J. B. CAMENZIND.

FUEL SUPPLY TANK FOR GAS GENERATORS.

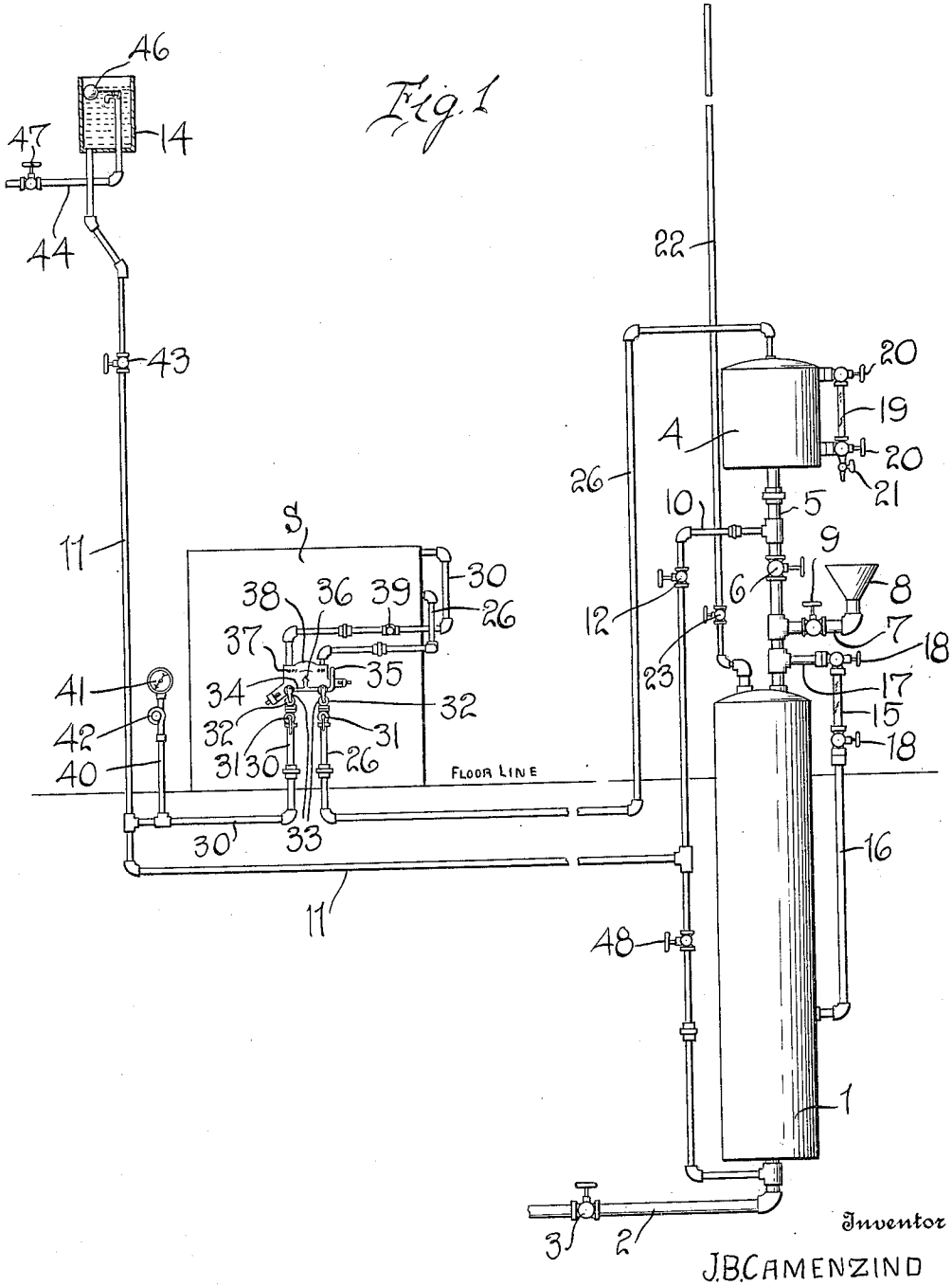
APPLICATION FILED JAN. 27, 1915.

1,151,081.

Patented Aug. 24, 1915.

2 SHEETS—SHEET 1.

Fig. 1



Witnesses

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2 SHEETS—SHEET 2.

Fig. 2

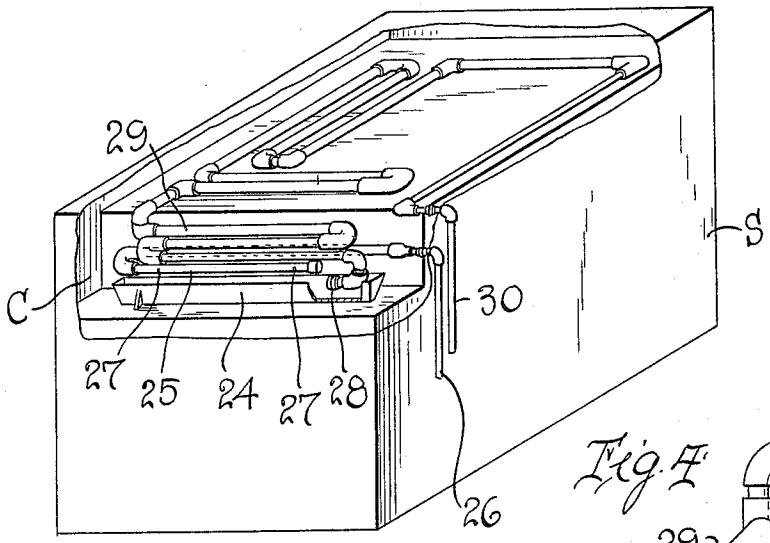


Fig. 4

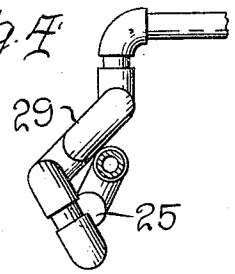


Fig. 3

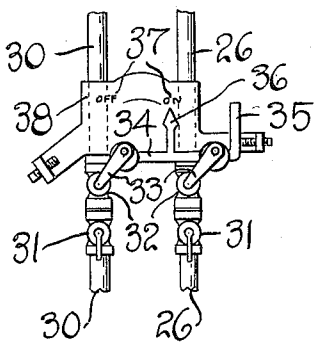


Fig. 5

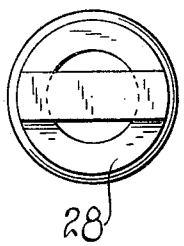
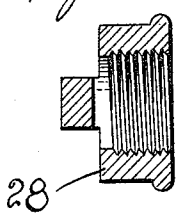


Fig. 6



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UNITED STATES PATENT OFFICE.

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FUEL-SUPPLY TANK FOR GAS-GENERATORS.

1,151,081. Specification of Letters Patent. Patented Aug. 24, 1915.

Application filed January 27, 1915. Serial No. 4,705.

To all whom it may concern:

Be it known that I, JOSEPH B. CAMENZIND, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Fuel-Supply Tanks for Gas-Generators, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to certain improvements in fuel supply tanks for gas generators and has relation more particularly to a device of this general character especially designed and adapted for use in connection with stoves or furnaces; and an object of the invention is to provide a device of this general character wherein the hydrocarbon fluid may be readily and effectively atomized.

Furthermore, it is an object of the invention to provide a novel and improved tank of this general character wherein the supply of hydrocarbon fluid may be renewed without interference with the operation of the system.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved tank whereby certain important advantages are attained and the device is rendered simpler, less expensive and otherwise more convenient and advantageous for use, all as will be hereinafter more fully set forth.

The novel features of the invention will be carefully defined in the appended claims.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein—

Figure 1 is a diagrammatic elevational view, illustrating a gas generating system arranged in accordance with an embodiment of my invention; Fig. 2 is a diagrammatic view in perspective, with parts broken away, of a stove equipped with my present invention; Fig. 3 is an enlarged elevational view illustrating in detail a controlling means for the hydrocarbon fluid and water as delivered to the generating point; Fig. 4 is an enlarged fragmentary view, partly in end elevation and partly in section of the hydrocarbon fluid coil and the water coil as herein embodied; Fig. 5 is an end elevational view of the steam nozzle; and Fig. 6 is a vertical sectional view taken through Fig. 5.

As disclosed in the accompanying drawings, 1 denotes a reservoir or container in which the supply of hydrocarbon fuel is adapted to be contained and having in communication therewith through the base thereof, the discharge 2 leading to a sewer or other source of discharge, for a purpose to be hereinafter more particularly referred to, and interposed in such pipe 2 is the valve 3 for controlling the flow thereof.

Positioned at a point above the reservoir 1 is a supplemental or auxiliary reservoir or tank 4 of a capacity materially less than that of the tank or reservoir 2, and said reservoir or tank 4 is in communication with the reservoir or tank 1 through the medium of the conduit 5 in connection with the tank or reservoir 1 at the top thereof and with the tank or reservoir 4 at the base thereof. Interposed in the conduit or pipe 5 is the controlling valve 6 and in communication with the pipe 5 below the valve 6 is the filling pipe 7 terminating in the upstanding funnel 8 and having interposed therein a controlling valve 9.

The pipe or conduit 5 above the valve 6 has in communication therewith, the branch water pipe 10 leading from the water-line 11 and interposed in such branch 10 is the controlling valve 12. The water-line 11, as herein embodied, leads from a suitably positioned water box 14 and delivers within the tank or reservoir 1 at the base thereof through the discharge pipe 2 and for which purpose it is in communication with the discharge pipe 2 at a point intermediate the valve 3 and the tank or reservoir 1. Exteriorly of the reservoir or tank 1 adjacent the top thereof is the gage glass 15 having its lower extremity operatively engaged with the pipe 16 in communication with the tank or reservoir adjacent the lower extremity thereof, while the upper extremity of the gage glass 15 is operatively engaged with the pipe 17 in communication with the pipe or conduit 5 at a point below the communication between such pipe 5 and the feed pipe 7 and the flow through such gage glass 15 is under control of the valves 18 positioned adjacent the opposite extremities thereof. The supplemental or auxiliary tank or reservoir 4 has also operatively en-

gaged therewith a gage glass 19, the flow through which being under control of the valves 20 and being capable of drainage through the petcock 21.

In communication with the tank or reservoir 1 through the top thereof is a vent pipe 22 having interposed therein a controlling valve 23 and in practice I find it particularly advantageous to have the upper extremity of the vent pipe 22 terminate a predetermined distance above the location of the water box 14.

S denotes a stove of predetermined configuration and herein disclosed as provided with a combustion chamber C in which is positioned a pan 24 over which is disposed an extremity of a coil 25 of an oil supply pipe 26 leading from the top of the supplemental or auxiliary tank or reservoir 4, and such extremity of the coil 25 is provided in its under face with the restricted openings or slots 27 through which the oil is discharged. Positioned at one extremity of the pan 24 and in advance of the free end of the extremity of the coil 25 is a steam nozzle 28 formed at the end of the coil 29 of the pipe 30 leading from the water-line 11.

Interposed within the pipes 26 and 30 are the independently operable controlling valves 31 and also interposed in said pipes are the controlling valves 32 adapted to be operated in unison and, as herein embodied, the stems of such valves are provided with the arms 33 tied or connected by the bar 34 terminating in a hand hold 35 whereby said valves 32 may be properly operated, and the bar 34 is provided with an index or pointer 36 adapted to coact with suitable indications 37 of the plate 38 whereby the degree of adjustment of the valves 32 may be readily determined. The pipe 30 at a point intermediate a valve 32 and the coil 29 has interposed therein a conventional check valve 39 whereby retrograde flow of water within the pipe 30 under the influence of the pressure of the steam generated within the coil is prevented, for a purpose which will be self-evident. The pipe 30 has also in communication therewith intermediate a valve 31 and its connection with the water-line 11, the pipe or connection 40 leading to the gage 41 and being provided intermediate its length with a siphon coil 42. The water-line 11 in close proximity to the water box 14 has interposed therein a controlling valve 43.

In practice, it is my purpose to have the water box 14 positioned at a predetermined point above the stove S and to have the casing or reservoir 1, or the major portion thereof, positioned below the stove S, as by this arrangement I have found that my system operates with greater facility. The stove S is diagrammatically indicated in the accompanying drawings, but it is to be understood that said stove is of a character now generally employed in connection with coal or similar fuel and whereby it will be readily appreciated that the requisite oxygen will be admitted within the stove necessary to support combustion.

The water box 14 is of a comparatively small capacity and receives its supply of water through the pipe or conduit 44 in communication with a water main or other source of supply and the delivery of the water within the box 14 is under control of a conventional float valve 46. The pipe 44 has interposed therein a controlling valve 47. The water-line 11 intermediate its connection with the discharge pipe 2 and the branch 10 has interposed therein a controlling valve 48.

With the tank or reservoir 1 properly filled with hydrocarbon fluid, the valves 6, 18 and 20 are open, while the valves 3, 9, 12 and 43 are closed. Upon opening the valve 43, the resultant pressure of the water entering through the bottom of the tank or reservoir 1 will force the hydrocarbon fluid up through the pipe or conduit 5 into the auxiliary or supplemental tank or reservoir 4 and through the oil pipe 26 to the coil 25, hereinbefore referred to. Water will also pass through the pipe 30 to the coil 29. It is to be understood, however, that the flow through the pipes 26 and 30 is under control of the valves 31 and 32. With the valves 31 adjusted in open position, the valves 32 are partially opened so that the requisite discharge of the hydrocarbon fluid may be had within the pan 24 and upon ignition of the hydrocarbon fluid within the pan, it will be perceived that the coils 25 and 29 will serve to properly heat the fluids passing therethrough and vaporize the same. It is to be understood that the adjustment of the valves 32 depends upon the quality of hydrocarbon fluid employed as I have found in practice that my improved system may be employed with equal facility in connection with crude oil or any of the distillates thereof.

When the fuel within the tank or reservoir is substantially exhausted as will be readily indicated by the gage 15, the tank or reservoir may be readily refilled without interfering with the operation of the system by closing the valves 6 and 48 and opening the valves 3 and 23 whereupon the water within the tank or reservoir will be discharged through the pipe 2 to the sewer or other point of delivery. The valve 3 is then closed and the valve 9 opened so that the new supply of fuel may be readily delivered within the reservoir or tank 1 through the funnel 8 and pipe 7. During the filling operation, the valve 12 is opened whereby it will be perceived that the branch pipe 10 serves as a by-pass so that the pressure of the water will still be exerted on the hydrocarbon fluid within the supplemental or auxiliary tank or

reservoir 4. After the tank or reservoir 1 has been refilled, the valves 9 and 12 are closed and the valves 6 and 48 opened, whereby the normal operation will be resumed. I also find it of advantage to reopen the valve 6 slowly so that any water within the auxiliary or supplemental reservoir or tank 4 and the pipe 5 may be drained within the tank or reservoir 1.

From the foregoing description, it is thought to be obvious that a fuel supply tank for gas generators constructed in accordance with my invention is of an extremely simple and comparatively inexpensive nature and is particularly well adapted for use by reason of the convenience and facility with which it may be assembled, and it will also be obvious that my invention is susceptible of some change and modification without material departure from the principles and spirit thereof and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as defined by the appended claims.

I claim:

1. In combination, a hydrocarbon fluid reservoir, a supplemental reservoir disposed thereabove, a conduit connecting said reservoirs, a valve interposed in said conduit, a discharging conduit leading from the supplemental reservoir, a conduit leading from a source of pressure in communication with the first named reservoir at the base thereof, a by-pass leading from said last named conduit and in communication with the conduit connecting the reservoirs at a point between the valve in said last named conduit and the supplemental reservoir, a valve interposed in the by-pass, and a valve interposed in the conduit leading from the source of pressure positioned between the by-pass and the main reservoir.

2. In combination, a hydrocarbon fluid reservoir, a supplemental reservoir disposed thereabove, a conduit connecting said reservoirs, a valve interposed in said conduit, a discharging conduit leading from the supplemental reservoir, a conduit leading from a source of pressure in communication with the first named reservoir at the base thereof, a by-pass leading from said last named conduit and in communication with the conduit connecting the reservoirs at a point between the valve in said last named conduit and the supplemental reservoir, a valve interposed in the by-pass, a valve interposed in the conduit leading from the source of pressure positioned between the by-pass and the main reservoir, and a valve controlled filling pipe in communication with the conduit interposed between the reservoirs at a point intermediate the main reservoir and the valve in said conduit.

3. In combination, a hydrocarbon fluid reservoir, a supplemental reservoir disposed thereabove, a conduit connecting said reservoirs, a valve interposed in said conduit, a discharging conduit leading from the supplemental reservoir, a conduit leading from a source of pressure in communication with the first named reservoir at the base thereof, a by-pass leading from said last named conduit and in communication with the conduit connecting the reservoirs at a point between the valve in said last named conduit and the supplemental reservoir, a valve interposed in the by-pass, a valve interposed in the conduit leading from the source of pressure positioned between the by-pass and the main reservoir, and a valve controlled exhaust conduit in communication with the conduit leading from the source of pressure at a point adjacent the main reservoir.

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

JOSEPH B. CAMENZIND.

Witnesses:

ANDREW MOOR,

LESTER HASTINGS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."