S. T. McDOUGALL.

GAS APPARATUS.

No. 27,460. Patented Mar. 13, 1860.

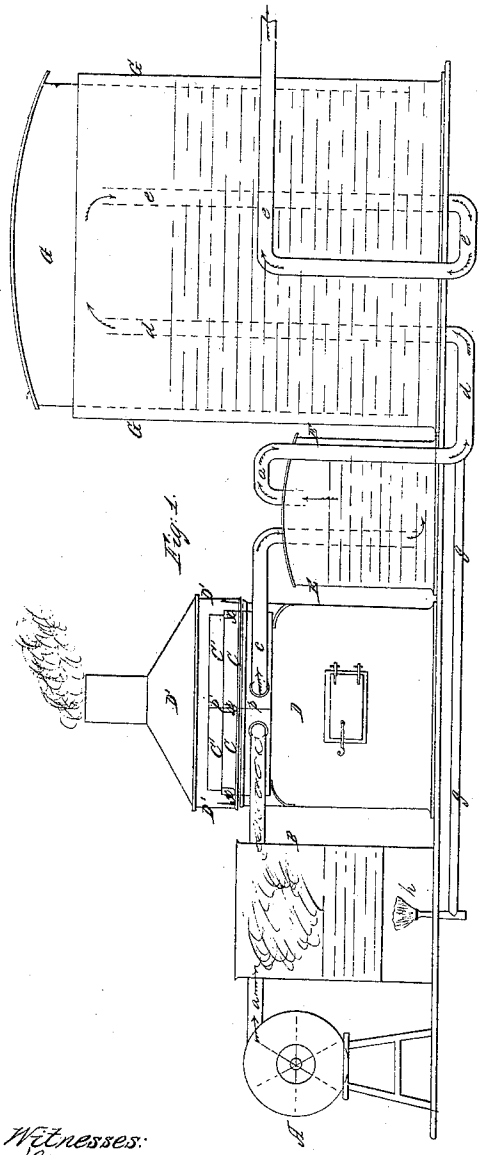


Fig. 1.

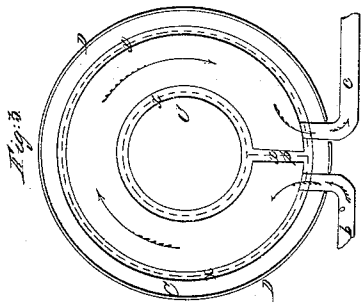


Fig. 3.

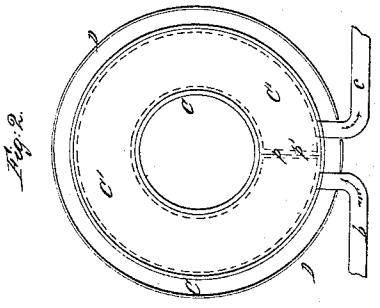


Fig. 2.

Witnesses:
Lang Smith
Wm. H. Bertling

Inventor:
S. T. McDougall

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

S. T. McDOUGALL, OF NEW YORK, N. Y.

MANUFACTURE OF GAS.

Specification of Letters Patent No. 27,460, dated March 13, 1860.

To all whom it may concern:

Be it known that I, S. T. McDOUGALL, of the city, county, and State of New York, have invented a new and useful Improvement in Apparatus for Making Gas for Illuminating and other Purposes; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the annexed drawing, making a part of this specification, in which—

Figure 1, is a diagram of the apparatus used presenting the different vessels required, in a general view. Figs. 2 and 3 are top views of the peculiar retort made use of in the apparatus, as shown in the diagram.

The nature of my invention consists in the combination, for the purpose of making gas for illuminating, and other purposes, by converting the vapor of hydrocarbons into permanent gases as herein set forth, of an air blast, and vaporizing chamber, a retort, and furnace, a purifying vessel, and gasometer, constructed, and operated together substantially as represented and described.

To enable others skilled in the construction of gas apparatus, to make and use my invention, I will proceed to describe the construction and the operation thereof.

To construct the apparatus for making gas from hydrocarbons according to my new process, I make use of a mechanical blast A, (see drawing,) a vaporizing chamber B, a retort and furnace C, D, a purifying chamber or vessel E and a gasometer G; these may be of any known form and construction, provided with competent means of communication by pipes *a*, *b*, *c*, *d*, *e*. The blast is operated by any competent power, varying of course with the size or capacity of the apparatus. The vaporizing chamber has a burner under the bottom to heat said chamber, supplied from pipe *d*, of the purifying chamber or vessel, by a small pipe *g*.

To start the apparatus, the retort in the furnace D being first heated to a red heat, and the blast put in operation, a flame is held under the vaporizing chamber until a vapor is generated; as fast as the vapor forms, the blast carries it into the retort through pipe *b*, and when converted into gas, it escapes at pipe *e*, going thence into the purifying chamber or vessel E which has previously been supplied with water or other suitable purifying agent; from the purifying vessel it passes into the gasometer G by pipe *d*, and thence escapes therefrom by pipe *e* on its way to be measured and used at the burners. As soon as the gas commences to form, the burner *h* is lighted.

Thus far I have described the apparatus and manner of making the gas, in general. I will now proceed to detail the form and construction of the peculiar retort which I prefer to use in the process, as being the most perfect in operation, and economical of fuel. The said retort is shown in Figs. 2 and 3 in top view the cover being removed in Fig. 3. A sectional diagram is also shown in Fig. 1. The retort is of an annular or ring-form, and is of a smaller diameter than the furnace; and being supported on brackets, the fire passes on both the inside and outside of said retort, as well as under the bottom and over the top, thus forming a very desirable one, in view of the amount of heated surface presented to the gas, or vapor. Said retort has a groove *x*, in the edge of the inner and outer circular walls, as well as in the edge of the partition *p;* and the lid c^1, has a rim corresponding to said groove and a partition *p'*, (see in Fig. 1,) which rim and partition set into fusible metal with which said groove is filled, in the usual manner of making retorts gas tight. On each side of the partition *p*, and the rim of the lid *p'* are the ingress and egress openings with pipes attached, *b*, *c*, so that the vapor or what not entering on one side of the partition is obliged to make the entire circuit of the furnace, before it can escape at pipe *c* on the other side; and this sending of the gas in this circuitous direction around the furnace constitutes the essence of my invention in the said retort. And hence a retort of a horse shoe or ⊏ form, when vapor or liquor, as the case may be, enters at one extremity and escapes at the other as gas, would be substantially the same as my said invention hereinbefore described.

I do not wish to be understood as confining myself, in the process herein described of making gas from hydrocarbons, to any particular form of vessels, chambers, furnace, retort or blast, for carrying on the

said process, but shall use any kind of apparatus known which is adapted to the purpose.

Having thus described the nature of my improvements, what I claim as my invention and desire to secure by Letters Patent is,

The combination, of an air blast, a vaporizing chamber, a retort, and furnace, a purifying vessel, and a gasometer, arranged, and constructed substantially as herein described.

S. T. McDOUGALL.

Witnesses:
C. HARRY SMITH,
WM. H. BERTLING.