

A. C. RAND.

Retorts for Making Fixed Gas from Hydrocarbon.

No. 152,867.

Patented July 7, 1874.

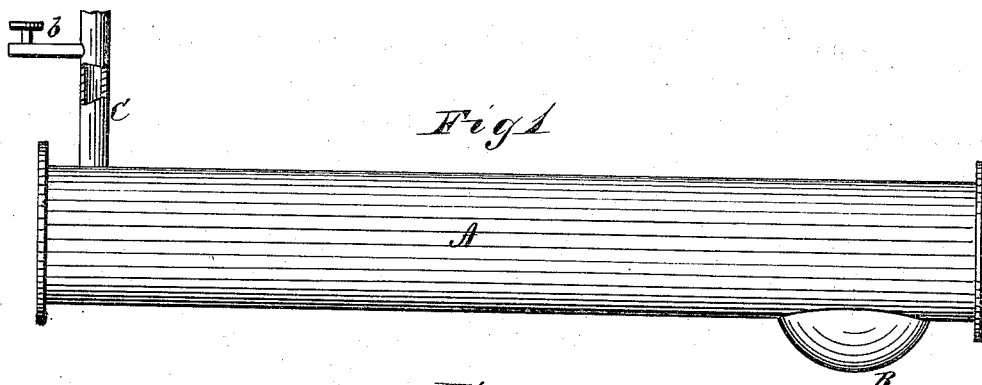


Fig 2

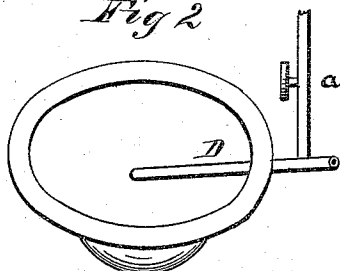
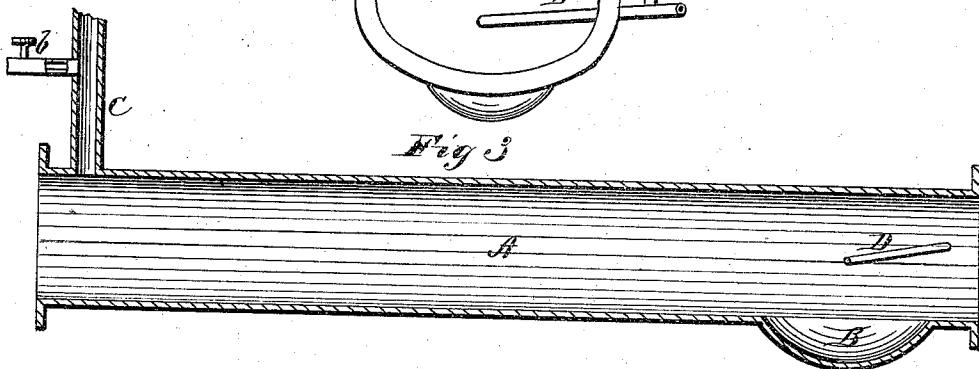


Fig 3



WITNESSES.

Francis L. Outland
C. L. Ewert.

INVENTOR

Alonzo C. Rand
Alexander MacArthur

By

Attorneys.

UNITED STATES PATENT OFFICE.

ALONZO C. RAND, OF MINNEAPOLIS, MINNESOTA.

IMPROVEMENT IN RETORTS FOR MAKING FIXED GAS FROM HYDROCARBON.

Specification forming part of Letters Patent No. **152,867**, dated July 7, 1874; application filed April 25, 1874.

To all whom it may concern:

Be it known, that I, ALONZO C. RAND, of Minneapolis, in the county of Hennepin and in the State of Minnesota, have invented certain new and useful Improvements in Retorts for Converting Hydrocarbon Liquids into Fixed Illuminating-Gas; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, making a part of this specification.

My invention relates to retorts for converting hydrocarbon liquids into fixed illuminating-gas, and it consists in providing the retort with an interior vaporizer, either formed in or placed on the bottom thereof.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a side elevation of a retort, showing one form of my invention. Fig. 2 is a front-end view, and Fig. 3 a longitudinal section, of the same.

A represents an ordinary retort, such as are used for converting hydrocarbon liquids into illuminating-gas. At the head or front end, in the bottom of the retort, is formed a kettle-shaped depression or cavity, B, which is to answer the purpose of a vaporizer or still. C is the outlet or stand pipe in the rear end of the retort. D is the feed-pipe for the liquid at the front end of the retort, which pipe is provided with a stop-cock or valve, *a*.

The stand-pipe C is provided with a pet-cock, *b*, that, during the process of gas-making, is occasionally opened, permitting a little gas to flow out, and from its color is determined whether the flow of liquid into the cavity B in the retort is too great or inadequate. If too great, the color of the gas is—when it comes in contact with the air—white, like the condensation of steam. If the flow of the liquid is not sufficient for the temperature of the retort, the gas becomes what I term destructively decomposed—that is, part of it becomes dry carbon powder or dust—and the color of the gas making its exit from the pet-cock *b* is black or quite dark. The color desired is a

very light snuff-color, and this can be maintained by regulating the flow of the material by the small valve *a* in the feed-pipe D, and observing the color of the gas aforesaid.

The advantage this retort has over the still is that only one fire is required, and the vapor from the oil does not, nor cannot, cool off, as it does when passing from the still to the retorts. It saves the extra fire and considerable machinery used in other machines, and the tarry matter, asphalt, &c., is prevented from passing into the highly-heated part of the retort and inward up to the stand-pipe, and through the various pipes in the works, stopping them by clogging, &c.

After the batch of gas is made the lid of the retort is struck, and the coke or asphalt in the cavity B is taken out with a hoe formed expressly to fit it, or a dipper, and thrown into the furnace and there utilized; or it may be drawn off, when hot, by a pipe placed in the head of the retort, and a vacuum created in the other end of the pipe on the siphon plan. If coked, the hoe will remove it perfectly. If asphalt, while hot the pipe will remove it as aforesaid.

In place of the cavity formed in the bottom of the retort I may use a pan in the retort, with a rod attached to it and passing through a stuffing-box on the lid of the retort, so that when vaporizing too fast the pan might be drawn forward to the cooler part of the retort; and when vaporizing too slow it could be pushed back in the hotter part of the retort.

If the ordinary coal-retorts should be used to make oil-gas, a pan might be placed in the rear of the retort; or it might be placed in the front end of the retort, and a cover, with pipe attached, might be made to extend backward and stop short of the end of the retort, and through the open end of the pipe the vapor would pass, and thence back and up the usual stand-pipe.

Other modifications or changes in the vaporizer might easily be made without departing from the spirit of my invention, which is simply the inclosure of the vaporizer within the retort, whether the same is formed in, attached to, or placed on the bottom thereof.

Having thus fully described my invention,

what I claim as new, and desire to secure by Letters Patent, is—

A gas-retort, provided with an interior vaporizer at the head or front end in its bottom, substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I

have hereunto set my hand this 31st day of March, 1874.

ALONZO C. RAND.

Witnesses:

ROBT. McMULLEN,
ALFRED J. DEAN.