

No. 649,435.

Patented May 15, 1900.

R. F. CARTER & R. W. ZIERLEIN.

CARBURETER.

(Application filed Feb. 26, 1900.)

(No Model.)

Fig. 2.

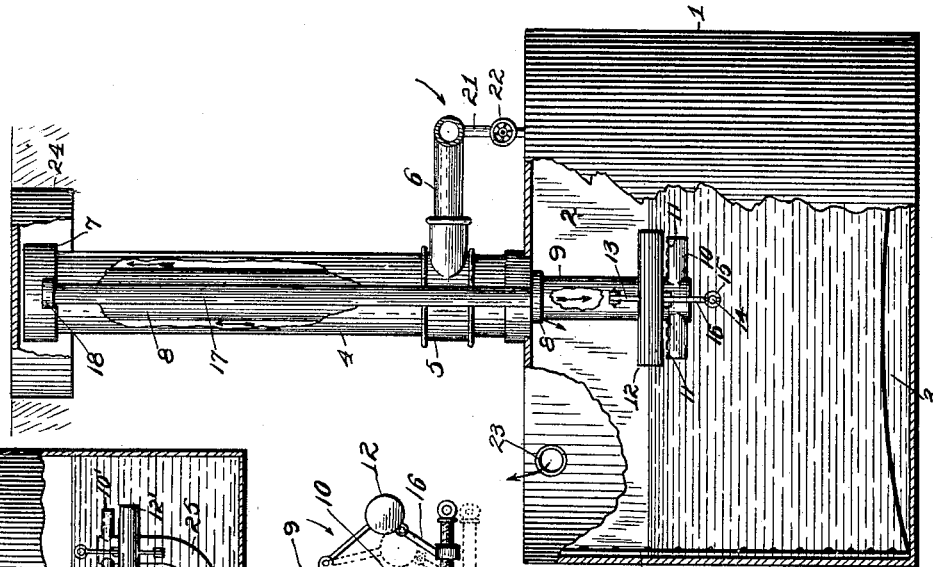


Fig. 4.

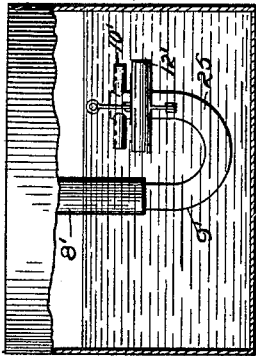


Fig. 3.

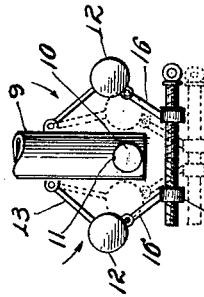
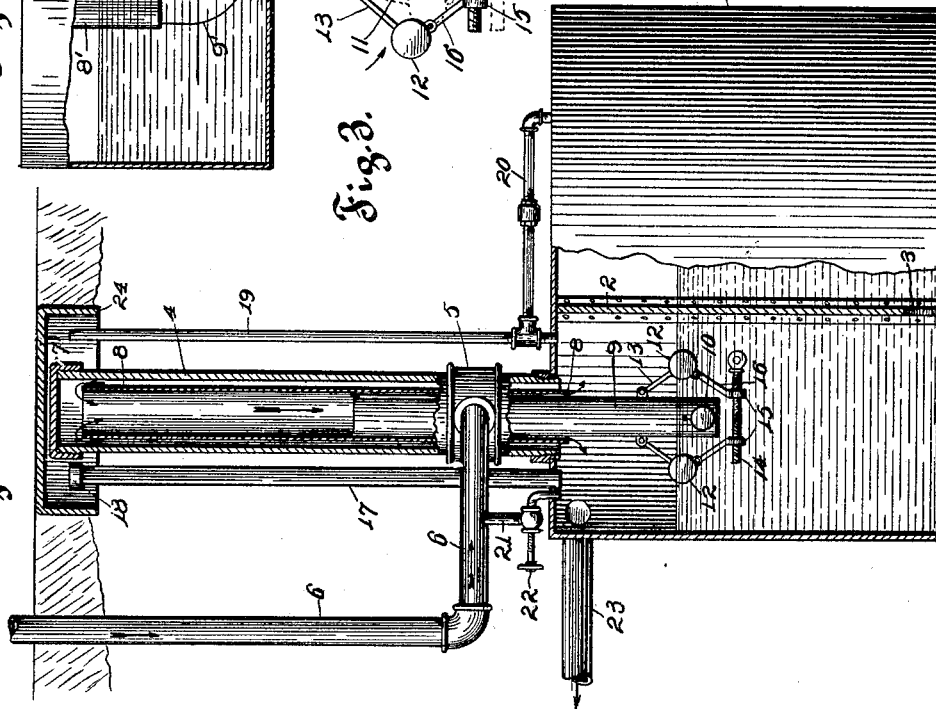


Fig. 1.



Witnesses.
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UNITED STATES PATENT OFFICE.

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CARBURETER.

SPECIFICATION forming part of Letters Patent No. 649,435, dated May 15, 1900.

Application filed February 26, 1900. Serial No. 6,603. (No model.)

To all whom it may concern:

Be it known that we, ROY F. CARTER and RICHARD W. ZIERLEIN, citizens of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Apparatus for Making Gas, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part thereof.

Our invention has relation to improvements in apparatus for manufacturing illuminating-gas; and it consists in the novel arrangement and combination of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a combined section and elevation of the apparatus, the walls of the tank being broken away. Fig. 2 is a similar view to Fig. 1, but in a plane at right angles thereto. Fig. 3 is a detail showing the manner of adjusting the floats, and Fig. 4 is an elevation of a modified form of float-pipe.

The object of our invention is to construct an apparatus for the manufacture of gas from volatile liquid hydrocarbons, the device being designed for the special view of insuring uniform results in the matter of the generation of the gas irrespective of the quantity of hydrocarbon treated.

In detail the invention may be described as follows:

Referring to the drawings, 1 represents a closed tank or generator, preferably submerged below the surface of the ground, said tank being divided into two compartments by a partition 2, the base of the latter being cut away, leaving a communicating passage 3 between the two compartments. Communicating with the smaller of the compartments through the roof of the tank is an air-pipe 4, to which is coupled, by means of a T 5, the air-supply pipe 6, leading to any suitable air-pump, (not shown,) the top of the pipe 4 being closed by a cap 7. Located within the pipe 4 and passing also through the roof of the tank and projecting a short distance into the latter is a guide-tube 8, open at both ends, the upper end extending to near the cap 7. Adapted to play within the guide-tube is a float-pipe 9, open at its upper end, but closed

at the bottom, said pipe 9 having lower laterally-projecting discharge-tubes or spray-pipes 10, closed at their ends, but provided with upper peripheral openings 11, for the escape of the air forced into the pipe 4. The pipe 9 is kept floated on top of the liquid in the tank by means of two cylindrical hollow floats 12 12, pivotally secured to the pipe 9 by means of links 13 13 on either side of the tubes 10. The distance between the floats is regulated by means of an adjusting-screw 14, over whose right and left hand screw-threads are respectively adapted to travel the terminal loops 15 of the connecting-arms 16, secured to the floats. It is desirable under all circumstances to retain the discharge-openings 11 a slight but constant distance below the surface of the liquid in the tank; but as the specific gravities of different liquids operated on differ it is apparent that the floated pipe 9 would sink to different levels according to such specific gravities. By varying the distance between the floats, however, the depth of submergence of the pipe 9 may be kept constant, for it is obvious that by turning the screw 14 in a direction to cause the rods 16 to approach (see dotted lines, Fig. 3) the effect would be to bring the floats closer together and depress the same, and hence tend to either raise the pipe 9 in a liquid of constant specific gravity or retain the same at the same level in a liquid of lower specific gravity. So, also, should the gravity of the liquid be greater than the floats had been set for, by separating the floats the pipe 9 will sink to the proper depth to bring the openings 11 to their desired position below the surface level of the liquid. Leading also to the smaller of the compartments is a filling-tube 17, having a cap 18, and communicating likewise with said compartment is a vent-pipe 19, the base of which is coupled by a pipe 20 with the top of the large compartment, the vent-pipe serving to allow for the escape of the air when the tank is being filled through the tube 17. The vent-pipe 19 is closed by a plug or stopper (not shown) after the tank is filled to prevent any escape of the gas generated in the tank after the apparatus is once started. Leading from the air-supply pipe 6 at a convenient point is a shunt or branch pipe 21, controlled by a needle-valve 22, es-

tablishing communication between the pipe 6 and the top of the smaller compartment of the tank. 23 represents the gas-delivery pipe. The upper ends of the pipes are protected by a hood or box 24.

The operation of the device is as follows: By means of the air-pump (not shown) air is forced through pipe 6 and T 5 into pipe 4, the air circulating, as seen by the arrows, upward through the space around the tube 8, (which space is closed at the bottom by the annular plug which supports the tube 8 and which is inserted between the said tube and the pipe 4,) thence down said tube into the float-pipe 9, and out through the openings 11 of the spray-pipes 10, the force of the jets of air disintegrating the oil and converting it into gas, which is forced through the pipe 23 to the point of consumption. By maintaining the pipes 10 at a slight and constant level below the surface of the liquid the amount of gas generated will be constant for a given pressure and temperature of air forced into the same. A slight percentage of air will find its way above the liquid from the space between the tube 8 and pipe 9, as seen by the arrows, this slight amount insuring the admixture of a quantity of oxygen sufficient to effect perfect combustion of the gas disengaged from the surface of the liquid. Should it be desirable to mix a greater percentage of air above the liquid, the needle-valve 22 may be opened, in which event a part of the air-current will be diverted and rush into the tank through the branch pipe 21.

In case where it be not desirable to permit any air to mix above the liquid we extend the guide-tube 8' (see Fig. 4) below the normal level of the liquid and form a bend 25 in the float-pipe 9', providing the free end of the arm of the bend with spray-pipes 10' and floats 12' in like manner as in the foregoing description, the adjusting-screw in this case being above instead of below the spray-pipes 10'. In this modification no air can possibly enter the tank except that which escapes through the pipes 10'.

It is apparent, of course, that other changes may be made in the present apparatus without departing from the spirit of our invention. The character of liquid hydrocarbon is immaterial, and the same may be gasoline, kerosene, ligroin, naphtha, and the like.

The object of the partition 2 is to confine the agitation of the oil and the generation of the gas to but one compartment and concentrate the same toward the delivery-pipe, the other compartment constituting the feed for the gas-generating compartment.

Having described our invention, what we claim is—

1. In a gas-making apparatus, a suitable closed tank or generator, an air-pipe leading

therefrom closed at the top but open at the bottom, a guide-tube confined within the air-pipe and open at both ends, a float-pipe loosely playing in the guide-tube, said pipe being open at the top, the base of the pipe being provided with suitable openings for the escape of the air-currents, an air-supply pipe communicating with the air-pipe above the tank, a gas-delivery pipe leading from a point above the level of the liquid in the tank, and suitable devices for floating the float-pipe on top of the liquid in the tank, substantially as set forth.

2. In a gas-making apparatus, a suitable closed tank or generator, an air-pipe leading from the roof thereof, and closed at the top, a guide-tube confined within the air-pipe and open at both ends, a float-pipe loosely playing in the guide-tube closed at the bottom but open at the top, spray-pipes carried at the lower end of the float-pipe, closed at their outer ends but having upper peripheral openings, an air-supply pipe communicating with the air-pipe above the tank, a gas-delivery pipe leading from the upper portion of the tank, and suitable float-cylinders for the float-pipe, substantially as set forth.

3. In a gas-making apparatus, a suitable closed tank or generator having two communicating compartments, an air-pipe projecting from the roof of one of the compartments, a guide-tube in the air-pipe, vent-pipes leading from both compartments, a filling-tube located adjacent to the air-pipe, a float-pipe loosely playing in the guide-tube, spray-pipes carried at the lower end of the float-pipe, an air-supply pipe topping the air-pipe above the roof of the tank, a gas-delivery pipe, a valve-controlled shunt leading from the air-supply pipe to the compartment with which the air-pipe communicates, and means for regulating the depth of submergence of the float-pipe in the liquid confined in the tank, substantially as set forth.

4. In a gas-making apparatus, a float-pipe having lower spray pipes or extensions, hollow floating tubes pivotally secured to the pipe on either side of the spray-pipes, arms secured to the respective hollow tubes, the further ends of the arms terminating in interiorly-screw-threaded loops, a right and left hand threaded adjusting-screw over which the loops are passed, whereby the depth of submergence of the spray-pipes below the liquid may be controlled and adjusted, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

ROY F. CARTER.

RICHARD W. ZIERLEIN.

Witnesses:

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