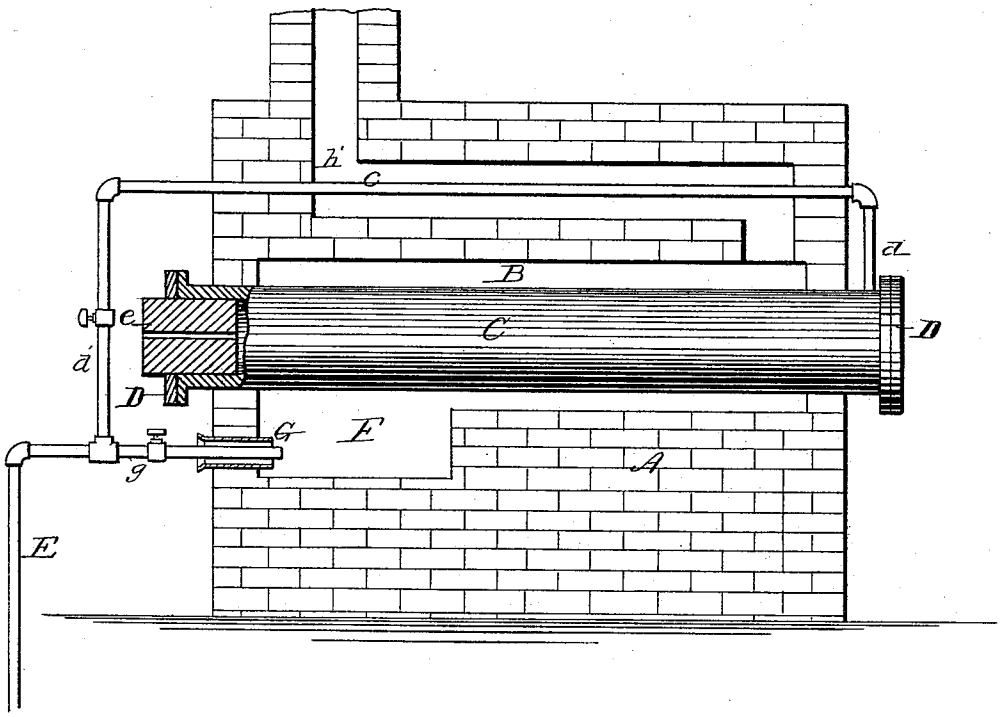
(No Model.)

J. J. McTIGHE.

APPARATUS FOR PRODUCING HARD CARBON FROM HYDROCARBON VAPOR.

No. 338,605. Patented Mar. 23, 1886.



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UNITED STATES PATENT OFFICE.

JAMES J. McTIGHE, OF PITTSBURG, PENNSYLVANIA.

APPARATUS FOR PRODUCING HARD CARBON FROM HYDROCARBON VAPOR.

SPECIFICATION forming part of Letters Patent No. 338,605, dated March 23, 1886.

Application filed December 7, 1883. Serial No. 113,833. (No model.)

To all whom it may concern:

Be it known that I, JAMES J. McTIGHE, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Producing Hard Carbon from Hydrocarbon Vapor; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, which forms a part of this specification, in which is shown a sectional view of my improved apparatus.

This invention has relation to the manufacture of coke or other analogous forms of hard carbon directly from natural hydrocarbon gas such as is obtained in great purity from gas-wells.

In an application filed by me August 24, 1883, Serial No. 104,628, I have described a simple and effective process whereby the production of the coke or hard carbon is accomplished by subjecting the hydrocarbon vapor obtained from the well to the decomposing action of intense heat and maintaining the heat after the disassociation of the hydrogen and carbon until coking ensues. I have in explaining said process referred to a simple form of apparatus for carrying the same into effect, such apparatus embracing as essential features a coking-retort and suitable means for heating the same; and I have also suggested that the heating of the retort and the consequent disassociation of the gases may be accomplished by the employment as fuel of the natural gas obtained from the same source as that which feeds the retort.

In the application referred to I have reserved the privilege of making the apparatus the subject of a separate and distinct application.

Accordingly the present invention consists in a coking oven or apparatus constructed as hereinafter set forth and adapted for the production of coke from natural gas.

Referring to the accompanying drawing, A designates a furnace or oven structure built of suitable refractory material, and formed with an elongated chamber, B, wherein is set a retort, C, of any suitable material and form, but preferably of refractory clay, and provided with a removable cap or head, D, and a connection or connections, *d*, for the attachment of a branch leading from the gas-well or supply-pipe E, conveying the hydrocarbon vapor. Below said retort, at a point, F, is formed in the furnace or oven structure a combustion-chamber, into which leads a gas-burner, G, of any suitable construction, obtaining its supply from the gas-well or supply-pipe E through a branch, *g*. The chamber F communicates with the narrow space B, surrounding the retort, and terminating in a flue, *h'*, at or near its rear end. The chamber F is closed in front, except where an opening is provided for the gas-burner and air-supply and in said chamber the explosion and ignition of the gas take place. The flames and heat therefrom entirely surround and lick the retort on all sides, so as to heat it uniformly.

The branch pipe *d'*, which conveys the gas from the well or main supply to the retort, is preferably connected to a pipe, *c*, of refractory clay, set in the furnace at such a point as to receive heat from the burning gas. The pipe *c* is connected with the retort, and as the gas passes through it to the retort it is heated and prepared for the subsequent decomposition in the retort. The pipe *c* is not absolutely necessary; but I prefer to employ it, as I find that the heating of the gas previous to its admission to the retort facilitates decomposition.

The retort or chamber C should be suitably vented, as shown at *e*, for the escape of the liberated hydrogen and undecomposed gas.

In starting operations the gas is first lighted at the burner and the retort heated to the highest point or degree practicable. The gas is then admitted and the heating continued until the coking is completed.

What I claim as my invention is—

1. An apparatus for producing coke from natural gas, comprising in combination a furnace structure, a vented retort set therein, a main supply gas-pipe, a branch thereof communicating with said retort, and a second branch leading to said combustion-chamber, substantially as described.

2. An apparatus for producing coke from natural gas, comprising in combination a fur-

nace structure, a retort set therein, and a gas-supply pipe having one branch leading to the combustion-chamber of said furnace and a second branch communicating with the retort, the latter branch passing first through the furnace at such point as to be heated by the burning gas in the combustion-chamber, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

JAMES J. McTIGHE.

Witnesses:
D. E. DAVIS,
T. J. McTIGHE.