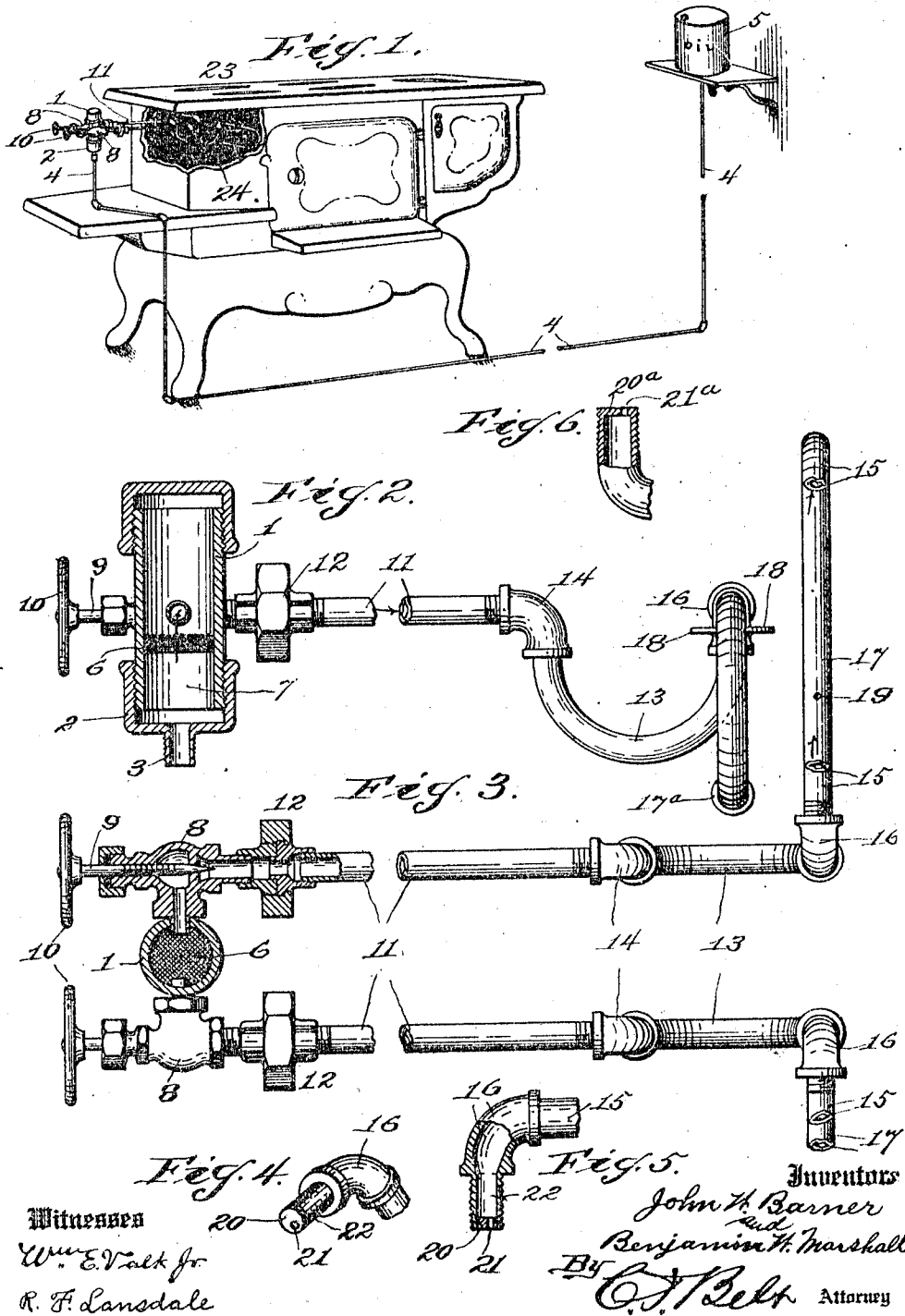


J. W. BARNER & B. W. MARSHALL.
VAPOR GENERATOR AND BURNER.
APPLICATION FILED APR. 20, 1912.

1,051,828.

Patented Jan. 28, 1913.



UNITED STATES PATENT OFFICE.

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VAPOR 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 we, JOHN W. BARNER and BENJAMIN W. MARSHALL, citizens of the United States, residing at Vicksburg, in the county of Warren and State of Mississippi, have invented certain new and useful Improvements in Vapor Generators and Burners, of which the following is a specification.

10 This invention relates to the general class of liquid and gaseous fuel burners, and especially to the particular class of fuel-feeding oil burners.

The object of the invention is to provide 15 an oil-vapor generator and gas burner having certain novel and peculiar features of construction and arrangement of parts whereby improved results are attained in this class of burners.

20 A further object of the invention is to provide a simple, inexpensive, and perfectly operative apparatus for generating coal oil or petroleum oil into gas, as the latter is burned in or by the apparatus for heating or 25 lighting purposes, and to furnish such apparatus as may be conveniently and expeditiously installed in or attached to an ordinary range or cooking stove.

A still further object of the invention is 30 to provide a special arrangement of oil pipes leading from an oil chamber, which is connected with an oil tank or other suitable oil storage, and to furnish such chamber with an oil screen or strainer through which 35 the oil passes to said oil pipes, whence the oil is forced to the overlying pipes.

The object still further of the invention is to provide an oil check device between the overlying pipes and the oil pipes for reducing the amount of oil to the smallest measure 40 necessary to produce sufficient gas for heating or lighting purposes.

Various other objects, advantages and improved results are attainable in the practical 45 application of the invention.

In the accompanying drawings forming part of this application:—Figure 1 is a perspective view showing the application of the invention. Fig. 2 is a sectional view of

the oil reservoir showing one line of pipes in 50 elevation. Fig. 3 is a cross section taken through the reservoir and one of the valves, showing the pipes in elevation, partly broken away. Fig. 4 is a detail perspective view of the portion of a pipe containing the 55 check device. Fig. 5 is a sectional view of the parts shown in Fig. 4. Fig. 6 is a sectional elevation of a modification.

The same reference characters denote the same parts throughout the several views of 60 the drawings.

It should be understood that in order to make burners of this class practically useful as a substitute for wood, coal, or other solid fuel in cooking ranges and heating stoves, 65 the danger of explosion should be eliminated as far as possible, and the non-combustion of gas or vapor after extinguishment of the flame, which is a well known cause of explosion, should be avoided, this we have accomplished by introducing into the oil path 70 or channel, means for reducing the flow of liquid fuel to the generator or overlying pipes according to the pressure of oil in the apparatus, and by arranging such means in 75 such position as to require the oil to be raised or forced through said reducer, so that all gas or vapor is consumed by the jet flame after the supply of oil from the reservoir has been cut off, notwithstanding the 80 fact that the pipes between the reservoir and the generator or overlying pipes contain oil.

In carrying out the invention we employ a casing 1, having a closed upper end, and a removable screw-cap 2 for closing the bot- 85 tom of the casing, and such cap is provided with a screw-nipple or stem 3, for connecting an oil supply pipe 4, leading from an elevated oil-tank or storage receptacle 5. The casing is provided with an oil strainer or 90 disk 6 composed of wire gauze or other suitable fabric material secured in the lower portion of an oil reservoir 7, formed by the casing. Two needle-valves 8 are connected with the oil chamber or reservoir 7, above the 95 strainer 6, and diametrically opposite each other, and said valves are operated by stems 9 having the usual hand knobs or wheels 10,

for opening and closing oil communication between the oil chamber 7 and oil pipes 11, which are connected with the valves by means of pipe-nut couplings 12. The pipes 11 may be any desired size and length, and while they are shown in horizontal parallel position, such position may be varied as desired or as occasion may demand.

In order to permit the oil to fall from the pipes 11 below the surface of the oil contained in the reservoir or chamber 7, the pipes 11, have one end of drop-pipes 13 forming oil reservoirs and connected therewith by L-couplings 14, and the other end of the drop-pipes is connected with gas generation pipe-sections 15, by means of L-couplings 16, and the sections 15 extend outwardly from the drop-pipes in opposite directions laterally and terminate in gas burner pipe-sections 17, having a closed end 17^a, positioned at a proper or suitable distance from and under the sections 15, so as to form two sets of overlying pipe-sections. The sections 15 are provided with a flame deflector 18, and the sections 17 are provided with a gas jet or aperture 19.

It is essential that only a limited amount of oil, or such measure thereof, enter the pipe-section 15, as may be consumed in the combustion of gas or vapor generated from the same in the sections 15, and for accomplishing this feed or oil limitation to the sections 15, we provide an oil check device between the drop-pipes and the pipe-sections 15. Such device consists, preferably, of a stopper or plug 20 interposed between and at the intersection of the discharge end of the drop-pipes and the pipe-sections 15, such plug or oil-stop having an orifice or small aperture 21, preferably offset from the center of the stopper and adjacent to the periphery or edge thereof. The offsetting of the plug aperture leaves the central portion of the plug-end closed so that the body of oil flowing to the plug is checked central of the pipes, and the oil is deflected by the closed end of the plug to the aperture. The said device has generally been used or applied by fixing it in a hollow screw-stem 22 employed for connecting the drop-pipes with the couplings 16, so as to position the stopper or check device in or adjacent to the discharge end of the drop-pipes, but such means for applying the check device may be varied without altering the usefulness and function of the same, that is to say, the discharge end of the drop-pipes may be cast or otherwise formed with said end closed as at 20^a, except for an aperture 21^a, therein, as shown in Fig. 6 of the drawings, or the couplings 16 may contain such or equivalent means for regulating or unitizing the amount of oil for generation.

In the application of the apparatus to a

range or cooking stove 23, the casing 1, is supported in front of the stove by the pipe 4, and the pipes 11, project through the front of the stove so as to position the drop-pipes and the overlying pipes in the usual fuel box or chamber 24, of the stove, and the usual draft regulating devices of the stove may be employed during the operations of this apparatus.

It will be understood that the oil in the pipes leading from the oil chamber to the check device is only under pressure when the needle-valves are open; that such pressure forces the oil from the drop-pipes through the check-plugs in such amounts as are measured and limited by the aperture 21, so that the bulk of oil in the drop-pipes is stored therein for feeding into the pipe-sections 15 under pressure from the reservoir oil controlled by the needle-valves; and that upon closing the needle-valves the flow of oil from the drop-pipes is automatically and simultaneously stopped, and the gas remaining in the overlying pipes is wholly consumed by combustion at or through the burner jets.

We do not wish to be understood as limiting ourselves to the application of the apparatus, nor to any particular size thereof, or material used therein, and we especially do not confine ourselves to any particular means for introducing the unitizing device, but reserve the right to make such variations in the mechanical construction of the whole apparatus and of its several parts as may be found most expedient in the practical working thereof, as far as the same may come within the scope of the appended claims.

Having thus described our invention what we claim as new and desire to secure by Letters Patent is:—

1. In an oil-vaporizer and burner, the combination with an oil reservoir, oil-valves connected with the reservoir, and oil-pipes leading from the valves, or vapor-generating and burning pipes, oil reservoir pipes connecting the said oil-pipes with the generating pipes, and means contained in the oil-channel between each generating pipe and reservoir pipe for controlling the amount of oil to the generating pipes.

2. In an oil-vaporizer and burner, the combination with an oil-reservoir, valve-controlled oil-pipes projecting from the reservoir, and means for supplying the reservoir with oil, of pipes for vaporizing and burning, reservoir pipes connecting the vaporizing and burning pipes with the said oil-pipes, and an oil checking device inclosed between each generating pipe and reservoir pipe.

3. In an oil-vapor burner, the combination with a chamber, an oil screen or strainer in the chamber, oil-valves upon the

outside of the chamber and connected with the chamber above the screen, oil-pipes connected with the valves, and pipes for generating gas or vapor, of reservoir pipes connecting the said generating pipes with the said oil-pipes, an oil check between each reservoir pipe and over-lying pipe, and means for supplying the chamber with oil.

In witness whereof we hereunto set our hands in the presence of two witnesses.

JOHN W. BARNER.

BENJAMIN W. MARSHALL.

Witnesses:

HUGH L. WEBSTER,
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