No. 640,695. Patented Jan. 2, 1900.

E. D. PARROTT.

CARBURETER.

(Application filed Mar. 24, 1899.)

(No Model.) 2 Sheets—Sheet 1.

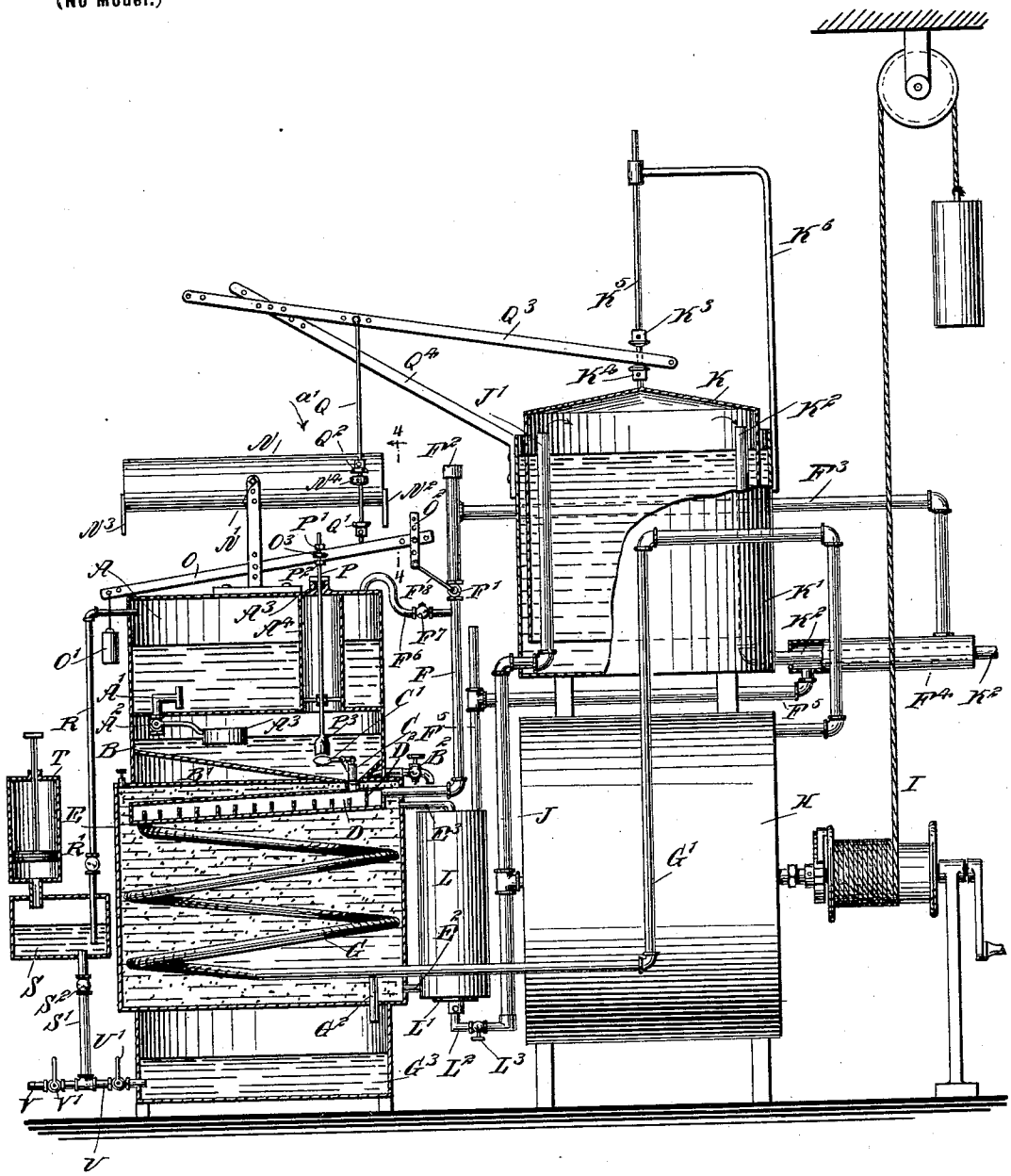

FIG. 1

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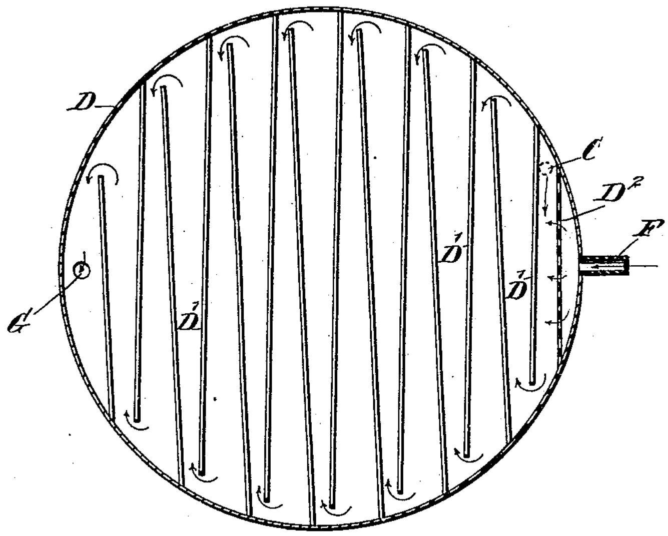
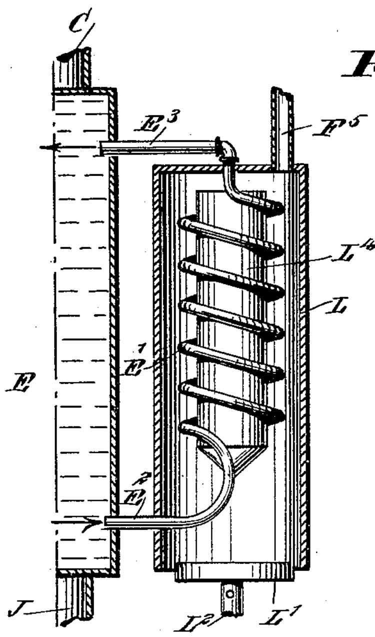


Fig. 2



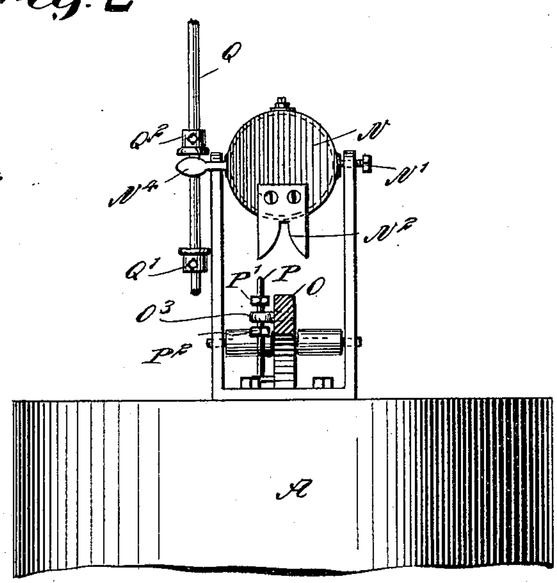


Fig. 3 Fig. 4

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UNITED STATES PATENT OFFICE.

ELIJAH D. PARROTT, OF PORTLAND, OREGON, ASSIGNOR TO THE NORTHWESTERN LIGHT AND MANUFACTURING COMPANY, OF GOLDENDALE, WASHINGTON.

CARBURETER.

SPECIFICATION forming part of Letters Patent No. 640,695, dated January 2, 1900.

Application filed March 24, 1899. Serial No. 710,325. (No model.)

To all whom it may concern:

Be it known that I, ELIJAH D. PARROTT, of Portland, in the county of Multnomah and State of Oregon, have invented a new and Improved Carbureter, of which the following is a full, clear, and exact description.

The invention relates to apparatus for manufacturing gas in which gasolene is evaporated by the use of an air-pump, the present invention being more particularly an improvement on the carbureter shown and described in the Letters Patent of the United States No. 615,100, granted to me on November 29, 1898.

The object of the present invention is to provide a new and improved carbureter arranged to prevent frost from forming on the inside of the evaporating-coil or in the gas-mains leading from the apparatus and to permit of recharging the storage-tank without any danger.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

A practical embodiment of my invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement with parts in section. Fig. 2 is an enlarged sectional plan view of the evaporating-pan. Fig. 3 is an enlarged sectional side elevation of the water-heating device for the water-tank, and Fig. 4 is an enlarged section of part of the improvement on the line 4 4 in Fig. 1.

The improved carbureter is provided with a gasolene-storage tank A, connected at its bottom by a pipe A′ with a gasolene-supply chamber B, kept filled with gasolene from said storage-tank A to a predetermined level by means of a valve A^2, held in the pipe A′ and controlled by a float A^3, swimming in the liquid contained in the chamber B. The bottom B′ of the chamber B is made hopper-shaped, as is plainly indicated in Fig. 1, to allow sediment to collect in the lower end of the bottom, the sediment being withdrawn from time to time through a suitable faucet B^2, leading to the outside.

The lower end of the hopper-shaped bottom B′ contains an outlet-valve C, having its entrance-opening located somewhat above the opening of the faucet B^2, so that only pure gasolene passes through said valve C down into an evaporating-pan D, arranged in the upper end of a tank E, filled with water.

The evaporating-pan D is preferably inclined, as indicated in Fig. 1, the inflow of gasolene being at the upper end, and an air-inlet pipe F likewise opens into the pan at the upper end thereof. The lower end of the pan D is connected with a coil G, extending into the water in the tank E and terminating in a pipe G′, leading from the tank to an air-pump H, of any approved construction and actuated by a drum and weighted cord, wire, or cable I or other suitable means. A drip-pipe G^2 leads from the lower end of the coil G into a drip-pan G^3 to allow the gasolene that has not evaporated in the pan D and coil G to flow into the drip-pan G^3, from which the accumulated gasolene is pumped from time to time back into the gasolene-storage tank A, as hereinafter more fully described, without, however, subjecting the gasolene to the action of atmospheric air during the transfer from the drip-pan G^3 to the tank A.

As shown in the drawings, the drip-pan G^3, the tank E, the chamber B, and the storage-tank A are located one above the other, so as to reduce the size of the apparatus as much as possible.

The air-pump H discharges into a pipe J, which leads to a stand-pipe J′, opening into the gasometer-bell K, mounted in the usual manner in a gasometer-tank K′, and the gas accumulating in said bell K is passed into the usual gas-main K^2 for carrying the gas to the burners.

The evaporating-pan D is provided with transversely-extending partitions or ridges D′, rising a suitable distance from the bottom, but terminating below the top of the pan, as is plainly indicated in Fig. 1. The partitions are arranged in such a manner as to form a zigzag passage for the gasolene flowing into the pan at the upper end thereof (see Figs. 1 and 2) to finally pass at the lower end of the pan into the evaporating-coil G, as previously described, the air, however, passing over the partitions upon the gasolene as the

latter slowly flows from the upper end of the pan toward the lower end thereof.

In order to distribute the air entering the pan through the pipe F, I provide a transversely extending perforated partition D^2 next to the entrance end of the pipe F, so that the air is divided and spread over the entire pan D to come in contact with all the gasolene during the flow of the latter through the zigzag passage to cause a rapid evaporation of the gasolene and a consequent mixing with the air to form the gas.

It is evident that when the air-pump H is started a suction is caused in the coil G and pan D, and consequently the air readily passes from the pipe F in and through the pan D and into the coil G, so that the gasolene that has not been evaporated completely in the pan will finally be evaporated and mixed with the air in the coil G previously to its passage into the air-pump H by way of the pipe G. Any liquid not evaporated passes through the drip-pipe G^2 into the drip-pan G^3, as previously explained.

The pipe F, as shown in Fig. 1, extends upwardly and contains a valve F', controlled from the gasometer-bell K, simultaneously with the lever C' for opening the valve C, controlling the outflow of the gasolene from the chamber B into the evaporating-pan D. On the top of the pipe F is arranged a cap F^2, which is removed during the warm season to allow atmospheric air to be drawn through the pipe F into the pan D by the action of the pump H for forming gas, as above described; but during the cold season the cap F^2 is placed in position on the pipe F to close the same, and then the air for forming the gas and passed through the pipe F is previously heated. For this purpose the pipe F' and the cap F^2 are connected by a branch pipe F^3 with a warmer F^4 in the form of a closed tube, through which passes the gas-main K^2 after leaving the gasometer-tank K'. The warmer F^4 is connected by a pipe F^5 with the top of a heating-drum L, arranged alongside the water-tank E, and having a burner L' of any approved construction in the lower open end of the shell for the heater L. The burner L' receives its supply of gas from a pipe L^2, connected with the outlet-pipe J for the pump H. A valve L^3 in the pipe L^2 serves to control the amount of gas passing to the burner. Inside of the shell for the heater L is arranged a heating-core L^4, preferably made hollow and surrounded by a coil E', connected at its lower and upper ends by pipes E^2 E^3 with the bottom and top portions of the water-tank E.

When the apparatus is in use during the winter time, the heat from the burner L' heats the water circulating through the coil E', so that the water in the tank E is always at a proper temperature to insure a proper heating of the coil G and the evaporating-pan D for producing the gas without danger of frost forming in the said evaporating-pan and the said coil. The air entering the shell of the heater L is likewise heated and is passed through the pipe F^5 and into the warmer F^4 to heat the gas-main K^2, so as to prevent the same from freezing or from forming frost on the inside of the pipe, and then the heated air passes by way of the branch pipe F^3 into the pipe F, past the valve F', to finally pass into the evaporating-pan D.

The mechanism for controlling the valves F' and C simultaneously and quickly from the gasometer-bell K is arranged as follows: A swinging balance N, in the form of a tube containing a liquid or a ball, is pivoted at the middle at N' to a bracket supported from the top of the storage-tank A. On the ends of this balance are arranged downwardly-extending arms N^2 N^2, adapted to engage opposite ends of a lever O, fulcrumed at its middle on the bracket carrying the balance N. This lever O carries on one end a weight O' and at its other end an adjustable arm O^2, pivotally connected with a crank-arm F^8 on the valve F', so that when the lever O swings downward by the arm N^2 coming in contact with the said lever then the valve F' is closed; but when the lever O is swung back to the position shown in Fig. 1 by the action of the arm N^3 on the other end of said lever then the valve F' is opened. The lever O is also provided between its fulcrum and the arm O^2 with a bearing O^3 for a rod P, carrying two nuts P' and P^2 for engaging the bearing at the top and bottom, the nuts being adjustably held on said rod P. The latter extends through a stuffing-box A^3 on the top of the tank A down through a pipe A^4 to carry at its lower end a weight P^3, adapted to engage the free end of a lever C' for opening the valve C and allowing the gasolene to flow from the supply-chamber B into the upper end of the evaporating-pan D. The valve C, by its own weight or that of a spring, is normally held to its seat and is only opened when the lever O receives a swinging motion by the arm N^2 moving in contact with this end of the lever, so that the rod P is moved downward and with its lower end actuates the lever C'.

The balance N normally stands in a horizontal position, as shown in Fig. 1, but receives a swinging motion in either direction from the bell K of the gasometer, and for this purpose the balance N is provided near the end carrying the arm N^2 with a bearing N^4, engaged by a rod Q, carrying adjustable collars Q' Q^2 for engaging the said bearing at the bottom and top. The upper end of the rod Q is pivotally connected with a lever Q^3, fulcrumed on a bracket Q^4, carried by the gasometer-tank K', and the free end of the lever Q^3 extends between two adjustable collars K^3 and K^4 on a rod K^5, secured to the top of the gasometer-bell K and fitted to slide in a bracket K^6, carried by the gasometer-tank K'.

When the several parts are in the position shown in Fig. 1, the valves F' and C are closed, and when the gas in the gasometer-bell K is

withdrawn by way of the gas-main K^2 then the bell K sinks and imparts a downward swinging motion to the lever Q^3, so that the collar Q^2 finally comes in contact with the bearing N^4 to swing the balance N in the direction of the arrow a' and cause the arm N^2 to impart a swinging motion to the lever O in the same direction, whereby the valves F' and C are opened to admit both air and gasolene to the evaporating-pan D. The gas now generated is pumped by the pump H into the gasometer-bell K, and as the latter rises an upward swinging motion is given to the lever Q^3, so that finally the collar Q' comes in contact with the bottom of the bearing N^4 and imparts a swinging motion to the balance N in the inverse direction of the arrow a', so that the arm N^3 finally comes in contact with the left-hand end of the lever O to impart a swinging motion to this lever in the inverse direction of said arrow. When this takes place, the valve F' is closed and the valve-lever C' is released by the rod P to allow the valve C to close by its own weight or a spring connected with the valve for that purpose. The flow of the gasolene and air is thus shut off from the evaporating-pan D, and a further generation of gas ceases until the bell moves back to a lowermost position, as previously explained.

A supply-pipe R for supplying the gasolene-storage tank with gasolene is provided with a check-valve R' and opens into a tank S, connected with a pump T, of any approved construction. The bottom of the tank S is provided with a suction-pipe S', having a suction-valve S^2, and said pipe S' is connected with a pipe U, opening into the drip-pan G^3, and having a valve U' for connecting or disconnecting the drip-pan and the pipe S'. A pipe V, having a valve V', also connects with the suction-pipe S', and this pipe V is adapted to be connected by a hose or other means with a shipping-tank for pumping the gasolene direct from said shipping-tank into the storage-tank A. In order to do this, the valve U' is closed and the valve V' is opened, and then the pump T is set in operation to pump the gasolene from the shipping-tank by way of the hose, pipe S', tank S, and pipe R into the storage-tank A.

When it is desired to empty the drip-pan G^3, the valve U' is opened and the valve V' is closed, and then the pump T is set in action to draw the gasolene from the drip-pan G^3 into the tank S and to then force it through the pipe R into the storage-tank A. Thus by the arrangement described the gasolene is passed from the shipping-tank or from the drip-pan G^3 into the storage-tank without coming in contact with the air, so that no dangerous explosive mixtures are formed.

When the storage-tank A is filled with gasolene, a valve F^7 in a pipe F^6, connecting the tank A with the pipe F, is opened to allow the escape of gas formed in the storage-tank by way of the pipe F^6 and pipe F into the evaporating-pan D, so that no gas whatever is lost.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. An apparatus for manufacturing gas, provided with a water-tank, an evaporating-pan connected with a gasolene-supply and an air-supply, an evaporating-coil leading from the pan, the pan and the coil being submerged in the water in the tank, and a pump connected with the said coil, substantially as shown and described.

2. An apparatus for manufacturing gas provided with a water-tank, an evaporating-pan connected with a gasolene-supply and an air-supply, an evaporating-coil leading from the said pan, the pan and the coil being submerged in the water in the tank, a heater connected with the said water-tank to heat the water therein, and a pump connected with the said coil, substantially as shown and described.

3. An apparatus for manufacturing gas, provided with a water-tank, an evaporating-pan connected with a gasolene-supply, an air-supply and an evaporating-coil leading from the said pan, the pan and the coil being submerged in the water, to permit of reducing the high strength of the gasolene in the evaporating-pan and allow a continued evaporation in the coil, a pump connected with the said coil for drawing the gas from the coil and pan, a gasometer into which discharges the pump, and valves for controlling the supply of gasolene and air to the said evaporating-pan, the said valves being controlled by the gasometer-bell, substantially as shown and described.

4. An apparatus for manufacturing gas, provided with a water-tank, an evaporating-pan connected with a gasolene-supply, an air-supply and an evaporating-coil leading from the said pan, the pan and the coil being submerged in the water, to permit of reducing the high strength of the gasolene in the evaporating-pan and allow a continued evaporation in the coil, a pump connected with the said coil, for drawing the gas from the coil and pan, a gasometer into which discharges the pump, valves for controlling the supply of gasolene and air to the said evaporating-pan, the said valves being controlled by the gasometer-bell, and an operating connection between the said bell and the said valves, and comprising a lever connected with the bell, a balance controlled by the said lever, a second lever controlled by the said balance, and connections between the said second lever and the said valves, substantially as shown and described.

5. An apparatus for manufacturing gas provided with an inclined evaporating-pan having transverse partitions forming a zigzag passage for the gasolene to flow in, the partitions being arranged at an inclination to each other and rising but a short distance from the bottom of the pan to leave the top thereof

free for the passage of the air, a gasolene-supply pipe opening into the top of the pan at its upper end and an air-supply pipe opening into the upper end of the pan, substantially as shown and described.

6. An apparatus for manufacturing gas, provided with an inclined evaporating-pan having transverse partitions forming a zigzag passage for the gasolene to flow in, the partitions rising but a short distance from the bottom of the pan, to leave the top thereof free for the passage of the air, a gasolene-supply pipe opening into the upper end of the pan, an air-supply pipe likewise opening into the pan at the upper end thereof, a distributer in the pan, for distributing the air entering through the air-pipe, an evaporating-coil leading from the lower end of the said pan, and an air-pump connected by a pipe with the said coil, substantially as shown and described.

7. An apparatus for the manufacture of gas provided with a gasolene-supply chamber having a hopper-bottom, a faucet leading from the hopper-bottom to the outside for drawing off the sediment collecting in the lower end of the hopper-bottom, and a valved outlet-pipe for the gasolene leading from the said bottom and having an entrance-opening located above the opening of the faucet, substantially as shown and described.

8. An apparatus for the manufacture of gas provided with a gasolene-storage tank, a drip-pan, a tank provided with a suction-pipe connected with said drip-pan, a pump connected with said tank and a pipe provided with a check-valve and leading from said tank to the storage-tank, substantially as shown and described.

9. An apparatus for the manufacture of gas, provided with a gasolene-storage tank, a drip-pan, a pump having a suction-pipe connected with said drip-pan, a discharge-pipe connecting the pump with the said storage-tank, and a valved pipe connected with the said suction-pipe, and arranged for connection with a shipping-tank, substantially as shown and described.

10. An apparatus for the manufacture of gas provided with an evaporating-pan connected with a gasolene-supply a pipe connected with said pan for the admission of air, an evaporating-coil leading from the said pan, a pump connected with the said coil for drawing the air into and through the pan and coil and a gasometer into which discharges the said pump, substantially as described.

11. An apparatus for the manufacture of gas comprising a gasolene-storage tank, a gasolene-supply chamber connected with said tank, a water-tank, an evaporating-pan connected with the gasolene-supply chamber, an evaporating-coil leading from said pan, the evaporating pan and coil being submerged in the water in the tank, a pump connected with the evaporating-coil a gasometer into which discharges the pump, a heater connected with the water-tank to heat the water therein and a pipe connected with the heater and leading to the evaporating-pan to convey heated air thereto, substantially as shown and described.

12. An apparatus for the manufacture of gas comprising an evaporating-pan connected with a gasolene-supply, an evaporating-coil leading from the said pan, an air-pump connected by a pipe with the said coil, a gasometer into which discharges the pump, a gas-main leading from the gasometer, a warmer for the gas-main comprising a closed tube through which the gas-main passes, a heating-drum connected by an air-pipe with the said warmer, and an air-conveying pipe leading from the warmer to the evaporating-pan, substantially as described.

13. An apparatus for the manufacture of gas comprising a gasolene-storage tank, a gasolene-supply chamber connected with said tank, an evaporating-pan connected with the gasolene-supply chamber, a pump connected by a pipe with the evaporating-pan, a storage vessel into which the said pump discharges, a pipe connected with the evaporating-pan for admission of air thereto and a pipe connecting the gasolene-storage tank with the pipe leading to the evaporating-pan, substantially as described.

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