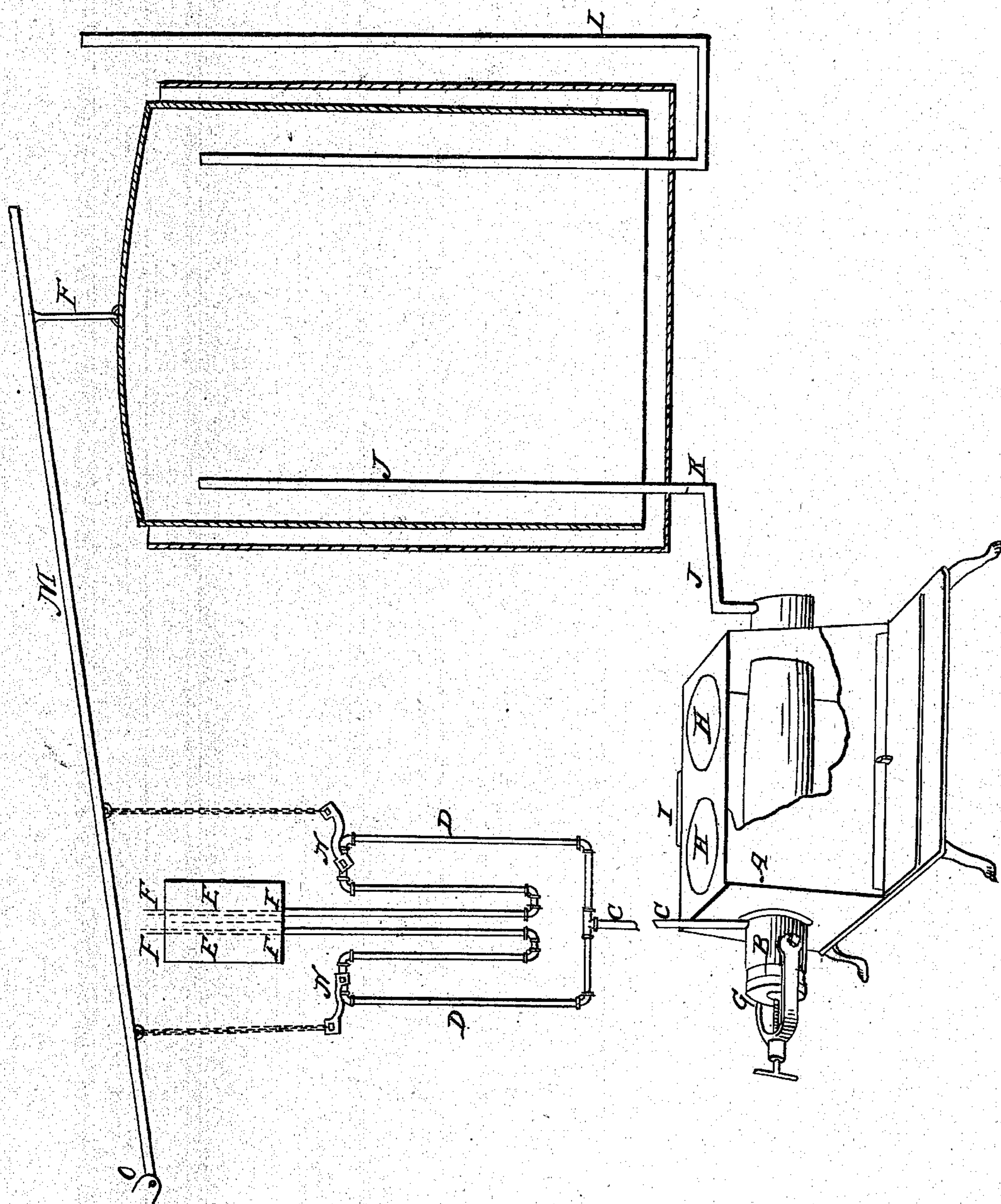


L. L. HILL.
Making Illuminating Gas.

No. 35,610.

Patented June 17, 1862.



Witnesses:
Geo. B. Hill,
Provr.

Inventor
L. L. Hill

UNITED STATES PATENT OFFICE.

LEVI L. HILL, OF HUDSON, NEW YORK.

IMPROVEMENT IN MAKING ILLUMINATING-GAS.

Specification forming part of Letters Patent No. 35,610, dated June 17, 1862.

To all whom it may concern:

Be it known that I, LEVI L. HILL, of Hudson, in the county of Columbia and State of New York, have invented a new and Improved Mode of Generating Gas; and I do hereby declare that the following is a full and exact description of the said invention.

The nature of my invention consists in the decomposition of water and oil, and in certain methods of economizing the process and rendering it convenient, simple, and effective.

To enable others skilled in the art to make and use my invention, I proceed to describe its operation.

I first of all construct of cast-iron or other suitable material a cylindrical retort, with a convenient cap opening and the proper openings for feed and discharge pipes at or near the respective ends. The feed-pipe projects upward about two feet, where it is united to two branches, each of which is bent after the fashion of the common safety-tube, and then terminates in the bottoms of two cans or water-tight compartments. Each of these branch pipes is provided with a stop-cock near its place of junction with the main feed-pipe. The end of each entering the can is filled with a disk of tin or other material, said disk being perforated with a hole about one-eighth of an inch in diameter. Through this hole, and projecting upward through the top of the can, is placed a wire or rod a little smaller than the hole in the disk. The oil or water will then be caused to flow in a fine stream, and the wire serves as a means of clearing said opening from clogage. A union-joint near the bottom of the main feed-pipe is found convenient when it is necessary to take the apparatus apart. I prefer to make and use one double can having a partition through its center, instead of two single cans, for in the former case, where paraffine or other congealable oil is used, hot water can be placed in the water-compartment, and thus the oil be kept limpid. The other end of the retort is provided with a discharge-pipe for leading the gas formed in the retort into the gasometer. In this I place a suitable valve opening toward the gasometer, and so arranged that it will close in case of a rupture or burning out of the retort, and thus prevent the gasometer from discharging its contents into the stove. The gasometer

is also provided with a safety-tube containing water or other fluid, so that in case the stop-cocks in the feed-pipes are not closed at the proper time the gasometer will relieve itself; but to secure the closing of said stop-cocks I arrange a connection between the gasometer when nearly full and the stop-cocks by means of a lever or cord.

For a portable gas-works I make the retort about thirty inches long and four inches diameter inside, and place it in the center of a small box-stove by means of openings in the end of the stove. This stove is about twenty inches long, twelve inches wide, and twelve inches high, and is provided with boiler-openings for cooking purposes, so that the gas required for an evening's use may be made with the same heat that cooks the meals; but I do not limit the size of the retort or confine myself to any particular method of mounting it, the process being adapted to much larger operations.

My method of operating is as follows: I charge the retort with small billets of wood, preferring those kinds of wood which yield by destructive distillation a considerable quantity of gas. Having secured the cap at the end of the retort, I kindle the fire and bring the retort to a bright-red heat. By the time it attains a red heat a considerable quantity of wood-gas will have passed into the gasometer and the wood be converted into charcoal. The two stop-cocks in the feed-pipes are now to be opened, when the oil and water, in due proportions, will flow into the retort. The oil undergoes destructive distillation and forms a very rich olefiant gas, and the oxygen of the water being absorbed by the red-hot carbon, producing carbonic oxide, its hydrogen is set free. The result is a carbureted hydrogen at a very low cost, for I find in practice that I produce four to five hundred cubic feet of exceedingly luminous gas in the use of one gallon of oil, whereas the same amount of oil alone would yield but one hundred feet. I can use in the process any good gas, oil, or grease; but I prefer the heavy or paraffine oil of coal or petroleum.

In the accompanying drawing A and B represent the stove and the retort as mounted.

C indicates the main feed-pipe, and D D its branches, twice bent and terminating in double can E E, and arranged with regulating-holes

and wires F F F F. The holes are in the top end of feed-pipes, and the wires run through these holes and project upward through the top of the can, so that they can be pushed up and down in case of clogage. The size of the wires relatively to that of the holes regulates the amount of flow.

The cap of the retort is marked G.

The boiler-openings of the stove are marked H H, and I indicates the smoke-pipe.

J J is the discharge gas-pipe, provided with a valve, K, to prevent a return of gas into the stove in case of a fracture of the retort.

L is the service-pipe, and M the lever for closing the stop-cocks N N. This lever has its fulcrum at O and is lifted by pin P, being so arranged that it shall be lifted just before the gasometer is full. A cord or chain may be used instead of the lever.

I do not claim, in the abstract, any portion of the above-described apparatus. Neither do I claim the use of wood-charcoal at a red heat for decomposing water or oil. The use of wood, however, for the triple purpose of making wood-gas, gasifying oil, and decomposing water I believe is new, as is also my method of charging the retort—viz., with wood instead of charcoal—and thus securing the advantages of

having the charcoal freshly burned, and finding a recompense for the slight trouble in the wood-gas obtained; and not only in the amount of the latter, but in the fact that its presence with the other gases is highly beneficial. I would further state that I can omit the wood and oil and substitute for both bituminous coal, in which case I depend upon the incandescent coal and coke for decomposing the water.

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination of wood-gas, the hydrogen of water, and the gas of paraffine-oil, or the same combination with any other oil-gas or the gas obtained from bituminous coal, when effected in the manner substantially as described, wishing, however, to be distinctly understood that I make no claim to wood, water, or oil gases in the abstract, knowing that they have been produced by others, but that I claim the methods described for producing and uniting the same, with a view to convenience, efficiency, and economy.

LEVI L. HILL.

Witnesses:

ETHAN S. FOX,
GARET G. HEERMANCE.