No. 628,639. Patented July 11, 1899.

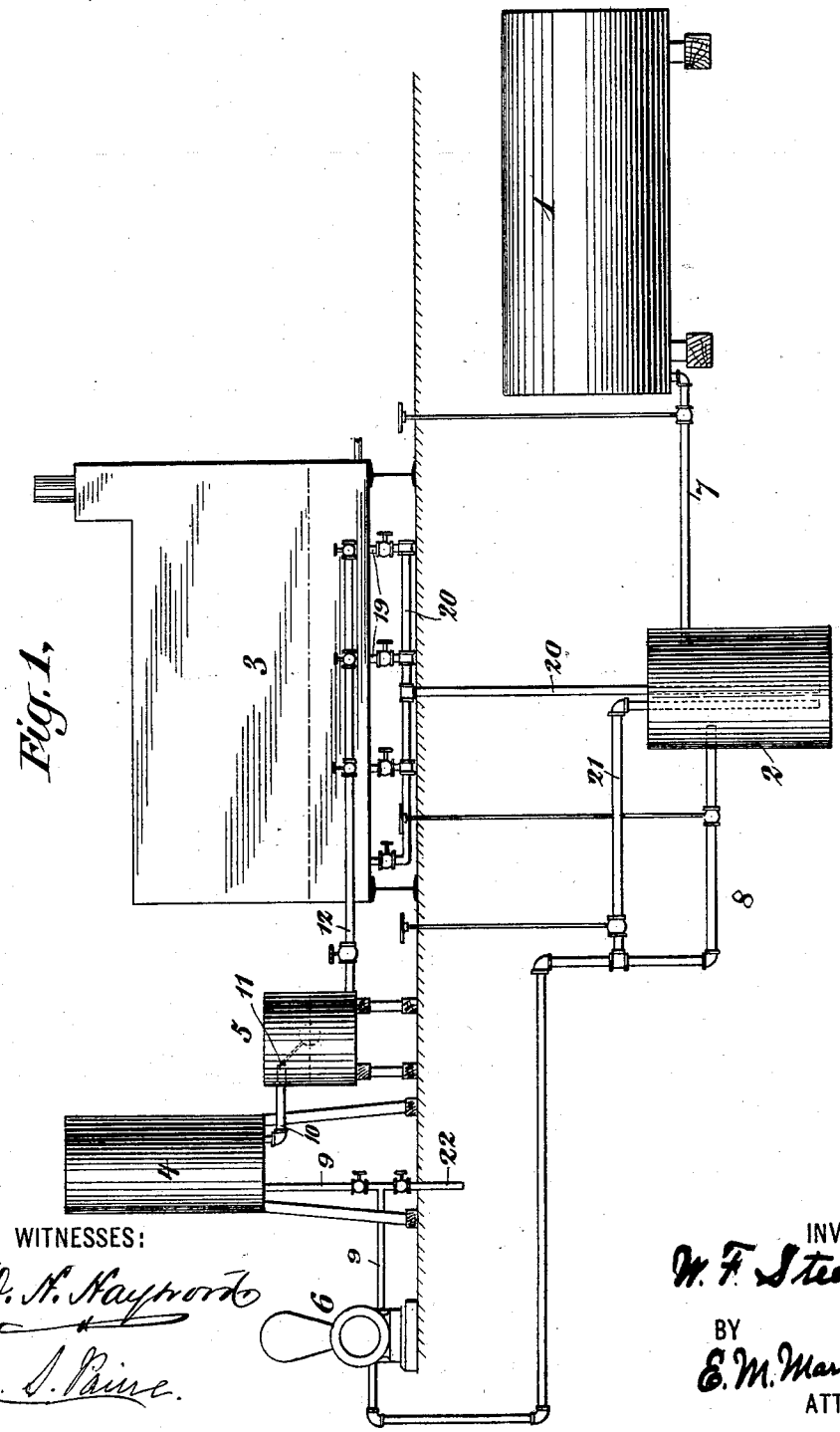
W. F. STEELE.

CARBURETER.

(Application filed Jan. 4, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



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Fig. 3.

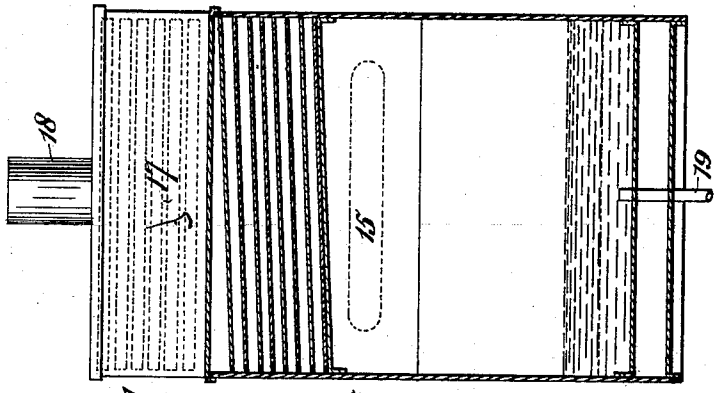
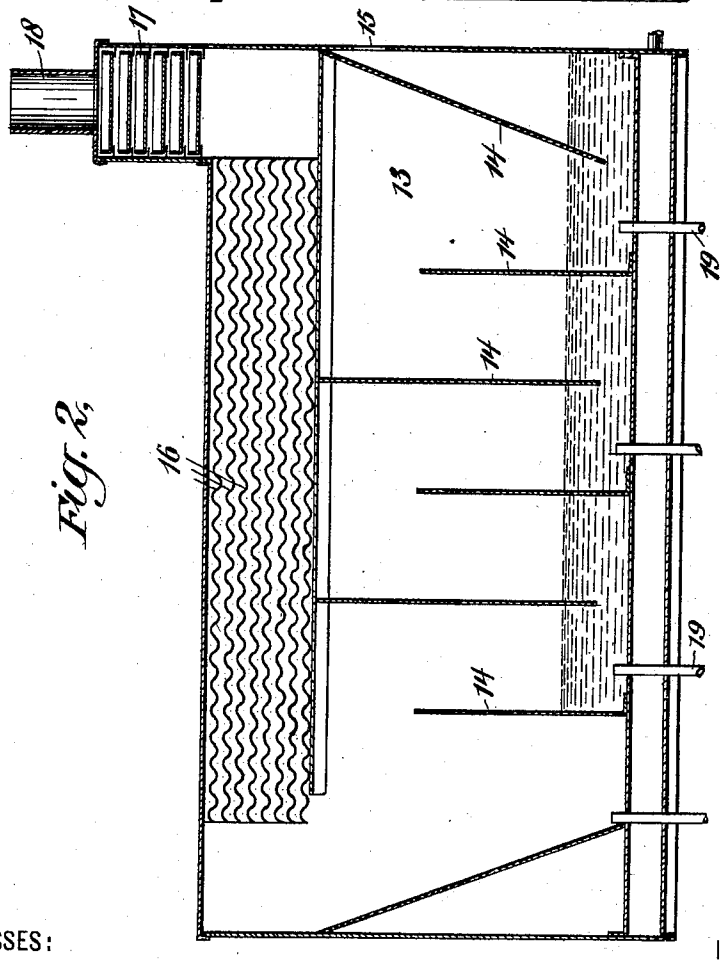


Fig. 2.



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UNITED STATES PATENT OFFICE.

WILBUR F. STEELE, OF ASBURY PARK, NEW JERSEY.

CARBURETER.

SPECIFICATION forming part of Letters Patent No. 628,639, dated July 11, 1899.

Application filed January 4, 1899. Serial No. 701,122. (No model.)

To all whom it may concern:

Be it known that I, WILBUR F. STEELE, a citizen of the United States, residing at Asbury Park, in the county of Monmouth and State of New Jersey, have invented certain new and useful Improvements in Gas-Making Apparatus; 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 generally to gas-making apparatus and particularly to improvements in gas-making apparatus of that class in which air is carbureted by mixing therewith the vapor of volatile hydrocarbon oils, such as naphtha.

My invention resides in the construction of the carbureter and in the employment of means for trapping off at intervals the non-volatile ingredients of the commercial oils commonly employed in the making of gas by the above-mentioned method.

The objects of my invention are to improve the construction of carbureters and insure the production of a gas free from liquid hydrocarbon and to avoid the accumulation in the carbureter of non-volatile oils. These objects are attained in the invention herein described and illustrated in the drawings which accompany and form a part of this specification, in which the same reference-numerals indicate the same or corresponding parts, and in which—

Figure 1 is a diagrammatic elevation of the apparatus. Fig. 2 is a longitudinal section of the carbureter, and Fig. 3 is a transverse section thereof.

In the drawings, 1 is a main supply-tank located below the level of the ground; 2, a trap; 3, the carbureter; 4, a secondary supply-tank; 5, a feed-tank, and 6 a pump by which the oil may be forced from the main supply-tank into the secondary supply-tank. A pipe 7, provided with a valve which may be operated from the surface of the ground, connects the main supply-tank with the trap 2. A pipe 8 connects said trap 2 with the pump 6, and said pipe is also provided with a valve which may be operated from the surface of the ground. A pipe 9 connects the pump with the secondary supply-tank 4.

A pipe 10 connects the secondary supply-tank with the feed-tank 5, and in said pipe is a float-valve 11, operated by rise and fall of the oil in the feed-tank and serving to maintain a substantially uniform level of oil in the feed-tank. The feed-tank is connected with the carbureter by a pipe 12.

In the carbureter is a closed chamber adapted to contain oil, having baffle-plates by which air passing through it is caused to pass through the oil and having a double bottom into which steam may be passed to heat the oil in the carbureter and so to hasten its evaporation. Air may be caused to pass through this chamber either by pressure or by suction. 13 is this chamber of the carbureter, and 14 14 are a series of baffle-plates projecting downward and upward alternately. The upwardly-projecting baffle-plates project above the normal level of the oil in the chamber 13, and the downwardly-projecting baffle-plates project below the normal level of the oil. Air entering the admission-opening 15 is therefore caused to pass through the oil a number of times before reaching the rear end of the carbureter. The pipe 12 connects with each of the spaces between the upwardly-projecting baffle-plates, except the last space, which receives the drip from the gas and also from the oil-separating chamber above the chamber 13.

Above the chamber 13 of the carbureter is an oil-separating chamber containing a series of corrugated plates 16, placed so close together that the air in passing between them is forced to follow a tortuous course. Oil carried with the air is thus thrown down upon the plates 16. These plates are inclined slightly, as shown in Fig. 3, and are perforated at their lower ends, so that the oil which collects upon them passes down into the chamber 13.

After passing between the corrugated plates 16 the air passes through a chamber 17, containing trays filled with absorbent material, which remove the last traces of free liquid; but the absorbent material may be supported in any other convenient manner, or the drying-chamber 17 may be omitted altogether. The air, with the hydrocarbon vapor mixed with it, passes out of the outlet 18 as a fixed gas.

Pipes 19 19 connect the spaces between the

upwardly-extending baffle-plates of the carbureter with a pipe 20, leading to the trap 2 and terminating near the bottom thereof. The trap is also provided with a pipe 21, terminating near the bottom thereof and connected with the pump 6, so that by opening a valve in said pipe 21 and closing the valve in the pipe 8 heavy oil which collects in the trap may be pumped out by the pump 6 and carried off through a pipe 22.

The operation of my apparatus is as follows: The valves in pipes 8 and 7 being open and trap 2 filled, oil is pumped from the trap into the secondary supply-tank 4, from whence it passes into the feed-tank 5 and thence into the carbureter. The oil is maintained at a uniform level in the carbureter by the float-valve 11. Air caused to pass through the carbureter either by pressure or by suction enters the opening 15 and passes under the first baffle-plate 14, and therefore through the oil contained in the lower portion of the carbureter, over the second baffle-plate, and under the third baffle-plate and through the oil, and so on until it reaches the rear end of the carbureter, passing through the oil a number of times and so carrying with it a considerable quantity of hydrocarbon vapor. The air and vapor then pass between the corrugated plates 16, and most of the free liquid carried with the gas is projected downward upon said plates and drains off. The gas then passes through the chamber 17, any free oil remaining in it being absorbed by the absorbent material in said chamber, so that the gas passes off through the outlet 18 quite free from liquid.

To facilitate evaporation of the oil, steam may be admitted into the double bottom of the carbureter or heat may be applied in any other convenient manner.

The oil being drawn from the bottom of tank 1, the heavier portion of it will flow by gravity into the lower portion of the trap 2, below the mouth of the pipe 8. The oil drawn off from the trap is therefore the lighter and more volatile oil. The heavier oil, which settles to the bottom of the carbureter, may be drawn off from time to time through the pipes 19 and 20 into the trap. When it is desired to free the trap from this heavy oil, the valve in the pipe 8 may be closed and also the valve in the pipe 9 and the valves in the pipes 21 and 22 may be opened, and the pump 6 then being operated the heavier oil is drawn from the trap and carried out through the pipe 22.

Having thus completely described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a gas-making apparatus, the combination, with a carbureter, a trap below the level of the same, a pipe for conveying oil from the trap to the carbureter, and a waste-pipe connecting the carbureter and trap and extending below the level of the outlet of the latter, of a supply-tank located above the level of the trap and connected therewith but having no direct connection, normally, with the carbureter, except through the trap, and means for forcing oil from the trap through the outlet-pipe thereof, substantially as described.

2. In a carbureter, the combination, with a chamber adapted to contain a liquid, and having an air-inlet and baffle-plates adapted to cause the air to pass through the liquid, of an oil-separator consisting of a chamber or air-passage having within it a series of parallel inclined corrugated plates set close together and extending from one side of the chamber to the other, thereby dividing said chamber into a series of narrow tortuous passages, substantially as described.

3. In a carbureter, the combination, with a chamber adapted to contain a liquid, and having an air-inlet and baffle-plates adapted to cause the air to pass through the liquid, of an oil-separator consisting of a chamber or air-passage having within it a series of parallel inclined corrugated plates set close together and extending from one side of the chamber to the other, thereby dividing said chamber into a series of narrow tortuous passages, said plates being provided with draining-openings, substantially as described.

4. In a carbureter, the combination, with a chamber, adapted to contain a liquid, and having an air-inlet and baffle-plates adapted to cause the air to pass through the liquid, of an oil-separator, consisting of a chamber or air-passage having within it a series of parallel inclined corrugated plates set close together and extending from one side of the chamber to the other, thereby dividing said chamber into a series of narrow tortuous passages, and a drying-chamber containing absorbent material, substantially as described.

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

WILBUR F. STEELE.

Witnesses:
H. M. MARBLE,
E. M. MARBLE.