D. Davison,

Gas Retort.

No. 112,557. Patented Mar. 14. 1871.

fig. 1

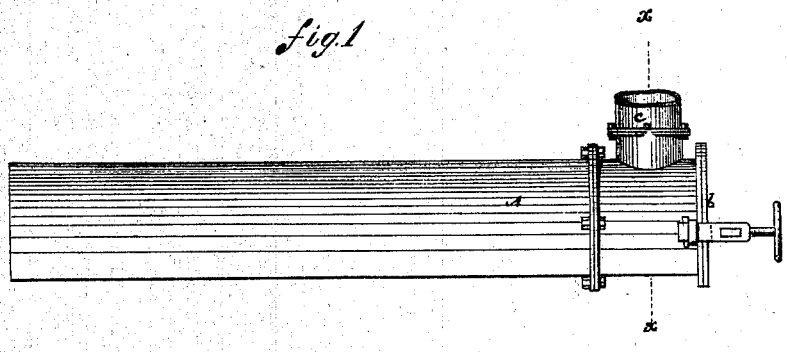


fig. 3.

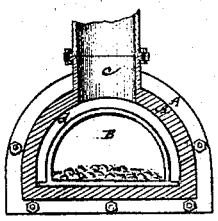
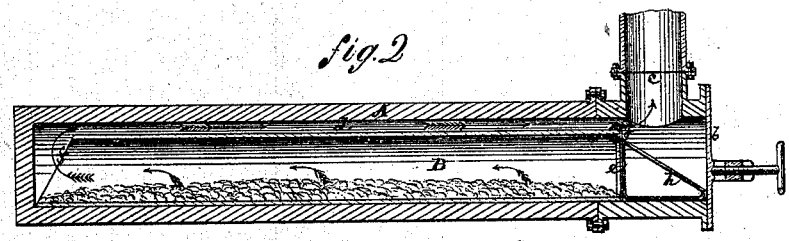


fig. 2



Witnesses
Fred. Haynes
R. L. Rateau

Inventor.
Darius Davison

UNITED STATES PATENT OFFICE.

DARIUS DAVISON, OF NEW YORK, N. Y.

IMPROVEMENT IN GAS-RETORTS.

Specification forming part of Letters Patent No. **112,557**, dated March 14, 1871.

To all whom it may concern:

Be it known that I, DARIUS DAVISON, of the city, county, and State of New York, have invented a new and useful Improvement in Gas-Retorts, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figure 1 represents a side elevation of a gas-retort constructed in accordance with my improvement, as shown in Figs. 2 and 3, which are longitudinal and transverse sections, Fig. 3 being a section taken as indicated by the line *x x*, with the lid to the inner retort removed.

Similar letters of reference indicate corresponding parts.

My invention, which relates more particularly to the destructive distillation of coal for the production of gas for illuminating purposes, consists in a combination of two retorts, the one arranged within the other, and the inner one, which contains the coal to be distilled, being made with open ends, the front or charging one of which is closed by a lid, while the other allows of the vapors passing off in the rear for travel in a thin stream or stratum between the two retorts, throughout their length, to the stand-pipe, which carries off the gas.

This improvement, while applicable to new structures, may be applied with advantage to retorts in present use without alteration of them or disturbance of their connections, and protects them from injury either by heat, the chilling contact of cold coal or vapors, and from that destructive wear which takes place consequent on removal of the coke or refuse, and, by the free fit of the inner retort within the outer or ordinary one, the former, which may be slid out or removed when required, is prevented from straining, by the expansion or contraction of its parts, on the outer retort. Apart from these advantages, however, my invention effects a great economy and improvement in the gas produced by causing a more uniform and thorough distribution of the vapors over the heated surfaces of the retort for their conversion into gas, and whereby there is a diminished residuum or inferior deposit of coal-tar from the vapors, which are thus more profitably utilized.

Referring to the accompanying drawing, A represents a gas-retort of ordinary construction, and which may be of either clay or metal, the same being provided with a lid, *b*, to its mouth, secured by the usual fastenings, and with a stand-pipe, *c*, in front, to carry off the gas. Arranged within this retort A is another and smaller retort, B, of nearly the same length as the outer retort, on the bottom of which it rests, so as to be capable of being slid out or removed, when required, without disturbing the connections of the outer retort. This inner retort, B, which may be of metal or other suitable material, is made to fit free or loose in the outside retort, so as not to strain upon the latter by expansion or contraction, and is of such dimensions in its transverse section as to leave a thin intervening space, *d*, around it and between it and the outer retort throughout the length of the retorts. Said inner retort, B, is, furthermore, constructed open at its ends, the front opening or mouth being fitted with a lid, *e*, which may be closed and luted after such retort has been charged with the coal to be distilled, and the rear opening, *f*, serving for the vapors, as generated, to pass off to and along the space *d*, which serves to spread them and bring all of the vapors uniformly in contact with the heated surfaces of the retort throughout its whole length, thus producing a more perfect and thorough conversion of the vapors into gas by the time the same arrive at the stand-pipe *c*, thereby providing a larger quantity and better quality of gas from a given amount of coal.

While the lid *g* at the front end of the inner retort may be variously constructed, it is desirable to make it capable of ready adjustment to and from its place, to facilitate which I have provided it with a triangular handle, *h*, arranged to take its bearing on or within the outer retort, and serving to brace and hold up said lid when in its place, also projecting toward the mouth of the outer retort, so as to be within easy reach on removing the lid from the latter.

What is here claimed, and desired to be secured by Letters Patent, is—

1. The inner retort, B, made capable of being slid out or removed from the outer retort, and constructed with openings at its opposite

ends, the one of which is provided with a lid, substantially as specified.

2. The lid *g* of the inner retort, constructed or provided with a triangular handle, *h*, arranged to take its bearing on the outer retort, substantially as specified.

3. The combination and arrangement of the outer and inner retorts, A and B, provided with lids at their approximate ends, and having an interposed space, *d*, between them, in communication at reverse ends of the combined retort with the outlets *f* and *c*, whereby a uniform distribution and perfect circulation of the vapors and gases are established in intimate contact with the hot surfaces of the retorts, essentially as herein set forth.

DARIUS DAVISON.

Witnesses:

FRED. HAYNES,

R. E. RABEAU.