S. H. & M. C. WALKER.

Gas Retort.

No. 14,934. Patented May 20, 1856.

Fig. 1

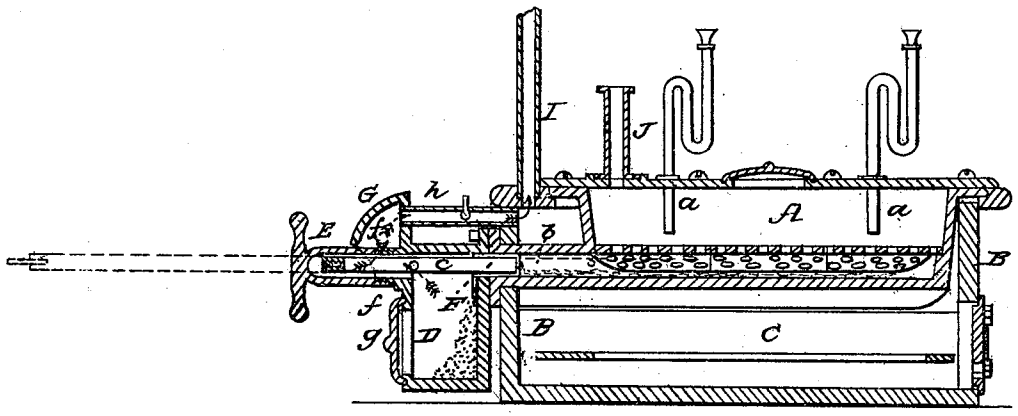


Fig. 2

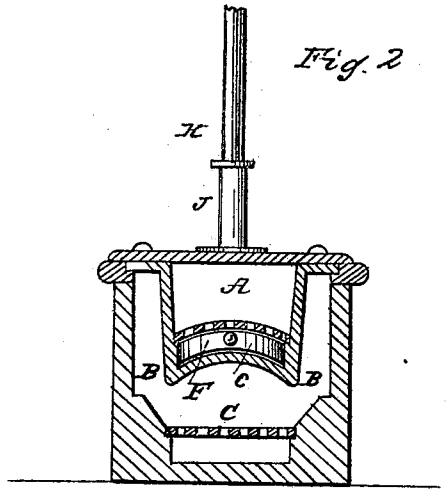
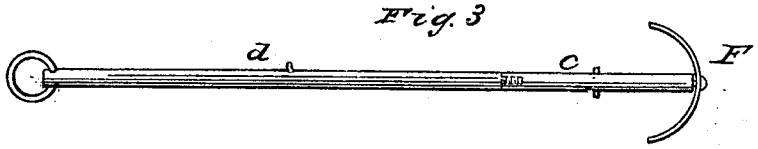


Fig. 3



N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

SAML. H. WALKER AND MATTHEW C. WALKER, OF LANCASTER, PENNSYLVANIA.

GAS-RETORT CLEANER.

Specification of Letters Patent No. 14,934, dated May 20, 1856.

To all whom it may concern:

Be it known that we, SAMUEL H. WALKER and MATTHEW C. WALKER, of the city of Lancaster, in the county of Lancaster and State of Pennsylvania, have invented a new and useful Improvements in Apparatus for Generating Gas from Oils or other Substances; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, is a longitudinal vertical section of a gas generating apparatus, with our improvement. Fig. 2, is a transverse vertical section of the same. Fig. 3, is a top view of the scraper.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain means hereinafter described, of providing for and effecting the cleaning of the bottom of the retort, from time to time, during the operation of the retort, without requiring the said operation to be suspended.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and operation.

A, is the retort, which is of cast iron and may be of various forms, but we prefer for the purpose of our invention, that its horizontal form should be that of an oblong parallel sided figure with rounded ends, and that its bottom should be of arched form or convex internally, as shown in Fig. 2, in order that when the oil or other substance from which the gas is generated may not rest where it first strikes the bottom, but may spread itself over the surface as much as possible, which is effected by placing the feed pipe or pipes *a*, *a*, over the center of the bottom of this form. By this means the carbonaceous residuum is caused to be thereby spread over the bottom and to be of a soft character resembling lamp black which can be easily removed by a scraper, instead of being allowed to encrust itself in one spot and becoming so hard as to be only with great difficulty removed, and to require the cover of the retort to be taken off for its removal, and causing the oil to be very imperfectly converted into gas. This retort is supported in a setting B, of brickwork or other material which also incloses the furnace C. From the rear end of the bottom of the retort A, a passage *b*, see Fig. 1, leads to a box D, of cast iron or other material which is outside the setting of the retort and extends some depth below the bottom of the retort to form a receptacle to receive the residuum which is scraped off the bottom of the retort. The transverse form of the bottom of the passage *b*, should be the same as that of the bottom of the retort, and the passage should be of the same width as the bottom of the retort. In the rear of the box D, exactly opposite the center of the passage *b*, there is a tubular opening *f*, to admit the rod or handle of a scraper to clean off the bottom of the retort. This opening should be only just large enough to allow the scraper rod to pass freely through. It is provided with a long metal cap E, which should be screwed or otherwise fitted to it, so as to close it tightly, but to be capable of easy removal.

F, is the scraper which should be of a form to fit the bottom of the retort, as shown in Fig. 2. It is provided with a long rod or handle which is made in two parts *c*, and *d*, the former of which is short and permanently attached to it, but the latter which is longer, is screwed to the former or otherwise made capable of being put on and taken off at pleasure, and is only attached temporarily to use the scraper.

When the operation of the retort commences and the bottom is clean, the part *d*, of the handle is detached and the scraper is in the passage *b*, with the part *e*, protruding from the opening *f*, but covered by the cap E, which prevents the escape of gas except at the proper main pipe J, which conveys it to the purifier. After the retort has been in operation about one hour the bottom requires scraping, so the cap E, is taken off and the part *d*, of the handle attached to the protruding end of the part *c*. The scraper is then pushed in to the opposite end of the retort, being kept clear of the bottom in its passage, and is then let fall on the bottom and drawn back, by which operation the residuum on the bottom is scraped off and drawn through the passage *b*, into the box D. This operation may be performed one, or more times as may be necessary before taking off the part *d*, of the handle and replacing the cap. Care should be taken always to leave the part *c*, of the handle protruding beyond the tube to enable the part *d*, to be readily connected. The operation of scraping the bottom requires to be

repeated about once every hour. The box D, can be cleaned out when it is convenient to suspend the operation of the retort. It is provided with a large door *g*, near the bottom, for that purpose.

G, is a metal hood which stands over the pipe *f*, and is connected by a small flue *h*, with the chimney H, of the furnace to create an upward draft through the said hood to the chimney, to convey thereto any small quantity of gas that may escape at the pipe *f*, when the cap E, is removed to clean the bottom of the retort.

I, is a perforated diaphragm of metal which may be placed in the retort at some distance above the bottom to support pieces of brick or other substance to make an increased generating surface.

By our improved means of cleaning the bottom of the retort a very great saving of fuel will be effected, owing to the prevention of the thick accumulation of residuum which is unavoidable when the cleaning of the bottom has to be delayed till the operation of the retort is suspended and the gas run off, and which forms a non-conductor. In addition to this the advantages of a clean retort bottom are a greatly increased production of gas, a great saving in the time required to generate a given quantity of gas, and a great saving of the labor which would be required to remove the hard residuum.

Instead of placing the passage *b*, and receptacle D, in rear of the retort as represented in the drawing, it may be placed in front or at one side of the retort, according to the form of the retort, or as convenience may dictate.

What we claim as our invention, and desire to secure by Letters Patent, is—

Providing the retort with a receptacle D, below its bottom, and applying in connection therewith a scraper F arranged and operating substantially as described, to scrape the residuum from the bottom of the retort into the said receptacle without suspending the operation of the retort.

SAMUEL H. WALKER.
MATTHEW C. WALKER.

Witnesses to the signature of Samuel H. Walker:

SAML. F. MCCLEAN,
O. H. SPURR.

Witnesses to the signature of Matthew C. Walker:

H. BOWDRE,
I. I. LATHROP.