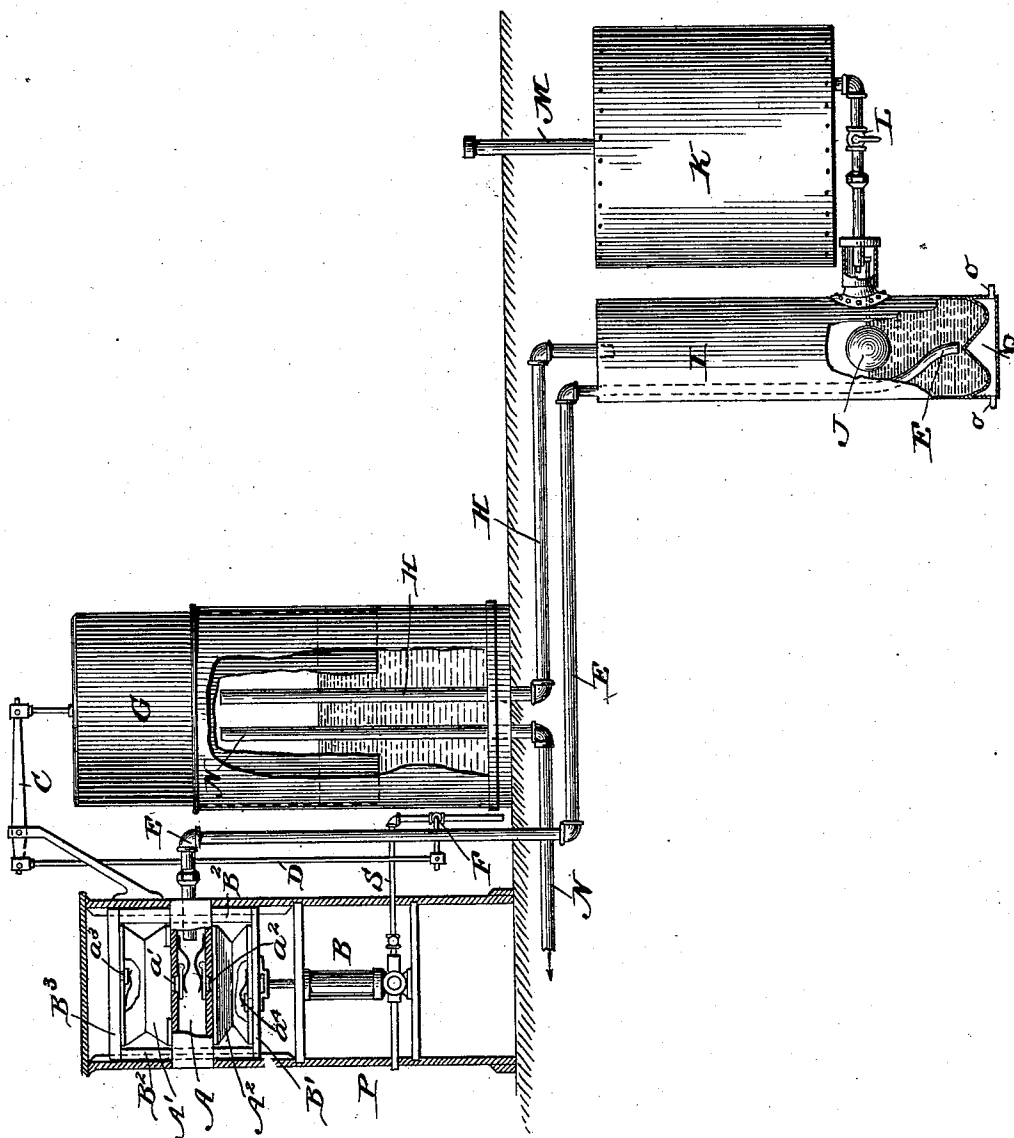


(No Model.)

U. A. GARRED.
MACHINE FOR GENERATING GAS.

No. 568,672.

Patented Sept. 29, 1896.



WITNESSES:

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ULYSSES A. GARRED, OF LEXINGTON, KENTUCKY, ASSIGNOR OF THREE-FOURTHS TO CHARLES E. TIPTON, WILLIAM N. CROPPER, AND CHARLES F. ALDRICH, OF SAME PLACE.

MACHINE FOR GENERATING GAS.

SPECIFICATION forming part of Letters Patent No. 568,672, dated September 29, 1896.

Application filed May 19, 1896. Serial No. 592,105. (No model.)

To all whom it may concern:

Be it known that I, ULYSSES A. GARRED, a citizen of the United States, residing at Lexington, in the county of Fayette and State of Kentucky, have invented a new and useful Improvement in Machines for Generating Gas, of which the following is a specification.

My invention relates to a machine for the manufacture of gas for heating and illuminating purposes from gasolene or other light hydrocarbon liquid by forcing air through it so as to carburet the air; and it consists in the peculiar construction and arrangement of devices hereinafter described and claimed.

The figure is a side elevation of the apparatus shown partly in section.

In the accompanying drawing, P is the frame of the air-compressor, which latter is constructed as a bellows driven by water-motor B. The air-compressor consists of a middle chamber A, fixed in the framework and having a bellows A' above it and another, A², below it, both communicating with the chamber A through valves a' a², opening into chamber A, each bellows having also its inlet-valve a³ a⁴ for taking in air. The top bar B³ of the upper bellows is connected to the bottom bar B' of the bellows by the vertical side bars B² B², which move in guides in the main frame and which when reciprocated cause one bellows to take in air while the other one is delivering the air into the chamber A, thus making a continuous blast. Thus when the yoke-shaped frame B' B² B³ moves down the air of bellows A' is forced into the stationary chamber A through valve a' and valve a³ is closed. The same movement expands bellows A², closes its valve a², and takes in air through valve a⁴. On the upward movement of the yoke-shaped frame these conditions are reversed. That is to say, bellows A² discharges its air through valve a² into the stationary chamber A and valve a⁴ is closed, while the bellows A' expands and, closing valve a', takes in a fresh supply of air through valve a³. In this way the reciprocation of the yoke-shaped frame causes a continuous inflow of air into the stationary chamber A.

The bellows are worked by the piston of

a water-motor cylinder operated by water through water-pipe S, controlled by lever-arm C, rod D, and valve F.

E is an air-pipe leading from air-compressor chamber A to generating-cylinder I. 55

G is a reservoir sealed by water; H, a pipe leading gas from generating-cylinder I to reservoir G. There will be one or more of these generating-cylinders to each machine.

J is a float-valve regulating height of gasolene or other hydrocarbon liquid in cylinder and acting automatically to admit the gasolene or hydrocarbon liquid from tank K. 60

L is a valve, M a filling-pipe, and N a gas-pipe leading from holder G to the house or place of use. 65

Q is a mixer for bringing the air into intimate contact with the gasolene in the generator I. This mixer consists of an annular curved trough formed in the bottom of the generator and rising in the center to a peak immediately below the discharge end of the air-pipe E, so that when the air strikes this peak it will be resolved into a thin funnel-shaped jet or sheet that passes into intimate contact with the heavy oil on the bottom of the generator and scours the bottom and makes an economical use of the hydrocarbon. 70 75

The machine is constructed of such material as may be found in any plumbing and tinning shop. It is automatic and can be started by merely lighting any jet on the system of burners supplied by pipe N. This draws gas from the reservoir G, and it is lowered by its own weight, drawing with it one end of lever C. The other end pulls up rod D and opens valve F. Water then flows into motor B and starts it, and the consumption and generation of gas thus goes on continuously and automatically. The water-motor, working according to the demand for gas, keeps just such a stream flowing as may be required, and no more. 80 85 90

The generating-cylinder I is one of the important features of the machine. To it belongs the float-valve, which maintains the same quantity or depth of gasolene in I at all times while running or shut down, thereby keeping it near the same proof of the original eighty-seven degrees in tank K, because 95 100

there is just as much allowed to flow in as is made into gas. The mixer Q has a double purpose, first, to distribute the air and mix it with gasolene, and, secondly, to regulate the temperature of gasolene by allowing some warm liquid to circulate through pipes o o, beneath the annular trough Q. By these combined means I make gas with required amount of carbon in it to suit any purpose.

10 In other words, I vary the carbon in gas at will, and from experiments I have found the gas to be a first-class gas for heating cooking-stoves, laundry-machines, and in all other such places where gas is used for heat. It

15 also makes a first-class lighting-gas, which cannot be surpassed in the Welsbach burner. There is not the least condensation in pipes from it, so that it is practicable to run pipes in any direction and give no attention to the

20 traps or places where other gases would fill with sediment caused by condensations.

K is only a simple tank to hold the supply of hydrocarbon. It may be placed at any distance from generator I in order to get the

25 gasolene at a safe distance from houses, and it is preferably buried in the ground, as shown.

The pressure of air in E is obtained by and is equal to the column of gasolene in generator I. This gasolene is forced out before the

30 air into chamber I. The air passes into the lowest possible part of I, mixing first with the heavy liquid, which is least volatile, and, the fresh air being most active, in this way I secure the best result, having the two proper

35 extremes together, and as the air becomes partly saturated with hydrocarbon it ascends through the liquid, being charged more and more as it meets the more volatile liquid at the top. The gas-holder G may be of ordinary construction, two simple tanks open at

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one end, one inverted in the other and just a little smaller, that it may slide up and down without too much friction. Water is put in lower one to seal it and make the two gas-tight. The tank has guides when large enough to require it.

Instead of using the air-forcing compound bellows, I may use a double-acting air-cylinder connected to the driving-motor.

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

1. The carbureting-chamber having its bottom formed with a concentric annular trough with a conical peak or projection rising in the center and with its outer edges curved upwardly to the sides of the carbureting-chamber; in combination with an air-inlet pipe arranged centrally above the peak and discharging downwardly on the same to cause the air to scour the bottom of the carbureting-chamber in a thin radiating sheet substantially as and for the purpose described.

2. The carbureting-chamber having its bottom formed with a concentric annular trough having conical peak or projection rising in the center and with its outer edge curved upwardly to the sides of the carbureting-chamber, an inlet air-pipe arranged centrally above the peak and discharging downwardly on the same, a second bottom arranged beneath the annular trough bottom of the carbureting-chamber and forming a subjacent chamber for a heating-bath with inlet and outlet connections substantially as and for the purpose described.

ULYSSES A. GARRED.

Witnesses:

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