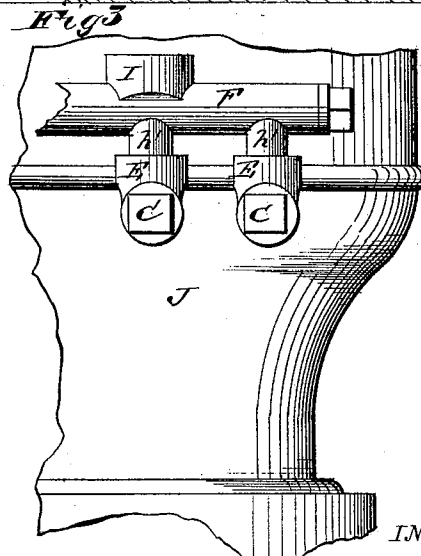
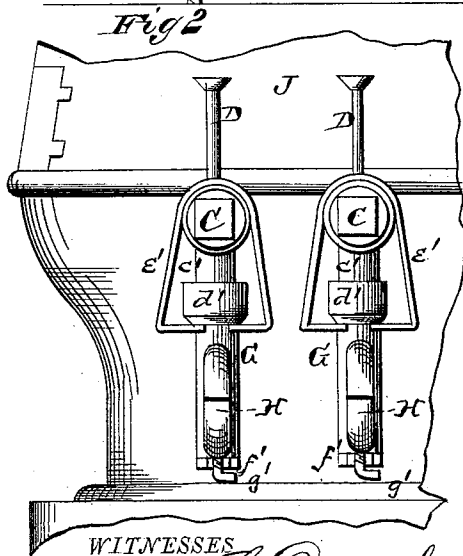
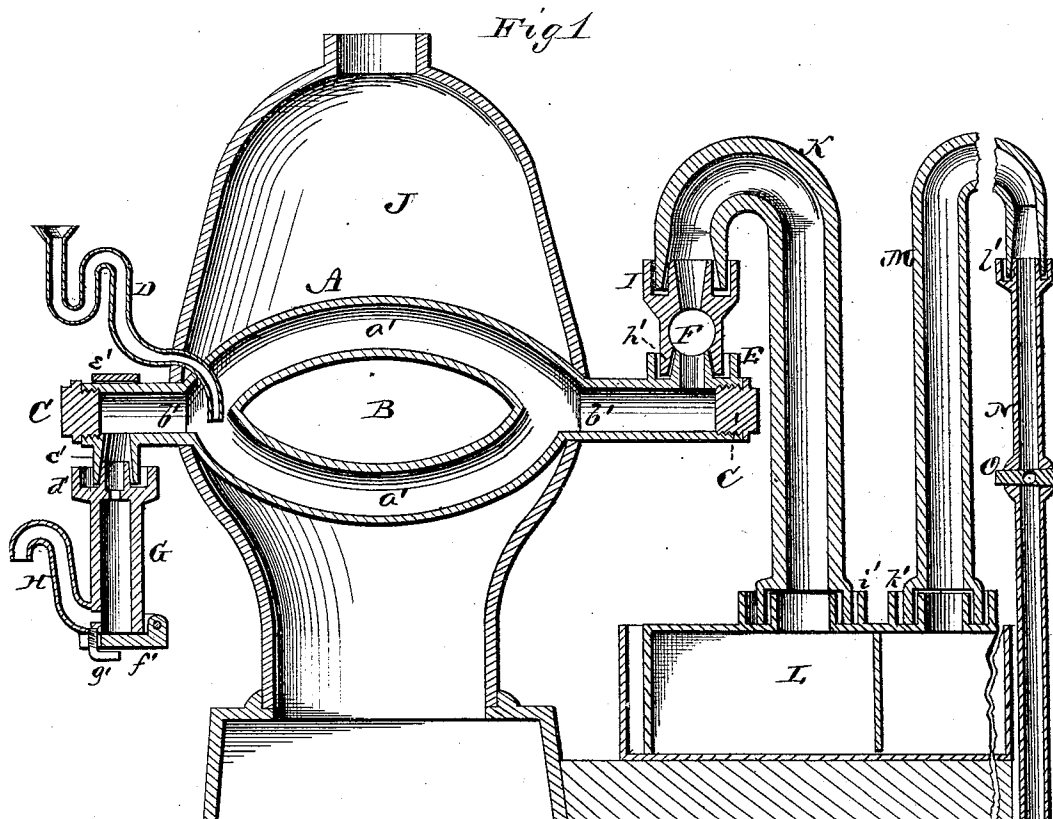


W. & R. H. SMITH.
GAS APPARATUS.

No. 179,364.

Patented June 27, 1876.



WITNESSES
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WILLIAM SMITH AND ROLAND H. SMITH, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN GAS APPARATUS.

Specification forming part of Letters Patent No. **179,364**, dated June 27, 1876; application filed November 18, 1875.

To all whom it may concern:

Be it known that we, WILLIAM SMITH and R. H. SMITH, of Pittsburg, in the county of Allegheny, and in the State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for the Manufacture of Illuminating-Gas and other Gases; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The nature of our invention consists in the construction and arrangement of an apparatus for the manufacture of illuminating and other gas, to be used in household fires or stoves, so that all the parts can be easily separated for the purpose of cleansing or repairs, and also so that, by duplication of parts thereof, the same may be made to answer for a large or small supply, as desired.

In order to enable others skilled in the art to which our invention appertains to make and use the same, we will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a longitudinal vertical section of our gas apparatus. Figs. 2 and 3 are side views of portions of the stove.

In the practical carrying out of our invention the stove is to be made of sufficient size to contain the number of retorts desired; or it may be made in sections bolted together, so as to increase or diminish the size of the stove according to the number of retorts used; or only one retort may be used in an ordinary stove where a small supply of gas is wanted.

In the drawing, J represents the stove for the reception of the retort or retorts, which stove may be made of cast or sheet iron, or built of brick. If made of iron, they can be provided with movable frames or liners in the interior, to be filled with fire brick or clay. These liners can then be made in sections, so that the entire fire-pot may be protected, and they can be hung in any suitable manner from the joints of the stove. A is the retort, made in tubular form, and the central part thereof, which is inclosed within the stove J, is in the form of two flat arcs, *a a'*, united by the strengthening-web B. The tubular portion of

these arcs unite in each end at *b' b'*, which ends can be closed by screw-plugs C C, as shown, or by any other appliance which will secure a proper joint, and be easily removable. The front end of the retort is provided on the lower side with the branch *c'*, used to form a connection with the drip. On the upper side the pipe D, used to supply the oil or other material from which the gas is made, is inserted, so that the end of it shall extend forward and into the lower arc of the retort, as shown. On the upper side of the rear end of the retort is placed a branch and seal, E, used where a number of retorts, as shown, are in operation, to form a joint for the connecting-pipe F; but when only one retort is operated the tube F may be dispensed with, and the pipe connecting with the washer may be jointed in the seal E.

G is a drip, to collect the refuse that may work out of the retort, and it has a seal, *d'*, on its upper end. The branch *c'* of the retort seated therein forms the joint. The drip G is supported by the shoe or strap *e'*, which passes over the top of the retort, and, closing under the seal *d'* on each side, holds the drip to its place. The lower end of the drip G is closed by the hinged trap-door *f'*, or any other means that will secure a joint easily opened. This trap-door, as shown, is locked by the swinging pin *g'*, by turning which the door is relieved and falls open. H is a seal, for relieving any excessive flow into the drip G. F is a connecting-pipe, to be used when two or more retorts are placed in a stove, and it is intended to obviate the necessity of using a separate communication from each retort to the washer. The pipe F is provided with branches *h' h'*, equal in number to the retorts it is to connect to, and they enter into the seals E, and thus form a joint. On the upper side of the pipe F is the central branch and seal I, for the reception of the conducting-pipe to the washer. The ends of the pipe F are closed with screw-plugs or any other easily-adjustable cap. K is the conducting-pipe to the washer L, and its upper end is inserted in the seal I of the connecting-pipe F, and its lower end in the seal *i'* on the lid of the washer. M is a pipe, of the same shape as the pipe K, and answers the same purpose in conduct-

ing the gas from the washer to the pipe N, which leads to the gas-holder. M has one end in the seal *h'* on the washer, and the other in the seal *l'* on the end of the pipe N. N is the pipe, permanently fixed, leading to the gas-holder, and it has the seal *l'* on its upper end, for the reception of the pipe M, and has also a cock, O, at any convenient point, for closing or allowing the flow of the gas.

To illustrate the advantages of our apparatus, we will suppose the same to have been some time in use, and to require cleansing. By closing the cock O, all communication with the gas-holder is stopped. The pipe K is lifted from its seals, and the connecting-pipe F is also removed without difficulty. Then, by removing the plugs C from the front end of the retort, a full supply of air is carried through it, rapidly burning out all the refuse remaining in the retort if the fire is kept up; or, by means of suitable scrapers, the same may be drawn out, as, owing to the shape of the retort, by removing the screw-plugs, all portions of its interior can be readily reached.

If it be required to clean the drip G, all that is necessary is to turn the pin *g'*, and, the door *f'* falling, the drip discharges its contents. By removing the pipe M, the washer is also readily cleansed, and all the pipes and connections being open, can be easily cleansed of refuse by suitable scrapers.

Thus it will be seen that our arrangement tends to an easy and rapid working of the machine, simplifying and reducing the first cost, and reducing the labor and annoyance of cleansing or taking apart for the purpose of repairs, &c., to the lowest possible point.

Although iron is probably the best material

for this retort and connections, they may be made of clay or any other substance that will stand the service required.

The seals are jointed with lead or any other easily-fusible metal or alloy, or they may be closed with water.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The retort A, constructed as described, with the arcs *a' a'*, and provided with the branch *c'*, seal E, and screw-plugs C C, substantially as and for the purposes herein set forth.

2. The drip G, having the seals *d'* and H, and provided with the trap-door *f'*, substantially as and for the purposes herein set forth.

3. The combination of the retort A, drip G, and shoe *e'*, substantially as and for the purposes herein set forth.

4. The connecting-pipe F, provided with branches *h'* and seal I, in combination with the seals E of the retorts, substantially as and for the purposes herein set forth.

5. The pipes K and M, constructed as shown and described, in combination with the washer L, pipe N, connecting-pipe F, and retort A, substantially as and for the purposes herein set forth.

In testimony that we claim the foregoing we have hereunto set our hands and seals this 22d day of October, 1875.

WILLIAM SMITH. [L. S.]
ROLAND H. SMITH. [L. S.]

Witnesses:

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