No. 626,193. Patented May 30, 1899.

D. M. SMALL.

CARBURETER.

(Application filed May 6, 1898.)

(No Model.)

Fig. 1.

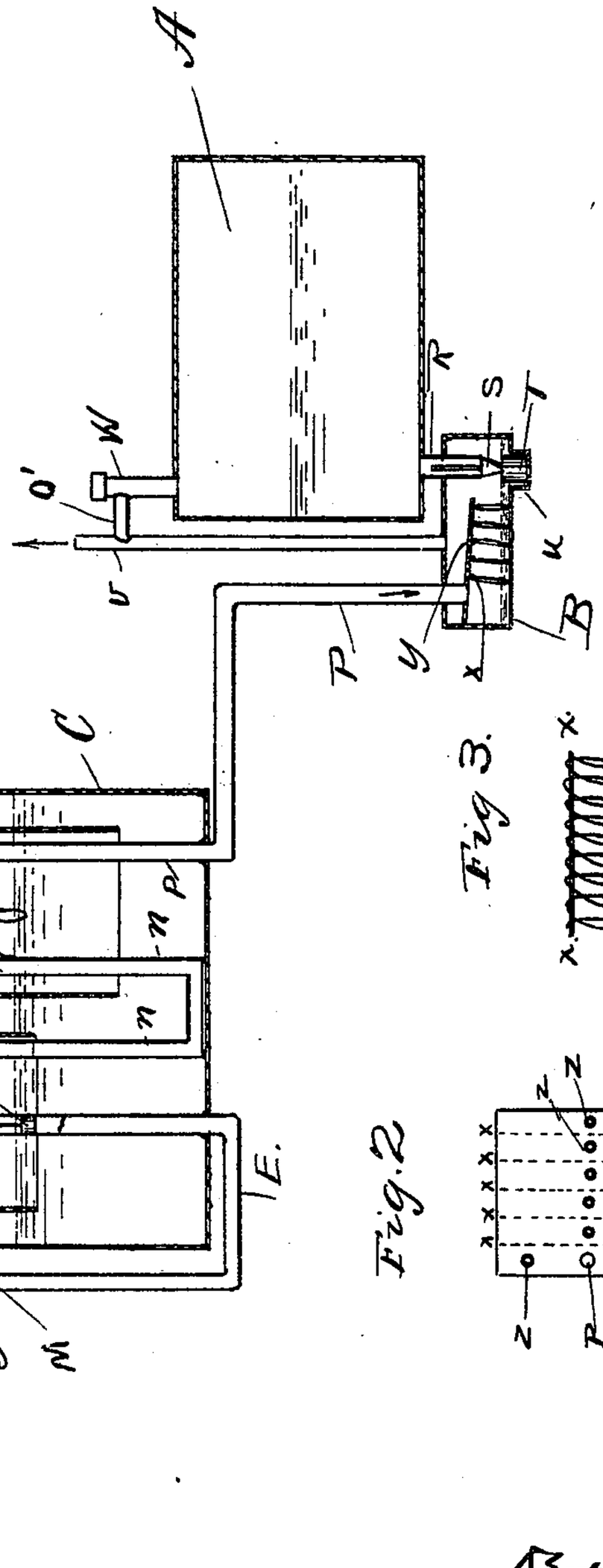

Fig. 3.

Fig. 2.

Witnesses
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DEXTER M. SMALL, OF PROVIDENCE, RHODE ISLAND.

CARBURETER.

SPECIFICATION forming part of Letters Patent No. 626,193, dated May 30, 1899.

Application filed May 6, 1898. Serial No. 679,936. (No model.)

To all whom it may concern:

Be it known that I, DEXTER M. SMALL, a citizen of the United States, residing at East Providence, in the county of Providence and State of Rhode Island, have invented an Improved Device for Generating Combustible Gas from Liquid Hydrocarbon, of which the following is a specification.

My object is to insure at minimum cost a practically uniform quality of gas, whether generated in small or large quantities; and my invention relates to the particular construction of the carbureter and to various combinations of parts.

In the accompanying drawings, which form a part of this specification, Figure 1 is a side view, partly in section, showing my device complete in combination with air-supplying mechanism; Fig. 2, a top view of partition Y; Fig. 3, a front view of one of the rods or supports *x x*, with loose absorbent material suspended therefrom.

A is a hydrocarbon-supply tank; B, a carbureting-chamber; C, an oblong water-tank, within which the cylindrical holders D and D′ are free to move up and down, whereby air at a uniform pressure is supplied to or forced through the carbureting-chamber as follows:

E is a pipe through which water is supplied under pressure to raise piston F, rod G, and holder D, air being admitted to holder in its ascent through valve H, and passing to holder D′ through pipe N N, as D, (which is the heavier) descends, valve O preventing its return from D′ to D when the latter is raised. The air passes from holder D′ to carbureting-chamber B through pipe P P, the pressure being regulated by weight of holder D′. This chamber is so constructed as to render one of small dimensions (a few inches square and three inches or so deep) adequate for a large plant of one hundred or more burners by means of absorbent material extending down into a thin sheet or film of hydrocarbon from the supports *x x*, and which when saturated forms a compact but extensive vaporizing-surface. It is connected with a tank A by a small inlet-tube R, supplied with a valve S, automatically closed by a float T, whereby a constant level of hydrocarbon of uniform density is maintained on the bottom of this chamber as long as the supply is kept up from tank A. The object of this construction is to avoid the premature escape of the most volatile portion of the liquid, as is the case in all surface evaporation within the tank by which gas of uniform richness cannot be generated long, even where the rate of consumption is uniform, since the specific gravity of the liquid is thereby rapidly reduced and a large and useless residuum soon left in the tank. In operation the air enters this chamber through pipe P below partition Y, which is constructed with a longitudinal or elongated outlet therein, and which may be composed of a series of small holes Z, as shown, up through which the air passes to pipe V after contact with such portion of the carbureting-surface as necessitated before sufficient space or opening for escape is reached, and which portion by this construction is thus made to depend upon the volume of incoming air, there being no other escape from beneath this partition, which inclines downward from mouth of air-inlet. Thus a uniform quality of gas is produced, whether generated for one or more burners, by being made to travel a greater or less distance below this partition, according to rate of consumption. This partition could be horizontal, if provided with a narrow channel for the air to traverse, the outlet or holes Z being along the line of such channel. This feature of my invention is applicable to other styles of carbureting-chambers, whether stationary or floating channels be used therein.

To insure a smooth flow of the liquid from tank A into chamber B through pipe R, as required, a connection O′ is made between outlet-pipe V (or inlet) and filling-pipe W for the admission of air to take the place in the tank of the outgoing liquid. This connection should be near top of filling-pipe to guard against danger of overflow into chamber B when filling tank. This is important, since the amount of accidental overflow into the small carbureting-chamber by this construction, where the communicating air-passage enters near top of filling-pipe, could only be slight—not enough to fill—and thus obstruct the air-passage through this chamber, as would otherwise be very liable to occur.

I claim—

1. A device for generating illuminating

and fuel gas from liquid hydrocarbon, which consists of a reservoir for the liquid, a carbureting-chamber automatically supplied therefrom, a partition within this chamber, above the level of the liquid therein, a device for supplying air to this chamber, below this partition which inclines downward from the air-inlet and is constructed with an elongated outlet therein commencing near air-inlet and extending down the incline, absorbent materials suspended beneath this partition and extending therefrom down into the liquid and so arranged with reference to this longitudinal or elongated outlet that the incoming air must circulate past more or less of this matetial according to the proportion of this outlet required for the passage of the air from beneath this partition.

2. The combination with a carbureter, within the carbureting-chamber, and beneath which the air is forced in its passage from inlet to outlet pipes, of a partition constructed with an elongated exit or series of diminutive exits therein for the air after it is carbureted, these exits commencing quite close to mouth of air-inlet which is below this partition, each succeeding exit being farther away from this inlet than the last, to the end of the series, with proper intervals between them, the construction permitting no escape for the carbureted air from below this partition except by such exit or exits, the distance which the air must traverse thereunder and consequently the amount of carbureting-surface utilized, being thus made to depend upon, and thus proportioned to, the volume of air which may be passing through the carbureter, all substantially as described.

3. In a gas-generator, the combination of a supply-tank A for liquid hydrocarbon, a carbureting-chamber B connected therewith by a small inlet R containing a valve S operated or closed by a float T, an air or gas passage connecting this chamber with supply-tank through filling-pipe W, partition Y within this chamber, inclining downward from the mouth of air-inlet P (as shown), lines of loose absorbent material X X suspended beneath this partition which is constructed with a series of apertures Z therein, extending lengthwise thereof, so that there shall be an exit following each line of absorbent material, all substantially as described.

4. The combination with a carbureter, of an air or gas passage connecting the carbureting-chamber with the supply-tank, through the filling-pipe, for the purpose set forth.

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Witnesses:
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