

G. W. Harris,

Gas Retort.

NO. 112,593.

Patented Mar. 14, 1871.

Fig. 1

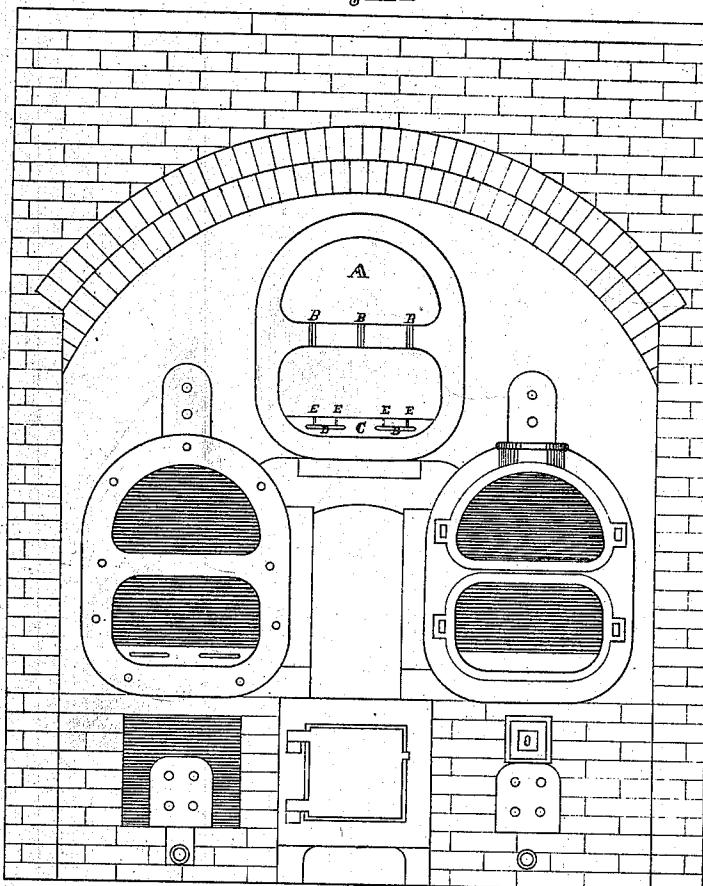
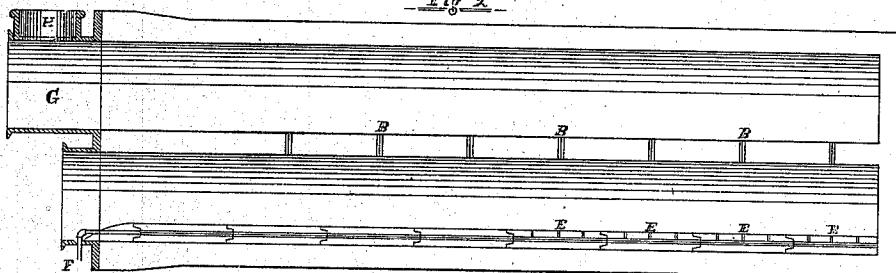


Fig. 2



Witnesses

*John Sander*  
*W. L. Gallaudet*

Inventor

*Geo W. Harris*

## UNITED STATES PATENT OFFICE.

GEORGE W. HARRIS, OF ELIZABETH, NEW JERSEY.

## IMPROVEMENT IN GAS-RETORTS.

Specification forming part of Letters Patent No. 112,593, dated March 14, 1871.

## SPECIFICATION.

I, GEORGE W. HARRIS, of Elizabeth, State of New Jersey, have invented certain Improvements in Gas-Retorts, of which the following is a specification:

This retort was invented for the purpose of overcoming difficulties experienced in the working and durability of the retort, secured by Letters Patent granted to the present petitioner heretofore, for the purpose of decomposing superheated steam in connection with heated carbon, in what is commonly known as the "hydrocarbon process," said patent being dated November 5, 1865.

Figure 1 is a front view of a setting or bench of three of my improved double retorts, the upper retort being a cross-section, showing the division *a* and the perforations *b b b*; also, the lower chamber with the false bottom of tile *c*, with steam-passages *d d* and small outlets *e e*.

Fig. 2 is a longitudinal section of the double retort, showing clearly the division or septum *a* and perforations *b b*, &c.; also, the false bottom or tile in the lower chamber, steam-passage *d*, and outlets *e e*, &c., the steam-pipe *f*, the mouth-piece *g*, and socket for stand-pipe *h*.

The peculiarity in this retort is in combining the hydrogen and bituminous retorts into one retort, thereby dispensing with the connecting-pipes and stop-cocks, such as are particularly claimed in the patent granted to Geo. W. Harris, the present petitioner, and Henry Holdrege, September 7, 1869, No. 94,596, and instead thereof, perforating the division between the upper and lower chamber of the retort with a number of holes, about one-half inch in diameter, more or less, as shown in Figs. 1 and 2, so that the gases produced by the decomposition of steam in the lower chamber will pass directly up through said holes and come into immediate contact with the gases arising from the bituminous coal in the upper chamber, or such other carbonaceous material as may be used.

In the practical working of the combined retort a false bottom, *c*, of tile, formed with passages *d d*, and a number of small outlets, *e e*, which are secured by the patents mentioned above, is inserted into the lower chamber, and the remainder of the space filled with anthracite coal, coke, or other suitable material. Highly superheated steam is then introduced into the said passages by means of pipe *f*, and up through jets *e e*, &c., and the heated contents of said chamber, and become decomposed, forming hydrogen and carbonic-oxide gases. These gases pass up through the holes *b b b*, &c., in the division between the chambers, into the upper chamber, which has been charged with bituminous coal or other suitable material in the usual manner, the said gases combining with the gases arising from said coal, and absorbing a great portion of the rich carbons usually condensed into tar, thereby adding a large increase to the quantity and quality of gas produced from said coal or other material.

## Claims.

I claim as my invention—

1. I claim a retort made of fire-clay or other suitable material, the form of which is produced by the combination of two retorts into one double retort, consisting of an upper and lower chamber, each of suitable size, the division or partition between said chambers being perforated with a number of holes about one-half inch in diameter, more or less.

2. I also claim a combination of a lower chamber containing a false bottom of perforated tile, in connection with the upper chamber having a perforated bottom or septum, all in the manner as and for the purposes substantially as hereinbefore set forth.

GEO. W. HARRIS.

## Witnesses:

C. E. SANDERSON,  
CHAS. H. NEILSON.