swung away from the open side of the mixing chamber for the purpose specified.

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

ELMER E. HICKERSON.

Witnesses:

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