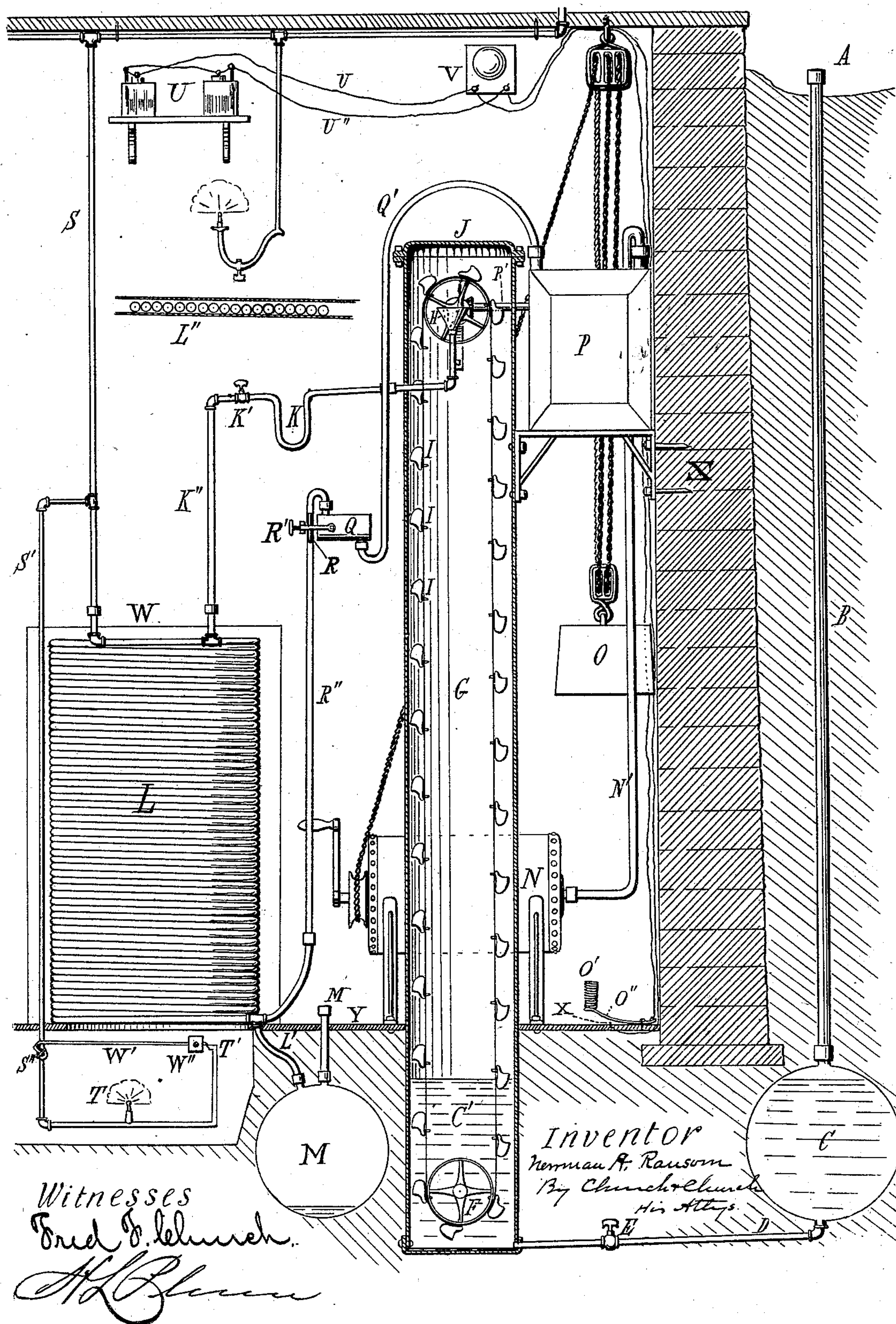


(No Model.)

N. A. RANSOM.
GAS MACHINE.

No. 308,796.

Patented Dec. 2, 1884.



UNITED STATES PATENT OFFICE.

NEWMAN A. RANSOM, OF CHICAGO, ILLINOIS.

GAS-MACHINE.

SPECIFICATION forming part of Letters Patent No. 308,796, dated December 2, 1884.

Application filed October 13, 1883. (No model.)

To all whom it may concern:

Be it known that I, NEWMAN A. RANSOM, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful
5 Improvements in Gas-Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, and to the figures and letters of reference marked thereon.

10 My present invention relates to that class of gas-machines wherein hydrocarbon vapors are generated and combined with air or other gaseous fluid to form the illuminating agent; and
15 it consists in certain improvements, more especially applicable to the machine or apparatus for which Letters Patent were granted to me April 3, 1883, as will hereinafter be more fully described, and pointed out in the claims.

20 The figure of the accompanying drawing represents a sectional elevation of the apparatus, in which C represents the supply tank or reservoir, situated under ground, preferably outside the building, and at a distance
25 therefrom. The supply-pipe B, through which the tank is filled, is carried up outside the building, or to any convenient point, and is provided with a cap, A, or any suitable valve. The bottom of the tank is located slightly
30 above the bottom of the feed-box G, with which it is connected through the pipe D and valve E. The feed-box G is elongated, so as to project below the floor-line, and of such proportions relatively to the reservoir or supply-
35 tank C that the supply of hydrocarbon liquid can never rise above a given point, the utmost limit being determined by the height of the column contained in the reservoir, and, if desired, a float controlling a valve in the supply-pipe D may be employed to regulate the
40 height of the liquid.

The hydrocarbon is supplied to the carburetor in suitable quantities by the buckets I, attached to a belt or chain passing around pulleys H and F and dipping into the liquid.
45 The contents of the buckets are discharged in the hopper or funnel at the upper end of the feed-box, and conducted through pipes K K' to the carburetor, as in my prior patent.

50 The carburetor is constructed in the form of a coil or worm, and is partially filled with balls impervious to the liquid. The addition of

these balls greatly increases the vaporizing-surface and capacity of the carburetor. It is important that they should be non-absorbent
55 and free from cups or cavities wherein the material might be retained.

The coil composing the carburetor is surrounded by a jacket, W, of sheet metal or other suitable material, and a flame, T, is applied
60 beneath the coil, to maintain an equable temperature of about 80°, or at any desired point that may be found most desirable. As shown in the drawing, the flame T is supplied by the combustion of the gas made by this machine,
65 and conducted beneath the carburetor through the pipe S'.

To cut off the flow of gas should the flame from any cause be extinguished, I have provided a thermostatic regulator, consisting of
70 a bar, W', attached to the cock S'', with its free end, when expanded by the heat of the flame, resting upon support T'. When the flame is extinguished, the bar W' contracts, and, withdrawing from the support T', falls by gravity,
75 and by so doing turns off the gas. A weight, W'', attached near the free end of the bar W', adds greatly to the certainty and effectiveness of its movement.

The expansion-rod W' may be made of
80 thin copper tubing, or other material having the property of expanding and contracting quickly.

The overflow-tank M is arranged to receive any surplus or residuum which might otherwise collect in the carburetor and impede the
85 flow of air and gas. Said tank may be buried in the earth at any desirable point, being connected to the coil of the carburetor by the pipe L', and provided with an outlet-pipe covered
90 by a cap, M', through which, when the cap is removed, a pump may be inserted and the accumulated liquid drawn off.

The pulley H, carrying the elevator-belt, is rotated by the meter P, as in my former patent.
95

The air is supplied by the force-pump N, of any suitable and well-known construction, and it is arranged to be operated by the descent of the weight O.

Between the pipe Q', leading from the meter
100 P, and the pipe R'', connected to the bottom of the coil of the carburetor L, is interposed a drying-chamber, Q, containing a horizontal perforated or reticulated shelf or diaphragm

for the reception of unslaked lime or other absorbent of moisture, through which the air is forced to dry it. One head, R, of the box or chamber Q is removable, being clamped tightly against the end by a screw, R', working through a yoke or stirrup pivoted to the box. This is to allow the lime or other absorbent material to be removed and renewed.

The drying-chamber may, if desired, be inserted in the pipe S between the carburetor and the service-pipes.

In order to give timely warning that the weight has nearly run down and that the machine needs attention, alarm or signaling devices are employed, consisting of an electric bell, V, and battery U in a normally-open circuit, which is closed by the descent of the weight O. To effect this latter operation, a spring contact-piece, O'', surmounted by a coiled spring, O', and extending above but not in contact with the terminal X, is arranged beneath the weight O, so that the latter, before it has reached the bottom or floor, shall close the circuit, thus causing the bell V to ring and give warning that the machine needs attention.

It is obvious that other well-known arrangements and devices may be employed for closing the circuit, and that instead of a normally-open circuit a closed circuit may be employed, in which case the descent of the weight will open instead of close the circuit; or a small dynamo-generator may be set in motion by the falling weight, or the weight caused to ring an ordinary non-electric bell.

The advantage derived from protecting and heating the carburetor is, that the evaporation of the hydrocarbon liquid is thereby facilitated, rendering it possible to use the whole of 74 gasoline, where before only a part of 87 gasoline could be vaporized.

The use of the thermostatic regulator prevents dangerous accumulations of gas, should

the flame from any cause whatever be extinguished, and, if proper electrical connections are provided, may be made to signal the fact that the gas is out, or that the flame has decreased below the minimum.

Having thus described my invention, I claim as new—

1. In a gas-machine, and in combination with the carbureting-coil and its inclosing-casing, a gas-jet located within the casing, and a thermostatic device located above and exposed to the direct action of the flame, for shutting off the supply of gas when the flame is extinguished, substantially as described.

2. In a gas-machine, the combination of a carbureting-coil, an inclosing-casing, a gas-jet, also within the casing, for maintaining a heating-flame, a cock in the gas-jet supply, and an expansible rod connected to the said cock and arranged above the gas-jet, and adapted when the flame is extinguished to contract and shut off the gas-supply to the jet, substantially as described.

3. In a gas-machine, the combination of a carbureting-coil, an inclosing-casing, a gas-jet, also within the casing, a cock in the gas-jet-supply pipe, an expansible rod connected to said cock and arranged above the gas-jet, and a weight for insuring the movement of the rod when released by the contraction of the rod, substantially as described.

4. In a gas-machine, the combination, with a carbureting-coil, of balls of non-absorbent material arranged within the pipe composing the coil, for the purpose of increasing the vaporizing-surface of the carburetor, substantially as described.

NEWMAN A. RANSOM.

Witnesses:

F. A. CHERITREE,
JOHN F. GREENLEAF.