L. Stevens,

Gas Retort.

No. 112,088. Patented Feb. 21. 1871.

Fig. 1.

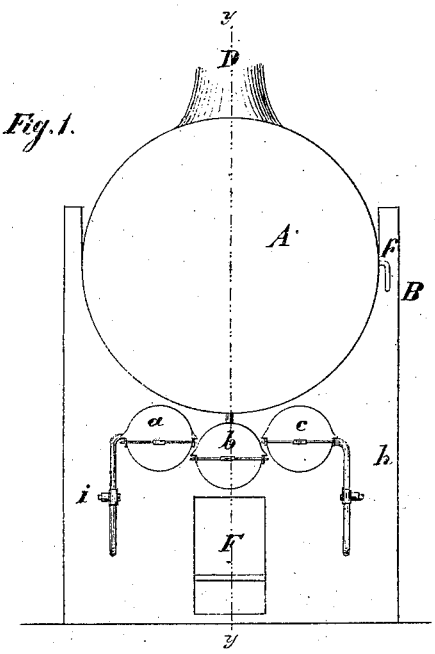


Fig. 2.

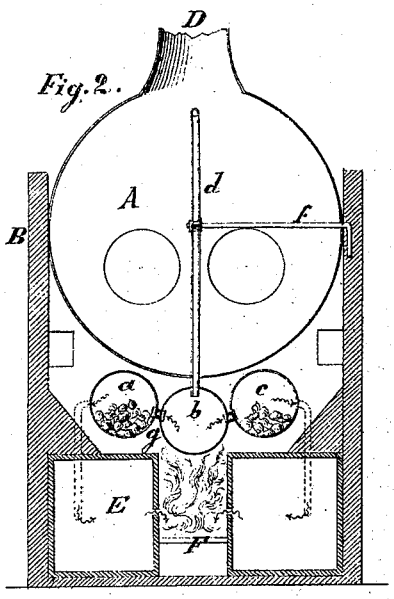
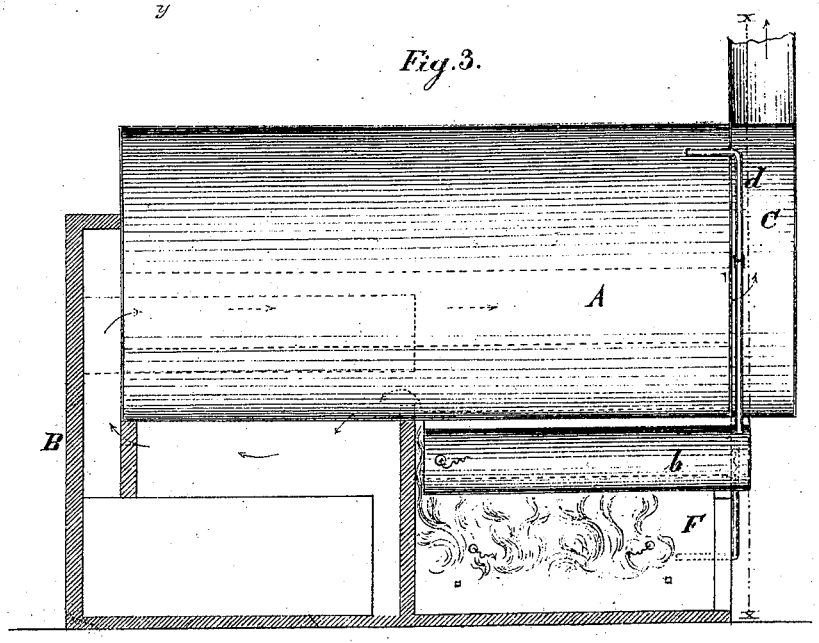


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

LEVI STEVENS, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN PRODUCING GAS FROM SOLID CARBONS.

Specification forming part of Letters Patent No. **112,088**, dated February 21, 1871.

To all whom it may concern:

Be it known that I, LEVI STEVENS, of the city of Washington, in the county of Washington and District of Columbia, have invented certain Improvements in Process of Producing Protoxide of Carbon from Solid Carbonaceous Materials, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to processes for the production of a gas for heating purposes; and consists in distilling carbon vapor from bituminous coal, asphaltum, or other solid carbonaceous materials, and uniting or combining the same with superheated steam under pressure by the use of any apparatus suitable for the purpose.

In the drawings, Figure 1 is an end elevation of an apparatus suitable for the purpose. Fig. 2 is a transverse vertical section on the line *x x* of Fig. 3, and Fig. 3 is a longitudinal vertical section on the line *y y* of Fig. 1.

In constructing an apparatus suitable for the production of a gas for heating purposes by my process, and for utilizing the same for combustion, I set a steam-boiler, A, in masonwork B, as shown in all the figures. Outside of the boiler is a chamber, C, from which rises a smoke-stack, as shown in Fig. 3. Under the front end of the boiler I set three retorts, *a*, *b*, and *c*, so as to be immediately over the fire-bed or furnace, as shown in all the figures. The front end of these retorts may be flush with the front end of the boiler, and about half the length of the same, as shown in Fig. 3. A steam-pipe, *d*, is arranged to communicate with the boiler and the middle retort *b*, and is provided with a valve, *f*, for regulating the flow of steam. The central retort *b* is connected, by pipes *g*, with the side retorts *a* and *c*, and the side retorts *a* and *c* with pipes *h*, communicating with chambers or passages E, provided with openings into the furnace or fire-place F under the retorts, all as clearly shown in Figs. 2 and 3. The pipes *h* are provided with cocks *i*, as shown in Fig. 2, for regulating the pressure in the retorts. In the rear of the furnace is an opening for the flame and smoke, which take the direction of the arrows, as shown in Fig. 3, along under the boiler; then into and through its flues to the front chamber C, and then up through the smoke-stack, as shown in the same figure.

By means of an apparatus of this kind, or any other similarly constructed, I am able to carry on my process as follows: The side retorts *a* and *c* are charged with bituminous coal, asphaltum, or other similar solid carbonaceous material, and the central retort *b* with coke or charcoal, and the boiler provided with water. A fire is then made in the furnace, the effect of which is to produce steam in the boiler, carbon vapor in the side retorts, and to heat the coke or charcoal in the central retort. The steam passes through the pipe *d* into the central retort *b*. When coming in contact with the hot coke or charcoal it is superheated. It then passes into the side retorts. When coming in contact with the carbon vapor under a pressure of about twenty pounds, regulated by the cocks *i* in the pipes *h*, it combines with the same, and forms a highly combustible gas, which passes through the pipes *h* and chambers or passages E, enters the furnace F, and there burns, producing the requisite heat for the retorts and boiler.

Having thus described my invention, what I claim is—

The process herein described of volatilizing solid carbon, and uniting or combining it with superheated steam, for heating purposes.

LEVI STEVENS.

Witnesses:
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