

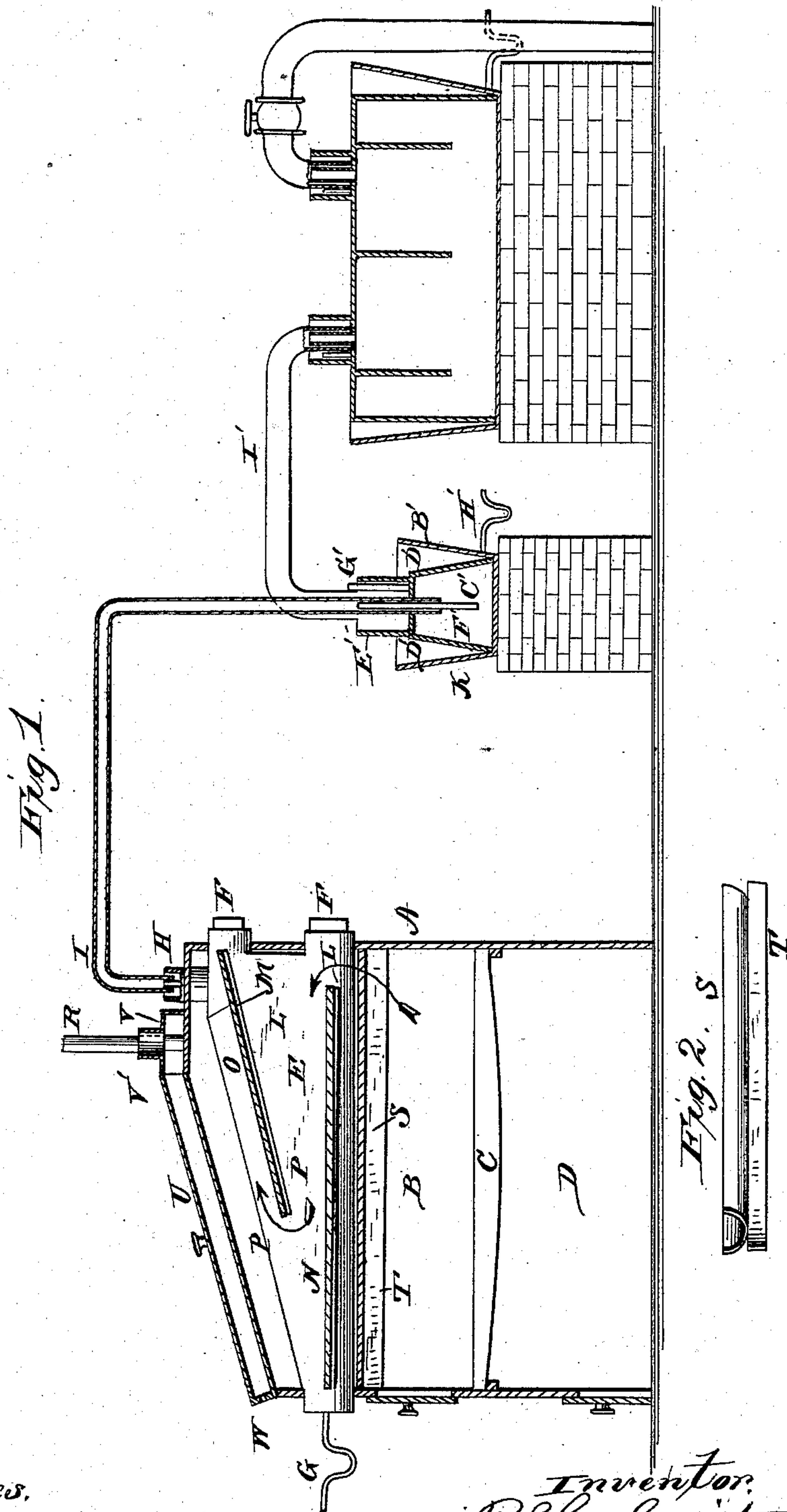
(Model.)

R. H. SMITH.

Apparatus for the Manufacture of Gas.

No. 239,870.

Patented April 5, 1881.



Witnesses.
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UNITED STATES PATENT OFFICE.

ROLAND H. SMITH, OF PITTSBURG, PENNSYLVANIA.

APPARATUS FOR THE MANUFACTURE OF GAS.

SPECIFICATION forming part of Letters Patent No. 239,870, dated April 5, 1881.

Application filed October 23, 1880. (Model.)

To all whom it may concern:

Be it known that I, ROLAND H. SMITH, of Pittsburgh, in the county of Allegheny, and in the State of Pennsylvania, have invented certain
5 new and useful Improvements in Apparatus for the Manufacture of Gas; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the let-
10 ters of reference marked thereon, making a part of this specification.

This invention relates to an improved apparatus for the manufacture of gas from liquid hydrocarbons and other gas-producing materials; and it consists, essentially, of a system
15 of works or devices whereby the gas may be generated, purified, and collected conveniently and economically, as more fully hereinafter specified.

20 My invention has for its objects to provide an improved retort, so constructed that when a series of the same are set in a bench in a suitable furnace they will form a system of flues, whereby the heat of the furnace will be utilized
25 almost wholly in the generation of the gas, and also to provide for conveniently clearing the retorts from deposited solid carbon.

My invention further has for its objects to provide a means whereby the retorts may be
30 protected against the destructive agency of the direct fire in the furnace, and also to provide against the diffusion of heat in the room in which the furnace is located, and furnish an improved washer for washing the gas after it
35 leaves the retorts.

These objects I accomplish by the apparatus illustrated in the accompanying drawings, in which—

40 Figure 1 represents a longitudinal vertical sectional view taken through the entire apparatus, and Fig. 2 a perspective view of one of the retort-shields.

45 The letter A indicates the furnace, which is constructed of metal, brick-work, or other suitable material, B the fire-box, C the grate-bars, and D the ash-pit thereof, the fire-box and ash-pit being provided with the usual openings and doors.

50 The letter E indicates the retorts, which are set in a series or bench parallel with each other in the upper part of the furnace above the fire-

box. These retorts are constructed of cast metal or other suitable material, widening vertically from the front to the rear, and at the upper and lower corners, at the rear, are provided with tubular projections F, which extend through the walls of the furnace, forming supports for the retorts, and serving as a means for cleaning the same, being provided with removable plugs for the purpose. The forward
55 ends of the retorts are tubular in form and project through the forward wall of the furnace, forming the forward supports for the retorts.

The letter G indicates the oil-induction tubes, which are made with the usual trap or bend, and provided with funnels at their extremities. These tubes enter the forward ends of the retorts. The retorts on top are provided with annular escape-pipes H, for the reception of the ends of the pipes I leading to the washer K,
60 the said pipes I being secured in place by a lead seal or filling in the annular chamber of the escape-pipes. The retorts, on the outside, are provided with flanges L M, which serve as supports for the tiles N O, the tiles N extending
65 from the front to near the rear of the furnace, and the tiles O from the rear to near the front, forming tortuous flues P, by means of which the heated products are carried into intimate contact with the retorts on their pas-
70 sage to the escape-flue R, leading to the chimney, as indicated by the arrows.

The letter S indicates a metallic shield, which is semicircular in cross-section, and adapted to set longitudinally, one under each retort,
75 the said shields being each provided with a longitudinal flange, T, below, which extends beyond the ends of the semicircular part of the shield, serving as supports to set in proper recesses in the walls of the furnace and hold the
80 shields in place to protect the retorts from the intense heat of the direct fire. The top of the furnace is inclined, as indicated, and is provided with doors U, which may be opened, in order to have access to the upper part of the
85 furnace, and when opened it will be seen that, by reason of the inclination of the top, the flues between the retorts may be readily reached by means of a suitable instrument for cleaning. In order to prevent the diffusion of heat into
90 the room the doors are made with double walls, the spaces communicating at the top with a

transverse chamber, V, at the rear upper part of the furnace, provided with a pipe, V', leading outside the building, through which the heated air escapes, the lower part of the doors 5 being provided with draft-openings W, for the entrance of cold air.

The letter K indicates the washer, into which the escape-pipes from the retorts lead. The said washer is composed of the vessel B', having an inverted vessel, O', secured therein, leaving angular spaces D' between the walls. The vessel O', on top, is provided with a seal-chamber, E', into which the pipes dip, the said pipes setting over the upper ends of the short 15 pipes F', which form part of the washer and extend downward into the same, terminating near the bottom thereof, in order to cause the gas to pass through the washer.

The letters G' and H' indicate, respectively, 20 the induction and eduction tubes for the water.

The letter I' indicates a pipe leading to the purifier, which may be of ordinary construction, and K' a pipe leading to the gas-holder.

The operation of my invention will be fully 25 apparent from the above, and further description is therefore deemed unnecessary.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In combination with the retorts provided 30 with tubular projections at their ends, and the furnace in which they are set, the tiles secured upon the flanges at the sides of the retorts, forming heating-flues, substantially as and for the purposes specified.

2. In combination with the furnace and the 35 inclined open top thereof, the doors having double walls and draft-openings, and the transverse chamber provided with a pipe leading outside of the building, whereby the heat is 40 carried off and its diffusion into the room prevented, substantially as specified.

In testimony that I claim the foregoing I have hereunto set my hand this 18th day of October, 1880.

ROLAND H. SMITH.

Witnesses:

S. J. CROSS,

ANDREW HUMBERT.