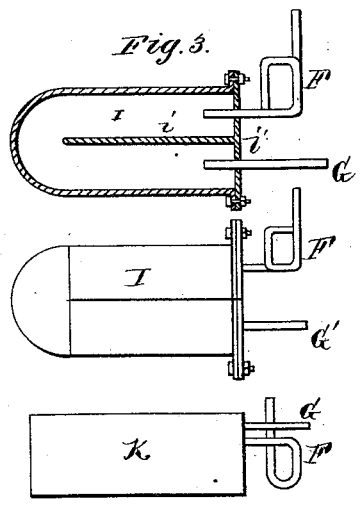
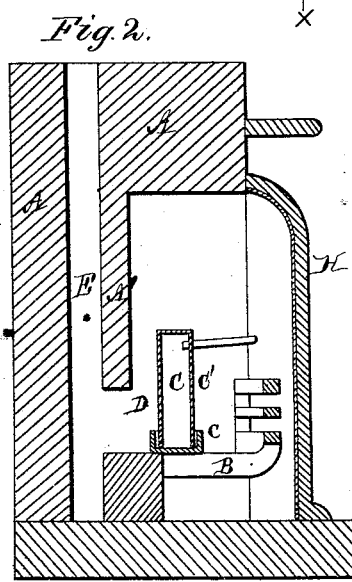
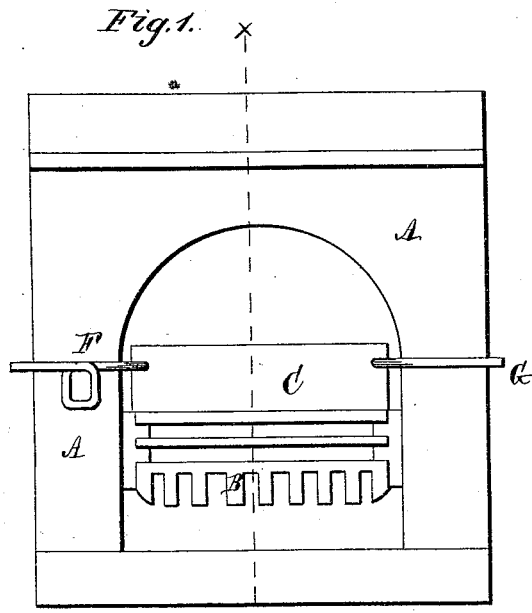


R. H. SMITH & J. GOLDTHORP.  
Gas-Apparatus.

No. 163,817.

Patented May 25, 1875.



WITNESSES  
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# UNITED STATES PATENT OFFICE.

ROLAND H. SMITH AND JOSHUA GOLDTHORP, OF PITTSBURG, PA.

## IMPROVEMENT IN GAS APPARATUS.

Specification forming part of Letters Patent No. **163,817**, dated May 25, 1875; application filed April 13, 1875.

*To all whom it may concern:*

Be it known that we, R. H. SMITH and JOSHUA GOLDTHORP, of Pittsburg, in the county of Allegheny and in the State of Pennsylvania, have invented certain new and useful Improvements in Appliances for the Manufacture of Illuminating-Gas; 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.

This invention relates to certain improvements in apparatus for manufacturing illuminating-gas, its object being to provide for the economical production of the same in small quantities for private purposes; and it consists, first, in an improved method of setting the retorts in an open fire-place, in such a manner that its front will form the back of the fire-chamber, and its rear one side of the flue leading to the chimney, in order to secure the full heating effect of the burning fuel, and the hot products of combustion, as will be fully hereinafter described; and, second, in the combination, with the open fire-place and retorts, of a shield for covering the same in warm weather, so that the apparatus may be employed for the generation of gas without inconveniently heating the apartment in which the fire-place is situated.

In the drawings, Figure 1 represents a front view of an ordinary open fire-place, showing my improved retort in position; Fig. 2, a sectional view of the same, taken on line *x x* of Fig. 1; and Fig. 3, detached views of different forms of the retorts.

The letter A represents the walls of an ordinary open fire-place, and B the grate, arranged as usual within the same. C represents the retort, set some distance in front of the rear wall A' of the fire-place, forming the back of the fire-box, and a flue, D, leading into the chimney E behind the retort. Said retort consists of two open boxes, *c* and *c'*, the lower one being in the shape of a shallow tray, of such size as to hold the upper

one, which is placed mouth downward in the same. The lower box is filled with lead or other fusible metal, which serves as a seal to close the two boxes.

F represents a trap-pipe leading into one end of the retort, through which liquid hydrocarbon, such as petroleum, may be admitted in proper quantities, without allowing the gas to be forced back through the same; and G, an escape-pipe leading from the opposite end of the retort to a gas-holder or to the burners. H represents a shield, constructed of sheet metal or other suitable material, lined with asbestos or other non-conducting material, and adapted to fit in front of the fire-place, and close the same to prevent the apartment in which the fire-place is situated from becoming inconveniently heated in warm weather.

The letters I and K represent modifications of the retorts, the retort I having a longitudinal partition, *i*, extending from its front to near the rear end of the same, to increase the heating-surface, and a removable cover, *i'*, secured to its mouth to afford ready access to its interior. The retort K is simply a closed oblong box, similar to the ordinary water-back commonly employed in ranges for heating water. Said retorts are provided with trap-pipes F and escape-pipes G, which both enter one end of the same, said last-mentioned retorts being particularly adapted to be fitted in the ordinary ranges and stoves in place of the water-back usually arranged therein.

Any of the fluid hydrocarbons may be employed for generating the gas, being admitted through the trap-pipe F, which prevents the return of the gas through the same. On coming in contact with the heated interior of the retort the hydrocarbon will be instantly converted into gas, which will pass off through the escape-pipe G to the gas-holder.

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

1. The combination of the retort C and the rear wall A', forming the intermediate

diving-flue D, to economize the heat of the fire and the escaping products of combustion, all substantially as set forth.

2. In combination with the retort in the fire-place, as described, the shield H, covering the front of the fire-place to prevent inconveniently heating the apartment in which it is situated, substantially as set forth.

In testimony that we claim the foregoing we have hereunto set our hands this 19th day of March, 1875.

ROLAND H. SMITH.  
JOSHUA GOLDTHORP.

Witnesses:

JOHN B. GEYSER,  
JOHN O. PALMER.