A. M. GILES.

Gas Retort.

No. 16,830. Patented March 17, 1857.

Fig. 3.

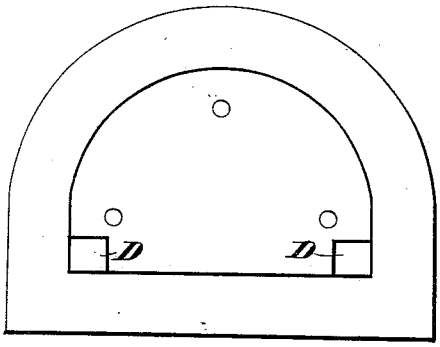


Fig. 4.

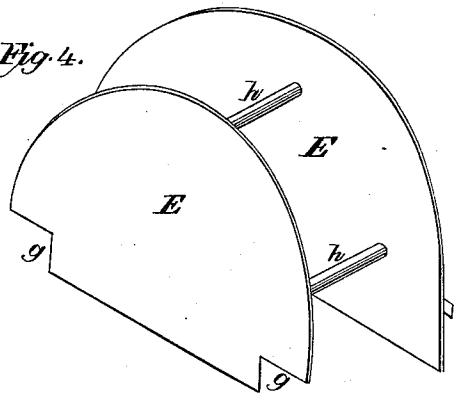


Fig. 2.

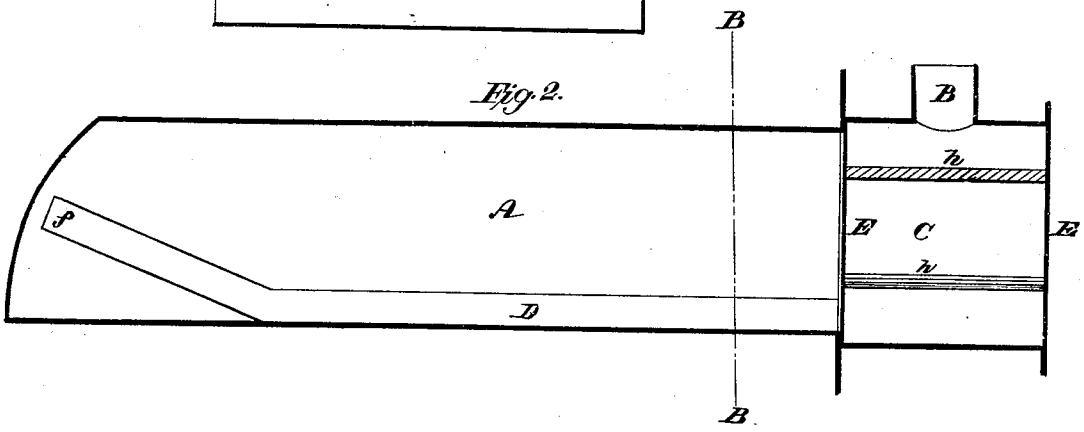
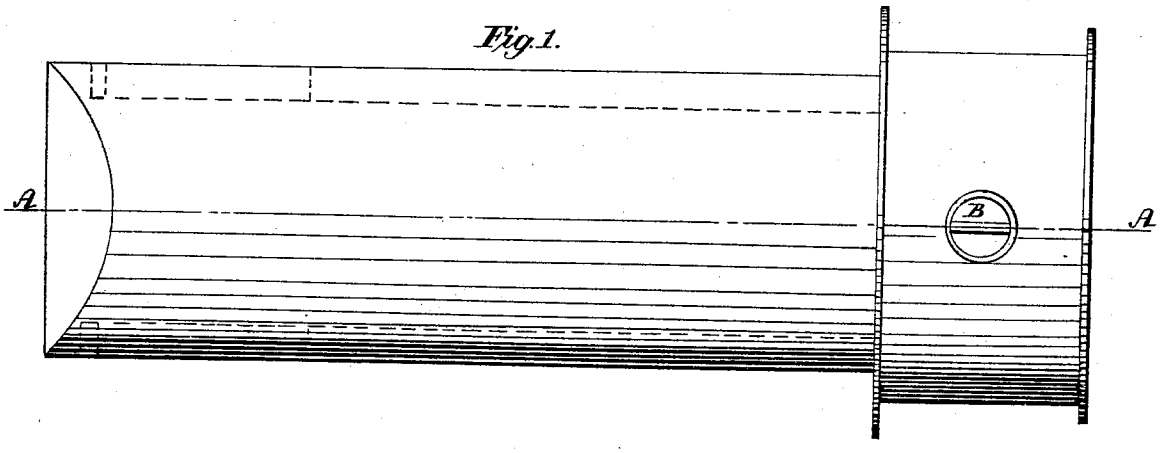


Fig. 1.



UNITED STATES PATENT OFFICE.

ALONZO M. GILES, OF BOSTON, MASSACHUSETTS.

GAS-GENERATOR.

Specification of Letters Patent No. 16,830, dated March 17, 1857.

To all whom it may concern:

Be it known that I, ALONZO M. GILES, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Retorts for the Manufacture of Illuminating-Gas, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a plan of my retort. Fig. 2, a longitudinal vertical section upon the line A, A, of Fig. 1. Fig. 3 a vertical section upon the line B, B, of Fig. 2. Fig. 4, a view of the double door.

In retorts as heretofore constructed and operated the hottest part is at the rear or closed end, from which point the heat gradually decreases toward the mouth piece where it is the coolest. When the heat rises sufficiently high at the rear end to generate perfect gas, it is only sufficiently hot at the forward end to distil the coal or other gas forming material, by which imperfect process a quantity of carbureted vapor is thrown off, holding in suspension volatile oils and tar, which, although rich in gas forming material, are a positive detriment to the gas and require to be separated therefrom. As the perfect gas commences to form at the rear of the retort, and the pressure under which it is worked is overcome, it passes off to the rising pipe and with it the vapors and uncarbonized volatile matters thrown up in the forward end of the retort. A double loss is thus sustained, first of the gas forming material which is thrown off without being perfectly decomposed, second of the expense which results from the necessity of purifying the gas, thus formed, for which purpose costly apparatus and expensive materials are required.

My invention has for its object to prevent this admixture of imperfectly decomposed materials with the perfect gas, whereby I am enabled not only greatly to economize the gas forming material, but to dispense with a considerable portion of the purifying apparatus heretofore employed. To effect this object I draw off the gas from the rear end of the retort where the perfect gas is formed, by which means any vapors or imperfectly decomposed materials which may be thrown up in other portions of the retort are forced to pass through this highly heated end, where their perfect decomposition is effected before they escape into the rising pipe.

To enable others skilled in the art to understand my invention I will proceed to describe the manner in which I have carried it out.

In the said drawings A, is the main chamber; B, the "rising pipe;" C, the mouth piece of the retort.

D, are pipes or conduits which are of a capacity sufficient to carry off the products of the retort, and may be of any convenient form or shape. In the retort represented in the accompanying drawings, they are rectangular and lie in the sides of the retort, they may however be formed by a single partition rising from the bottom of the retort to the arch above, or they may be formed in any way that shall furnish a heated conduit between the rear end of the retort and the mouth piece for the passage of the gas. In lieu of being in the bottom of the retort they may be placed in the top, and may be made to communicate directly with the rising pipe. They may also be cast in one piece with the retort or may be otherwise attached thereto, these peculiarities of form make no part of my present invention, though the construction shown in the drawings is that which I prefer. At the forward end these conduits enter the mouth piece C, and at the rear end they rise to a point about half way between the top and bottom of the retort as seen at *f*, Fig. 2.

At E, the retort is closed and separated from the mouthpiece C, by a tight fitting door, through which there are openings *g*, corresponding to the extremities of the conduits D, and this forms the second part of my invention, by means of this door all passage for the gas and vapors from the retort to the mouth piece is shut off, except through the conduit D, and the heat of the retort is rendered much more intense and uniform, this door is attached to the ordinary door E, by means of rods *h*, the two being removed and replaced together. The gas formed at the rear end of the retort, enters the conduits D, at the point *f*, and any imperfectly decomposed vapors and materials that rise from the colder end of the retort are forced to pass first into the hottest portion where their decomposition is more perfectly effected before they can escape to the mouth piece and rising pipe.

Should any undecomposed vapors remain

mixed with the gas, they will be still more perfectly reduced during their passage through the heated conduits D, which in retorts of the ordinary size will be 7 ft. in length and 2 inches square.

The advantages which result from the use of my improved retort may be briefly enumerated as follows: First, as regards the quantity of gas produced by a given quantity of coal or other material. There is an advantage of from 20 to 30 per centum in favor of my retort, when compared with the retorts heretofore in use, as the tar and volatile matters heretofore mixed with the gas as impurities, is by the use of my retort all or very nearly all converted into available gas. Second, as regards the quality of the gas, that produced by my retort gives a condensation by bromin of 3 to 5 per centum above that made in the ordinary retort. Third, as regards the expense of purifying, there is a saving of 80 per centum in favor of the gas produced by my retort. Fourth, the amount of fuel required for heating this retort is about 30 per centum less than is required for retorts of the ordinary construction.

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

1. The inner door E operating in the manner substantially as described whereby the heat of the retort is rendered much more intense and uniform as set forth.

2. I claim the pipes D in combination with the inner door E arranged and operating in the manner substantially as herein set forth for the purpose described.

ALONZO M. GILES.

Witnesses:
P. E. TESCHEMACHER,
SAM. COOPER.