

T. VAN KANNEL & L. D. TOWSLEY.
GAS-MACHINE RETORT.

No. 169,747.

Patented Nov. 9, 1875.

Fig. 1

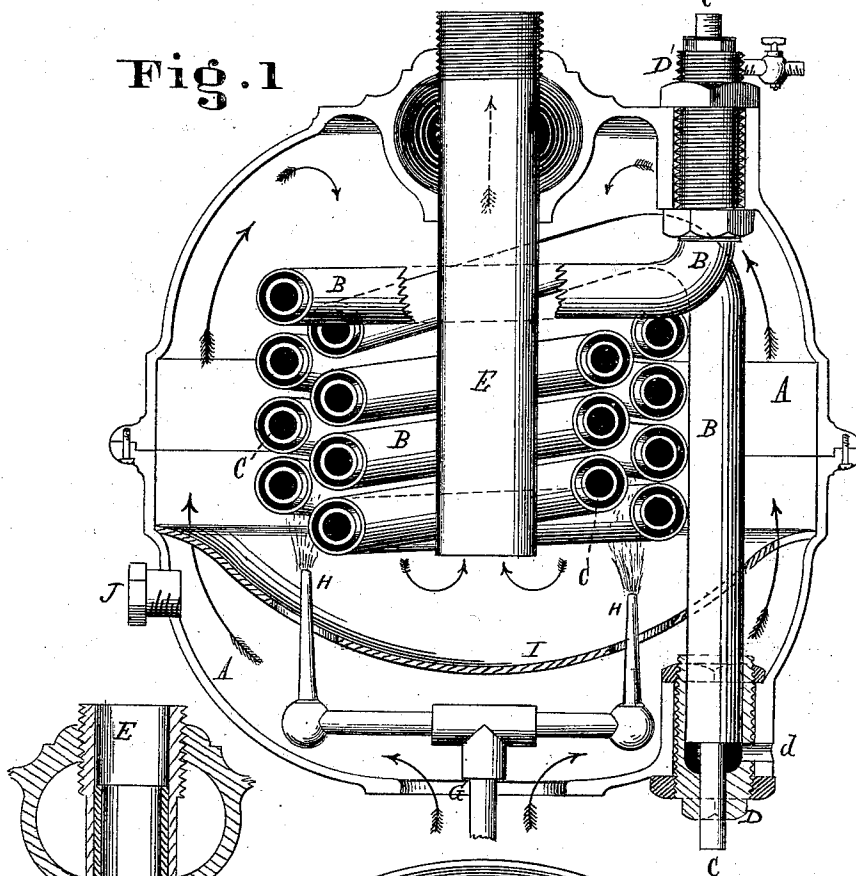


Fig. 3

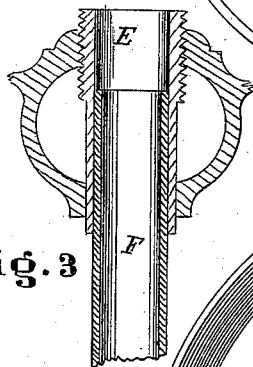
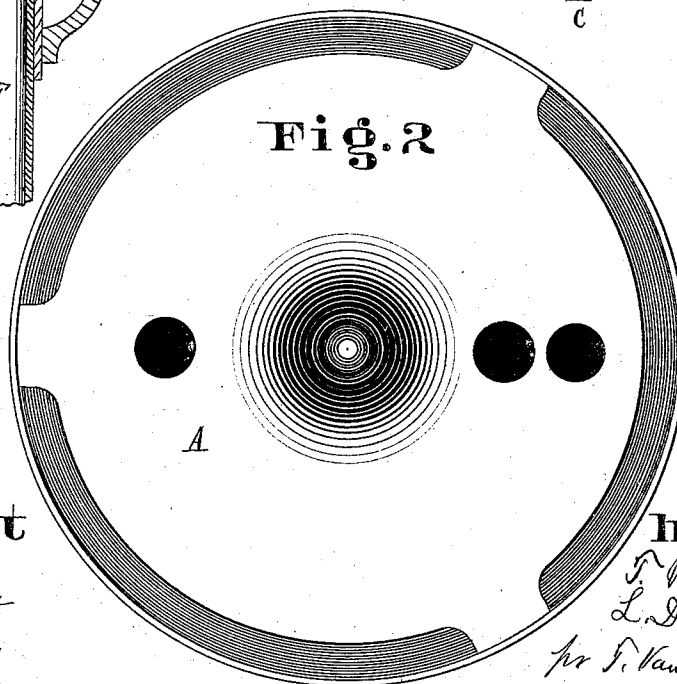


Fig. 2



Attest

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THEOPHILUS VAN KANNEL AND LOVIAS D. TOWSLEY, OF CINCINNATI, OHIO; SAID VAN KANNEL ASSIGNOR TO SAID TOWSLEY.

IMPROVEMENT IN GAS-MACHINE RETORTS.

Specification forming part of Letters Patent No. **169,747**, dated November 9, 1875; application filed August 31, 1875.

To all whom it may concern:

Be it known that we, THEOPHILUS VAN KANNEL and L. D. TOWSLEY, both of Cincinnati, Hamilton county, State of Ohio, have invented a new and useful Improvement in Gas-Machine Retorts; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification.

Figure 1 is a vertical section. Fig. 2 is a plan of the same, and Fig. 3 represents the adjustable damper-sleeve.

Similar letters of reference indicate like parts.

The nature of our invention relates to that class of gas-machines wherein a light hydrocarbon is brought to a vapor of high pressure by heat, which vapor forces up and fills the gasometer by emerging from a small jet which draws in and mixes therewith a given quantity of air.

Our invention consists in a retort for heating the fluid economically, and making it easy of operation, and at the same time compact and safe.

In construction our invention is as follows:

A is the main housing or shell, inclosing a double coil of spiral pipe, B, which has within it another double coil of spiral pipe, C, the two being of such relative size as to allow a space between them, which space is occupied by water. These pipes may be made of metal or other suitable material, and have one end protruding below, and the other above, the shell A. The pipe B is closed by having caps D D' screwed over their ends, being bored out in the center, to allow the longer pipe C to pass through. The same has also a thread cut outside, which will admit two lock-nuts, one within and the other without the shell, holding the coils firmly to the shell, and making the same air-tight.

It will be observed that the inner pipe C has a through-passage, while the outer one has not.

The pipe B, or its lower cap D, is tapped at d, to receive a pipe, which communicates to a regulating and indicating valve, whereby

the increased pressure of water in the coil will shut off the gas which heats said water; and vice versa. The upper cap D' is tapped to receive a steam-gage, and this opening also serves to replenish the coil with water when necessary. The inner pipe C leads below to the oil-tank, kept under pressure by water or otherwise, and is supplied with a valve or stop-cock, for shutting off this communication, when it is so desired. The upper end of pipe C leads first to the mixing-valve, and then to the gas-holder. In the center, vertically, is seen a section of pipe, E, which is firmly screwed within shell A, and within pipe E is seen sleeve F, which may be raised or lowered, and is kept in position by its elasticity and pressure against the interior of pipe E. This constitutes a chimney for the escape of the heated air, smoke, &c., and just below the shell A receives another pipe, G, through an opening, which conducts pure air to the burners H H. An inverted convex and concave disk, I, is placed between the sleeve F and the pipe G, having two large openings surrounding the burner-tips. At J is seen an opening closed by a plug, through which a taper may be applied to burners H.

The operation is as follows: The space between the two coils having been filled with water, (except a small space left for steam,) this compartment is put in communication with the pressure-gage and heat-regulator valve. This valve is to be so adjusted that when the water or steam has attained a pressure of ten pounds, or other given degree, to the square inch, the gas which gives the heat is partly shut off, so that the water-pressure never rises above a given degree. The amount of heat is sufficient to change the gasoline in pipe C into a vapor of sufficient pressure to elevate the gas-holder, as above mentioned.

The drawing will show the air-currents as they supply the burners, by the arrows marked thereon. As the air enters below, it can only move to the burners through two large openings surrounding them. As the heat passes up it touches every side of the coil, and descends near and around the damper-sleeve F, which it enters, and passes out of. Thus the

pure air, on entering, has no chance to mix with the carbonic-acid gas which descends around the damper F, while the hot air is given a complete circulation, thus heating every part of the coil.

When the escape of heat is too free, the damper can be lowered; when the reverse, then it is to be raised, giving freer escape to the heated air.

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

1. In gas-machine retorts, the combination of the coiled pipes B and C with a water-space between, the latter communicating with the

oil-reservoir and injecting apparatus, substantially as described.

2. The concave disk I, having perforations to supply pure air to the burners H H, in combination with the jacket A and coils B C, substantially as described.

3. The cylindrical damper-sleeve F, in combination with the disk I, as and for the purpose set forth.

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