

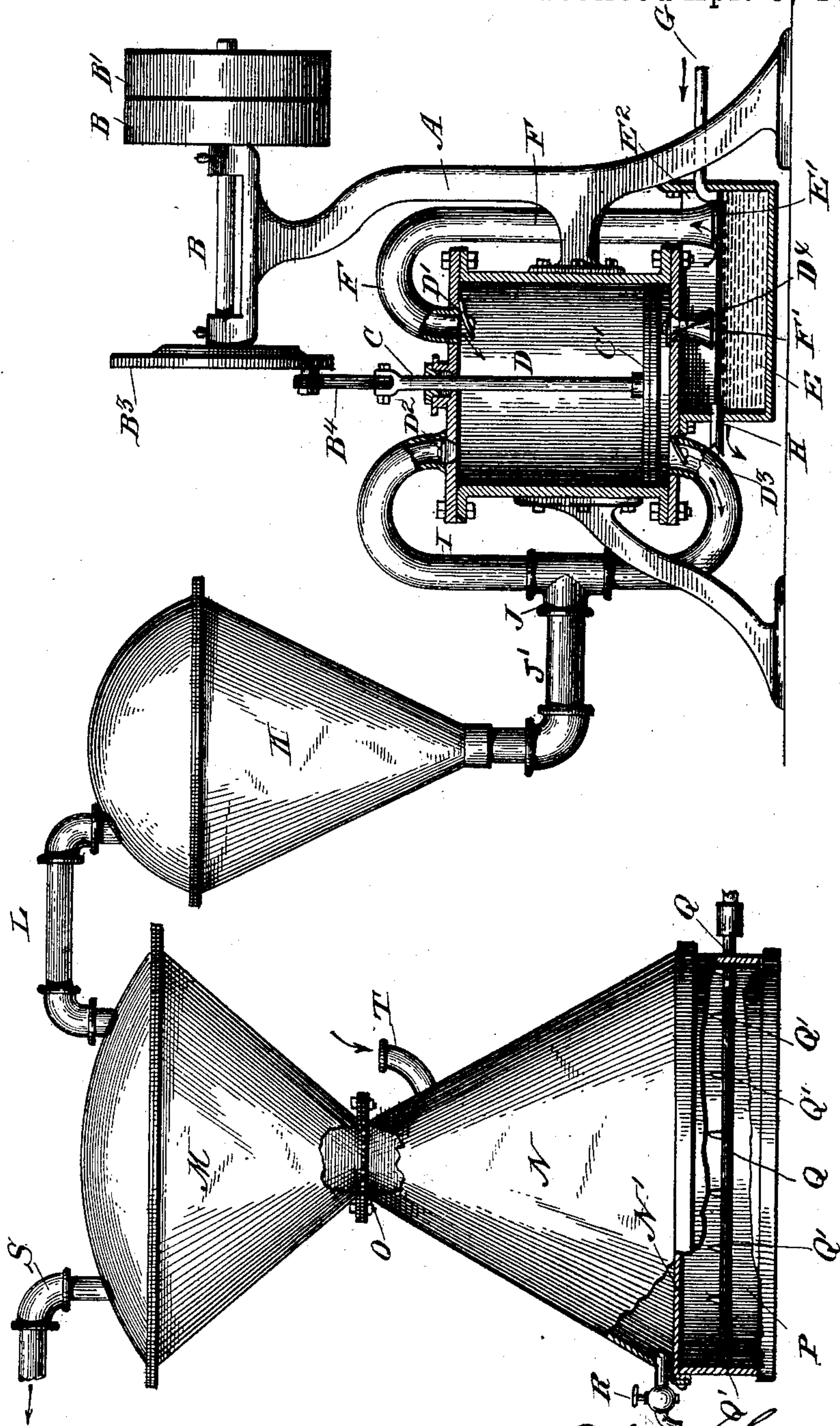
(No Model.)

A. LANGDON.

APPARATUS FOR MAKING GAS.

No. 360,533.

Patented Apr. 5, 1887.



WITNESSES
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UNITED STATES PATENT OFFICE.

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APPARATUS FOR MAKING GAS.

SPECIFICATION forming part of Letters Patent No. 360,533, dated April 5, 1887.

Application filed September 8, 1886. Serial No. 213,011. (No model.)

To all whom it may concern:

Be it known that I, ALFRED LANGDON, a citizen of the United States, residing at Jefferson City, in the county of Cole, State of Missouri, have invented certain new and useful Improvements in Apparatus for Making Gas, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention has relation to an apparatus for the manufacture of gas from heavy hydrocarbons—such as, for example, petroleum.

This apparatus is of that class which is adapted to inhale the outer atmospheric air, 15 pass it over water to cause it to take up more or less moisture, condense the air taken in, and force it to commingle with the vapors of the hydrocarbon employed.

The construction of the apparatus and its 20 mode of operation will be hereinafter described, and the novel features of the invention will be particularly pointed out in the claims.

Referring to the drawing, which is a side elevation of the apparatus with portions in section, A represents a suitable frame-work, in 25 which is mounted a shaft, B, provided at one end with an ordinary loose and driving pulley, B' B², respectively, and at the other end with a disk or crank, B³, upon the wrist-pin of which is mounted a connecting-rod, B⁴, suitably coupled with a piston-rod, C, attached to a piston-head, C', which is adapted to fit a cylinder, D, having at its upper end inner and 30 outer check-valves, D' D², respectively, and a similar pair of valves, D³ D⁴, at its lower end. These valves are so mounted that upon a downward stroke of the piston the upper inlet-valve, D', and the lower outlet-valve, D³, are opened, while at an upward stroke of the piston-head the upper outlet-valve, D², and the 40 lower inlet-valve, D⁴, are opened.

The inlet-valves are made to communicate with a water-tank, E, the upper valve doing this by means of the pipe F. A short pipe, F', 45 extends from the lower inlet-valve into the water-tank, and both pipes terminate just above the diaphragm E', which is perforated, as shown.

A supply-pipe, G, and a vertical pipe, H, are 50 arranged in the tank so that the upper surface

of the water is maintained at or near, or it may be in contact with, the perforated diaphragm E'. An opening, E², is formed in the top of the tank, to admit air into the upper portion thereof.

A pipe, I, communicates at its ends with the upper and lower outlet-valves of the cylinder, and is provided with a T-coupling, J, for the purpose of connecting the discharge-pipe J' with the pipe I and with an air-chamber, K. 55 From the dome, or it may be from any other suitable part of the air-chamber, there extends a connecting-pipe, L, which communicates with a mixing-chamber, M, mounted upon a vaporizer or still, N. Between these 60 two last-mentioned elements of the apparatus there is a perforated division-plate, O, and below the imperforate bottom, N', of the still N is a chamber, P, into which is extended a gas-pipe, Q, having burners Q' thereon, and just 70 above the bottom of the still there is a blow-off pipe and cock, R. A discharge-pipe, S, communicates with the mixing-chamber and with any suitable system of gas-distribution with which the ordinary burners intended for 75 lighting or heating are connected.

This being the construction, the operation is as follows: Motion being imparted to the shaft B, the piston-head is reciprocated in the cylinder D, and at each downward stroke 80 thereof the inlet-valve D' is opened, and air is drawn from the surrounding atmosphere through the opening E² into the water-tank and in contact with the perforated diaphragm thereof, and with the water upon, in, or near 85 the same, whereby the air becomes more or less humid. It is of course understood that the water is not allowed to come into contact with the lower ends of the pipes F F', lest it be drawn into the cylinder. The outlet-valve D³ is also 90 opened at a downward stroke of the piston, while the inlet-valve D' is closed at such stroke, whereby the air taken into the cylinder in a preceding upward stroke of the piston is forced through the pipe I in the direction indicated 95 by the arrow, and from thence into the air-chamber K, the upper outlet-valve being closed by the pressure of the air thereon, as well as by the suction produced by the downward stroke of the piston. Exactly the opposite 100

course is taken by the air in an upstroke of the piston—that is to say, the valve D' is closed, the valve D^2 opened, the valve D^4 opened, and the valve D^3 closed—so that at each stroke of
5 the piston saturated air is forced into the chamber K, and is held there under compression, except for such quantity thereof as may pass through the connecting-pipe L into the mixing-chamber M. Gas being supplied in the pipe
10 Q to the burners Q', they may be used in cold weather only for the purpose of heating a desired quantity of petroleum or other heavy hydrocarbon which is introduced into the still through the pipe T. The pressure of air in the
15 mixing-chamber produces a thorough commingling of the same with the vapor of the hydrocarbon, which rises into the mixing-chamber through the perforated plate O, and when thoroughly commingled the air and gas is con-
20 ducted through the pipe S to the place of use. Successive charges of the hydrocarbon employed are withdrawn from the still through the cock R.

Having described my invention and its operation, what I claim is— 25

1. In an apparatus for carbureting air, the combination of a water-tank having a perforated diaphragm, pipe terminating above the same, a cylinder provided with inlet and outlet valves communicating with said pipes and
30 with a delivery-pipe, an air-chamber, a mixing-chamber, and an oil-chamber, and means for heating the same, these chambers being connected with each other, substantially as specified. 35

2. The combination of the cylinder D with its valves, the pipes F and I, air-chamber K, mixing-chamber M, still N, and the gas-supply pipe Q Q', substantially as specified.

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

ALFRED LANGDON.

Witnesses:

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A. P. STANDISH.