No. 668,225. Patented Feb. 19, 1901.

F. W. C. SCHNIEWIND.

APPARATUS FOR MANUFACTURING GAS.

(No Model.) (Application filed Aug. 11, 1897.)

Fig. 1.

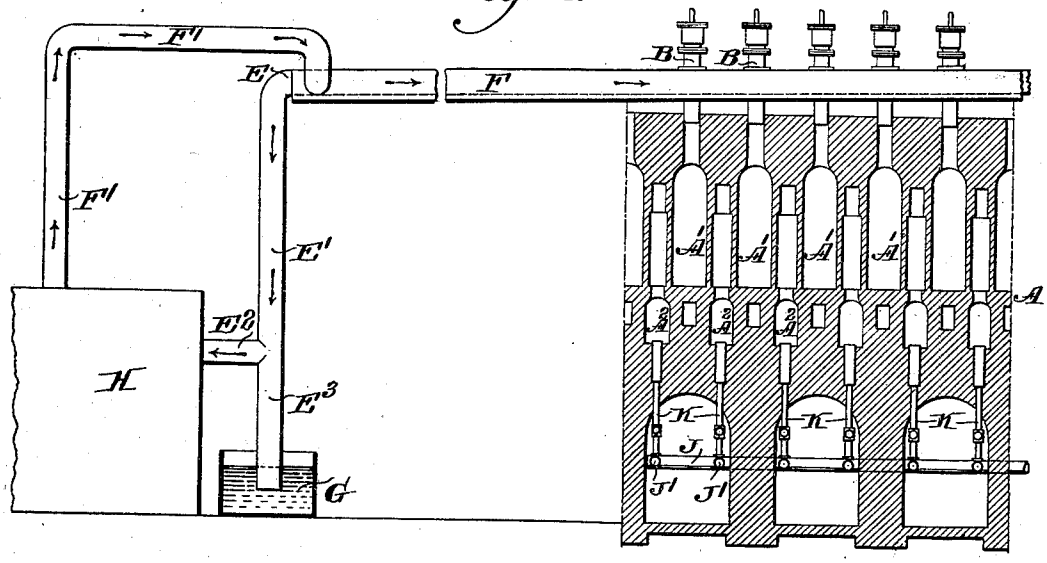
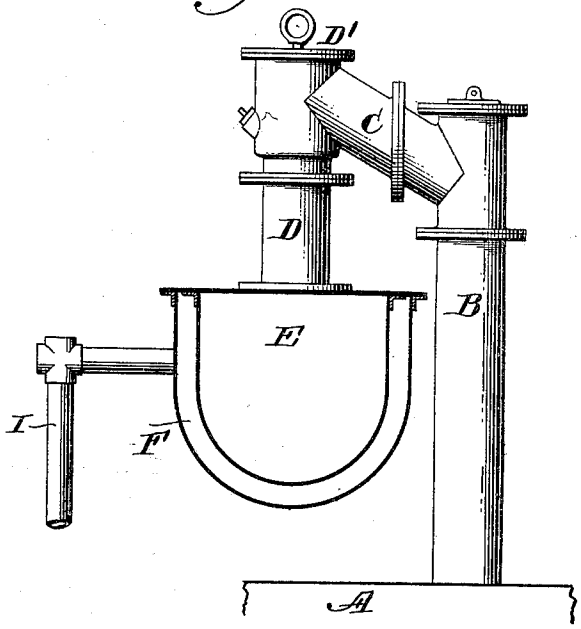



Fig. 2.




Witnesses.

Inventor.

Francis W. C. Schniewind

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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR MANUFACTURING GAS.

SPECIFICATION forming part of Letters Patent No. 668,225, dated February 19, 1901.

Application filed August 11, 1897. Serial No. 647,840. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERIC W. C. SCHNIEWIND, a citizen of the United States of America, residing in Pittsburg, in the county of Allegheny, in the State of Pennsylvania, have invented a certain new and useful Improvement in Apparatus for Manufacturing Gas, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

My invention relates to the manufacture of gas from coal in a multiple series of externally-heated retort-chambers having particularly, though not exclusively, in view the manufacture of gas as a by-product in coke-ovens.

The object of my invention is in a system wherein the produced gases are carried to a purifying-house and thence wholly or in part through a pipe system leading to the retort-heating furnaces to provide a common receiving-main leading from the retorts to the purifying-house and to inclose said main in a conduit leading from the purifying-house to the heating-furnaces, so as to prevent the choking of the receiving-main by cooling its gases and causing the condensation therein of the hydrocarbons which partly dissolve and carry along the solid hydrocarbons tending to deposit in and choke the main, while at the same time the cold gases coming from the purifying-house are highly heated, and thus rendered more efficient for use in heating the retorts.

My system is rendered efficient by reason of the collecting-main drawing its supply not from one or two retorts, but, as stated, from a multiple series, and because by reason of this construction the amount of condensation taking place in the main and the degree of heat imparted to the purified gases used for heating the retorts is practically uniform and can be adjusted for the best results.

Reference being now had to the drawings, which illustrate a simple form of apparatus well adapted for carrying my invention into effect, Figure 1 is an elevation, partly in section, showing my invention applied to a bank of coke-ovens, and Fig. 2 is an enlarged detail of the construction.

A indicates a bank of coke-ovens, the oven-chambers being indicated at A′ A′, &c., and the furnace-chambers at $A^2$ $A^2$, &c.

B B, &c., are gas-pipes leading from each oven through a connecting-pipe C to a pipe D, which in turn opens into the collecting-main E, D′ indicating a valve-handle, such as are usually provided in connections of this kind.

F is a surrounding or enveloping pipe or conduit which incloses that portion of the main E where the hot gases enter. As shown, the main E, after running with a slight inclination over the top of the bank of ovens, turns downward at E′, a branch $E^2$ entering the scrubbing and purifying chamber, (indicated at H,) while a vertical branch $E^3$ leads into a tar-collecting vessel G.

F′ is a gas-pipe leading to the enveloping-conduit F and, as shown, coming from the cleaning-chamber H, though it will be understood that the gas used for heating the ovens may be derived from any convenient source—such, for instance, as a water-gas producer.

I, Fig. 2, indicates a gas-take-off pipe leading from the conduit F and connecting with a pipe J, from which in turn the gas passes through pipes J′ to the burners K, which lead it into the furnaces $A^2$.

In operation the coal-gases from the various ovens pass into the collecting-main E through the pipes B, C, and D and along said pipe to the cleaning-house, the cool gases coming through the pipe F′ passing to the eveloping-conduit F and through it in contact with the main E, cooling the gases in the main and of course heating the gases in the enveloping-conduit. The result of the cooling of the gases in the main is the precipitation of the lighter or more fluid tars which are collected in the receptacle G, together with the heavier matters, which are carried out of the collecting-main by the lighter tars. The gas heated in the enveloping-conduit F is then distributed through the various burners to the gas-furnaces and is naturally more efficient than if supplied at lower temperatures.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a multiple series of carbonizing-chambers and a common gas-collecting main receiving gas therefrom, of gas-furnaces arranged to heat the carbonizing-chambers, a gas-purifying plant connected to the common collecting-main and a gas-conduit leading from the purifying plant to the gas-furnaces and inclosing the gas-collecting main aforesaid, whereby the gas coming from the carbonizing-chambers is cooled in the collecting-main, then purified, then reheated and then burned in the furnaces.

2. The combination with a multiple series of carbonizing-chambers, gas-furnaces arranged to heat said chambers, a tar-collecting vessel and a gas-purifying plant, of a gas-collecting main connected to receive gas from the carbonizing-chambers and arranged as described and so that liquid will flow freely through it to the tar-collecting vessel, a gas-conduit branch leading from the main to the purifying plant and a gas-conduit leading from the purifying plant to the gas-furnaces and inclosing the collecting-main all substantially as and for the purposes described.

FREDERIC W. C. SCHNIEWIND.

Witnesses:
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