(No Model.)

F. EGNER.

APPARATUS FOR THE MANUFACTURE OF ILLUMINATING GAS.

No. 326,488. Patented Sept. 15, 1885.

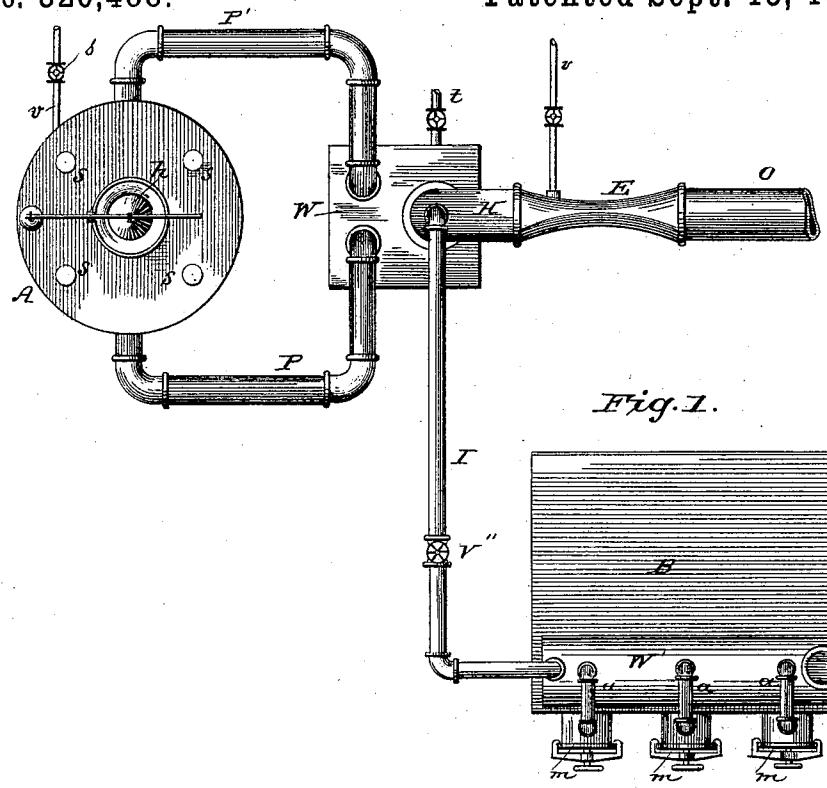


Fig. 1.

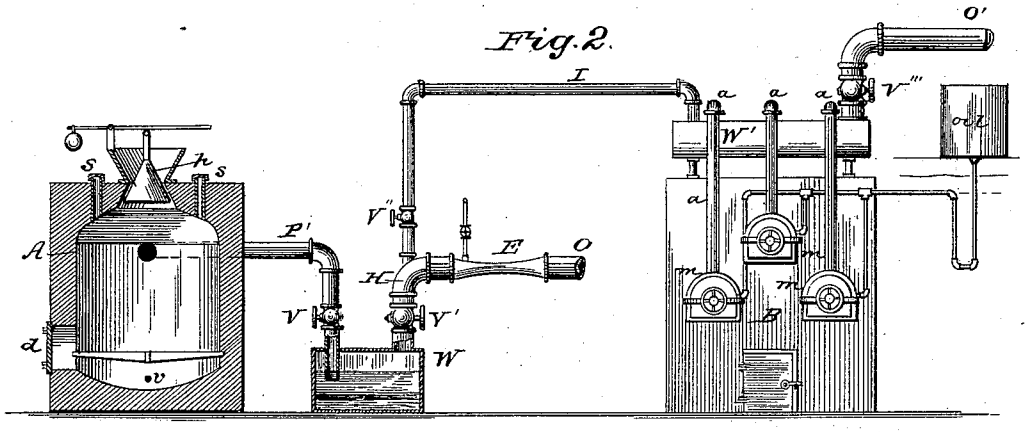


Fig. 2.

WITNESSES:

Fred. G. Dieterich

Edw. C. Byrn.

INVENTOR:

Frederic Egner

BY Munn & Co

ATTORNEYS.

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

FREDERIC EGNER, OF ST. LOUIS, MISSOURI.

APPARATUS FOR THE MANUFACTURE OF ILLUMINATING-GAS.

SPECIFICATION forming part of Letters Patent No. 326,488, dated September 15, 1885.

Application filed May 23, 1885. (No model.)

To all whom it may concern:

Be it known that I, FREDERIC EGNER, of St. Louis, in the State of Missouri, have invented certain new and useful Apparatus for the Manufacture of Illuminating-Gas, of which the following is such full, clear, and exact description as will enable others skilled in the art to make and use the same, when taken in connection with the accompanying drawings, in which—

Figure 1 is a plan view of the whole apparatus, and Fig. 2 is a side elevation of the same, partly in section.

A is a generator with firing-door *d*, grate, as shown, a steam-pipe, *v*, in the ash-pit, fuel-hopper, and valve *h*, stoke and sight holes S, take-off pipes P P', leading to hydraulic seal W through valve V.

B is an ordinary bench of retorts, such as is used in coal-gas works. W' represents the hydraulic main of same; *m m m*, the retort-lids; O', the main take-off pipe, which may be used when the apparatus as a whole is not in use.

I is a secondary take-off pipe leading to the back of the exhauster E, which herein is represented as of the style known as "steam-jet exhausters;" but any kind of exhauster may be used.

V'' is a valve in pipe I, which is not only for the purpose of shutting off that pipe from seal W when the bench alone should be used, but serves particularly to assist in regulating the relative amount of vacuum to be carried in W' when the whole is operated together.

V''' is a valve, to be closed when the apparatus is worked as a whole.

V' is still another valve in pipe O, and is back of exhauster E, so that really pipe O' and valve V''' might be entirely dispensed with, for by closing V' the gas made in B could be taken away through pipe O.

t is simply an overflow pipe from the seal W.

The manner of operating is as follows: A fire is kindled in A and the fuel supplied freely until a depth of four to five feet is reached. The bench B meanwhile having been heated, gas can be made in it from rich coals or oil, the oil being supplied by the tank shown. The gas thus made may pass through I and exhauster E, valve V' being meanwhile closed. When A is ready, V' is opened as far as may be required until about one-tenth of an inch vacuum is shown to exist in A above the fuel. It will then be found that the fire on the grate of generator A will burn very brightly. Steam is then turned on under the grate at *v* to as great an extent as the fire will admit, and it will be found astonishing how much steam can be thus used. The steam and air go in under the grate together continuously. As the fuel is consumed on the grate the deficiency is supplied from on top through the hopper and valve *h*.

Bituminous coal and coke mixed is preferred. It has been found by practice that any kind of coal can be used, but that ordinary gas-coal with about one-third of coke is far the best. This must be supplied regularly and in not too large quantities—that is, it is far better to supply a little often than a great deal at once. When the former is done, there will be no trouble with caking of the coal, and consequent choking of the furnace or generator A.

The gas made in this generator is a mixture of carbonic oxide, uncombined nitrogen, and rather more ammonia than is gotten in the ordinary process of distilling coals; also, a considerable amount of free hydrogen is formed, and no tar is made, the tar apparently being taken up in the shape of carbureted hydrogen. The ashes and clinkers formed are removed in the usual way.

The gas from generator A and bench B meet and are mixed by passing together through the exhauster E, and practice has proved that no further mixing or heating of the gas is necessary.

Any grade of illuminating power may be obtained by using fewer or more retorts with this apparatus.

The fuel in A must never be allowed to get to a less depth than thirty-six inches.

Having thus shown and described my improvement as to construction and operation, I may briefly state wherein my invention differs essentially from all other water-gas processes.

It will be observed that instead of alternately heating my fuel by a blast or otherwise, then supplying steam to be decomposed, after shutting off the air, I allow steam and

air to go into the same furnace together, the indraft being caused by the same apparatus or exhauster at the same time that it also takes the gas from bench B; but I do not claim this style of generator as my invention. The coal and oil gas bench is old, worked by itself, and I do not, of course, claim that; nor yet the exhauster in connection with either of these (generator or bench;) but

What I do claim, and desire to secure by Letters Patent, is—

The combination, substantially as before set forth, of the generator, bench of retorts, hydraulic seals, valves, pipes, and exhauster, connected as herein described, and operated as a whole together.

FREDERIC EGNER.

Witnesses:
CHAS. J. OWEN,
JNO. A. TOMPKINS.