

(No Model.)

L. M. HEERY.
APPARATUS FOR MANUFACTURE OF GAS.

No. 541,540.

Patented June 25, 1895.

FIG-1-

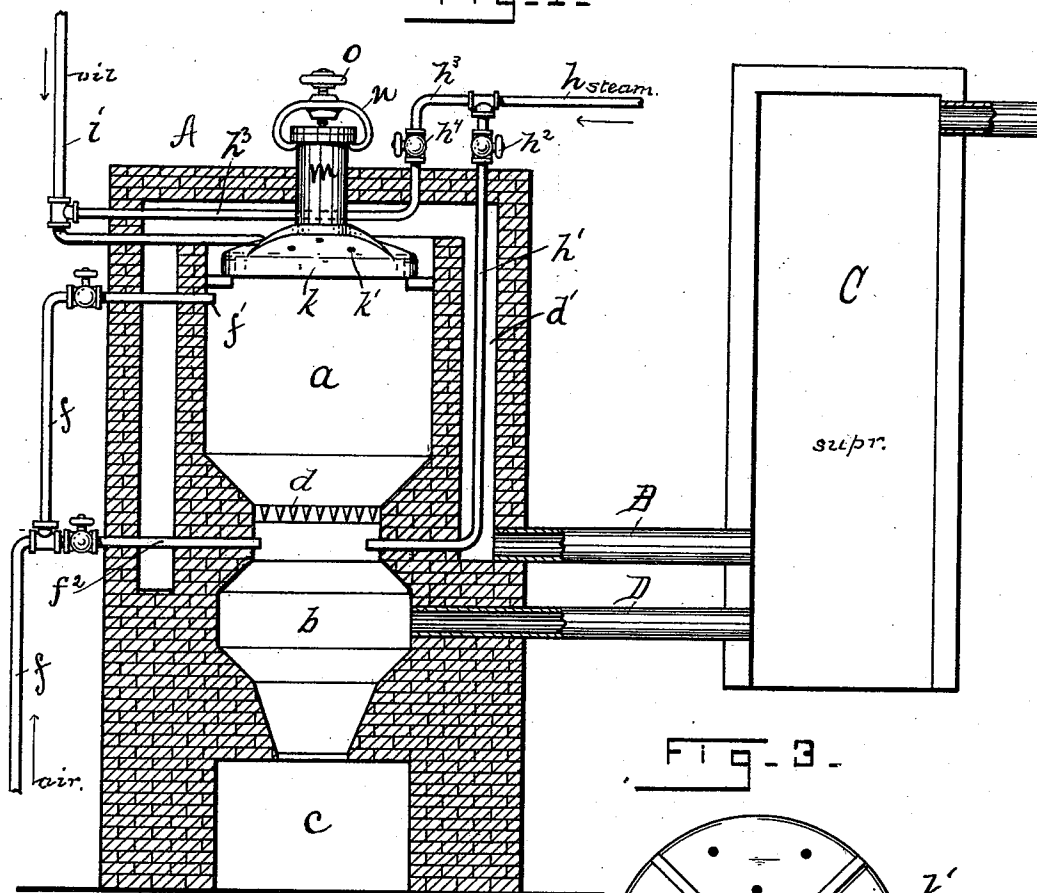


FIG-2-

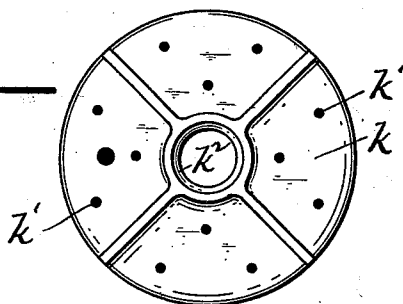
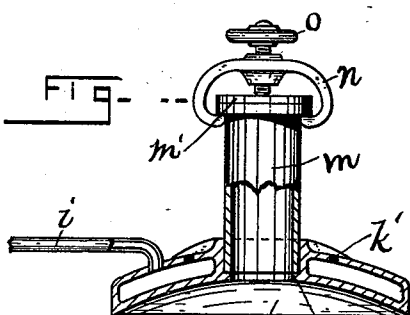


FIG-4-



FIG-



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APPARATUS FOR MANUFACTURE OF GAS.

SPECIFICATION forming part of Letters Patent No. 541,540, dated June 25, 1895.

Application filed November 12, 1894. Serial No. 528,592. (No model.)

To all whom it may concern:

Be it known that I, LUKE M. HEERY, a citizen of the United States, residing at Monson, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Apparatus for the Manufacture of Gas, of which the following is a specification, reference being had to the accompanying sheet of drawings.

10 This invention relates to apparatus for producing hydrocarbon gas and has for its particular object the improvement of the retort employed to volatilize and distribute the oil used in the production of such gas.

15 To more readily explain my invention I have annexed hereto a sheet of drawings, illustrating such portions of a gas producing apparatus as are immediately connected with said invention.

20 In the drawings, Figure 1 is a vertical central sectional view of a furnace and connected superheater or generator. Fig. 2 is an elevation, partly in section, of the vaporizing-chamber, which forms the leading feature of my invention. Figs. 3 and 4 are respectively plan and edge views of said chamber.

In the production of gases of this class it is particularly desirable, in fact necessary, in order to produce the best results, that the oils introduced shall be thoroughly volatilized or vaporized before being introduced to, and mingled with, the gases arising from the fuel on the grate and it is also desirable that such volatilized oils shall be broken up, separated, and discharged from the retort at various points rather than from a single large orifice and, to accomplish these desirable results, I have provided a peculiar, but cheaply produced, retort which I will proceed to describe.

40 Referring to the drawings, A indicates a furnace as a whole, having a combustion chamber *a*, ash-pit *b*, clearing-out pit *c* and grate *d*. Surrounding the combustion chamber and connected with the top thereof, is an annular chamber *d'* whose lower portion is connected by a flue or pipe B with a superheating or regenerating chamber C, which latter may be of any approved construction. The ash-pit chamber *b* is also connected, by 50 a flue D, with said superheating chamber C.

f indicates an air pipe leading from a blower and having suitably valved discharge pipes

f'—*f*² that enter, respectively, the combustion chamber and ash-pit. By means of this air pipe and its valves the products of combustion 55 of the furnace may be discharged through the annular chamber *d'* and flue B into the superheater C or such products may be "blasted back" through the ash-pit and flue D into said superheater, this construction being however 60 a common one in this class of apparatus, and forming no part of my present invention.

h denotes a steam pipe leading from a boiler located at any convenient point, said pipe having one branch *h'* (with valve *h*²) that discharges into the ash-pit, and another branch 65 *h*³ (with valve *h*⁴) connecting with an oil pipe *i* that discharges into a retort *k* formed as a hollow disk and supported in the upper part of the combustion chamber *a*. The described 70 oil pipe *i* discharges through the upper wall of said retort, and said upper wall is provided with a large number of comparatively small openings *k'*, as clearly seen in these several drawings. 75

When the apparatus is in service the disk retort, being so located as to receive the direct influence of the caloric products of combustion, is highly heated and oil discharged into said retort, through pipe *i*, is immediately 80 raised to a correspondingly high temperature and volatilized. In its efforts to escape (under pressure) such volatilized oil is then discharged through the several openings *k'* and at once mingles with the surrounding gases 85 arising from the fuel on the grate.

The effect, in practice, is a constant discharge of oily vapor, from each of the openings *k*, in such limited quantity as to most readily commingle with the gases arising from 90 the fuel on the grate, thus producing a more satisfactory result than when the oil is discharged directly from a pipe corresponding to pipe *i*.

The disk retort *k* has a central opening with 95 an annular ledge or rib *k*² upon which rests the lower end of a cylindrical chute *m* through which coal may be introduced into furnace *a* and, to close the upper end of said chute, I provide a cap or cover *m'* of disk form that 100 is held in place by some practical form of fastening. As here illustrated said cover is fastened by means of a yoke *n* whose ends hook under the flanged upper end of chute

m, the yoke being provided with a clamping screw *o* whose end abuts the cover *m'*, as clearly shown in Figs. 1 and 2 of the drawings.

From the foregoing description the operation of my improvement is obviously as follows: The chamber *a* having been charged with a proper amount of fuel, and the latter ignited, the heat arising therefrom, will so heat the retort chamber *k* as to thoroughly vaporize and mix the oil and steam entering said chamber through the pipe *i*. The vapor thus generated will be forced through the openings *k'* in small jets, which enables it to readily combine with the gases arising from the fuel on the grate *d*. This combined product then passes by way of the annular chamber *d'*, and pipe *B* to the superheater *C*, from whence it is finally distributed.

My described vaporizing retort may be cheaply produced, does not interfere with the functions of other parts of the apparatus, and is a valuable aid in the process of gas making.

Having described my invention, I claim—

1. In combination in and with the furnace of a hydro-carbon gas apparatus, a vaporiz-

ing retort supported in the combustion chamber, and an inlet oil pipe connected with said retort; the latter being of hollow disk form with discharge openings in its upper wall and with a central opening as set forth, a fuel chute seated in said central opening, and a cover for said chute, all substantially as and for the purposes specified.

2. In an apparatus for the manufacture of gas, the combination, with a furnace, of a hollow annular perforated retort seated in the upper portion thereof, said retort being provided with a central opening and having an annular flange or ledge, a cylindrical chute within the opening and resting upon the annular flange, a cover for the chute, a regenerating furnace communicating with the first mentioned furnace, and means for supplying the retort with oil and steam, substantially as set forth.

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