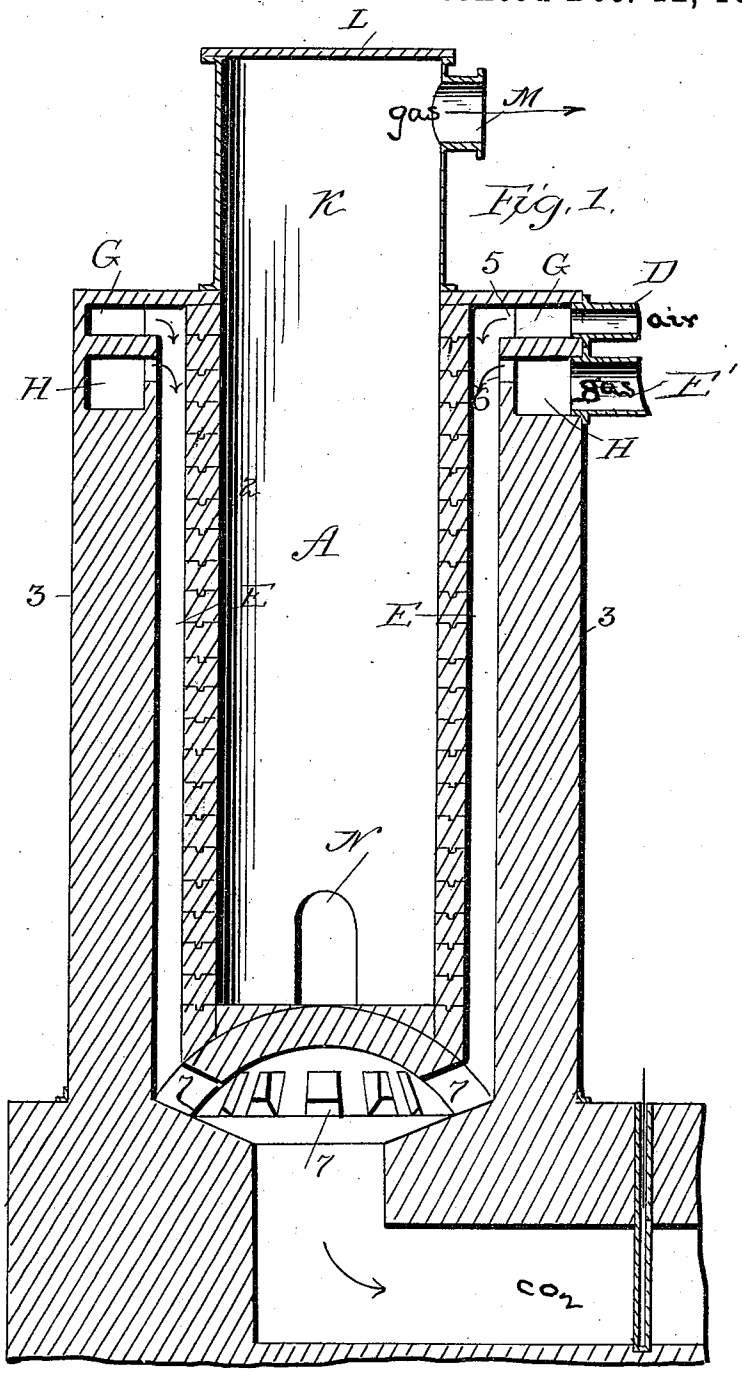
(No Model.) 3 Sheets—Sheet 1.

M. V. SMITH.

OVEN FOR THE MANUFACTURE OF COKE.

No. 510,448. Patented Dec. 12, 1893.



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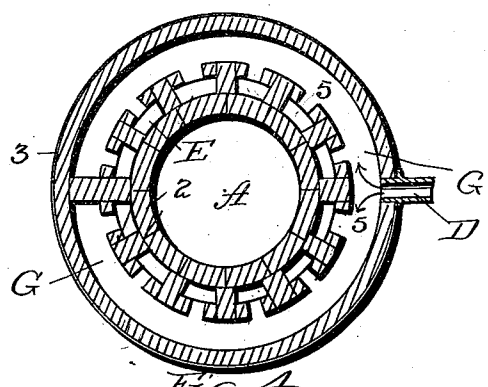

Fig. 4.

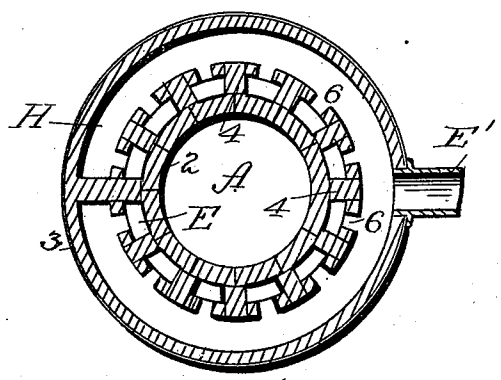

Fig. 3.

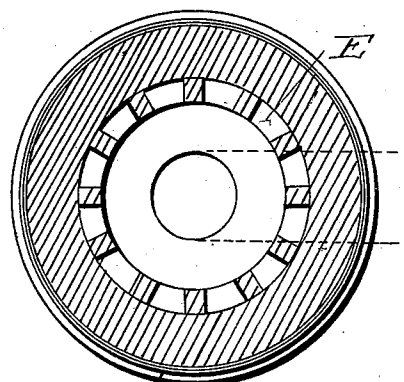

Fig. 2

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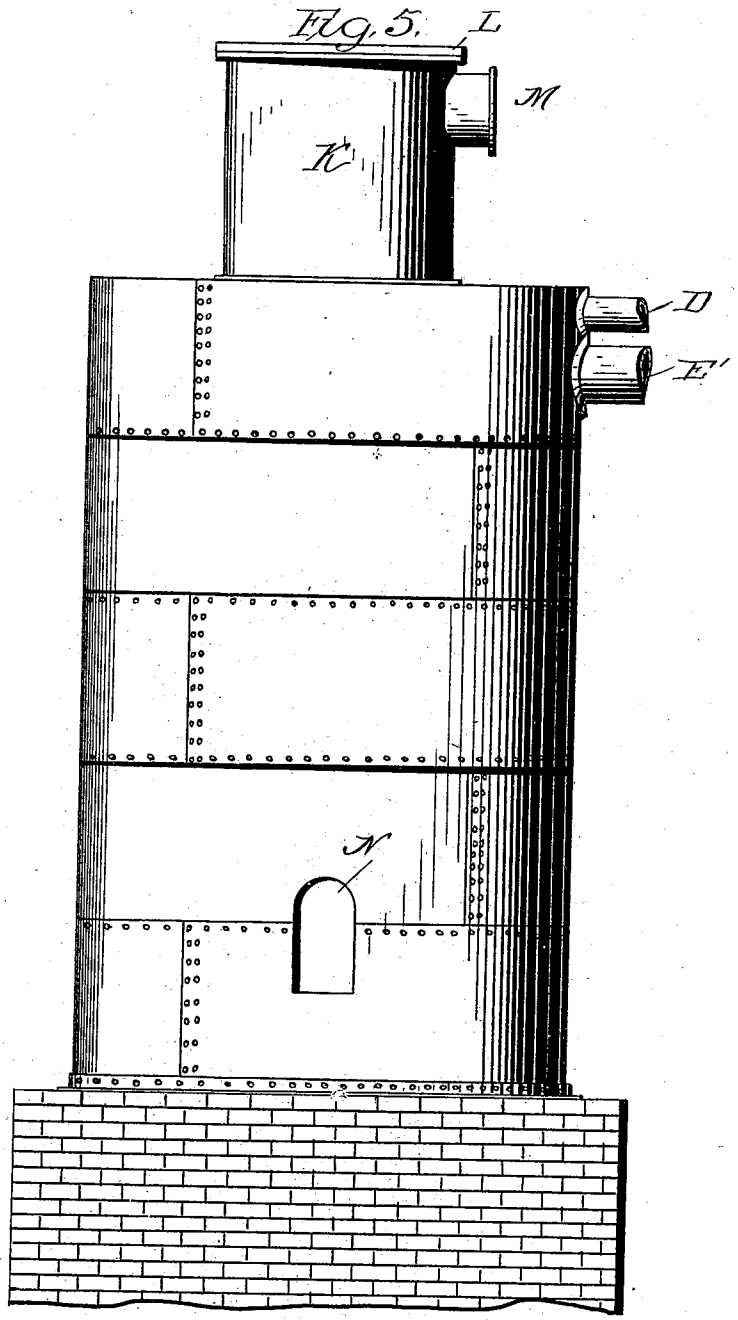
Fig. 5.



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UNITED STATES PATENT OFFICE.

MARTIN V. SMITH, OF PITTSBURG, PENNSYLVANIA.

OVEN FOR THE MANUFACTURE OF COKE.

SPECIFICATION forming part of Letters Patent No. 510,448, dated December 12, 1893.

Application filed February 17, 1893. Serial No. 462,725. (No model.)

To all whom it may concern:

Be it known that I, MARTIN V. SMITH, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Ovens for the Manufacture of Coke, of which the following is a specification.

My invention referred to in the foregoing petition relates to the manufacture of coke and illuminating and heating gas, in accordance with a method explained in an application filed by me in the United States Patent Office on the 27th day of December, 1892, said application having the Serial No. 456,354.

The general object of my invention is to manufacture coke in such a way that producer gas can be applied so as to give the necessary heat to drive off from the coal the volatile matter, which has a greater commercial value than the producer gas used, the producer gas in this case being substituted for the more valuable gas. By this method I produce heat from a more inferior grade of gas, thus enabling me to utilize the illuminating gas and tar heretofore consumed to manufacture coke.

My invention consists of an improved oven, designed for the purpose of producing coke and gas, according to my plan, referred to above.

In the accompanying drawings: Figure 1 is a longitudinal vertical section through the center of the oven showing the flues or ports extending from the top for the entire length of the oven, discharging underneath into a flue leading to the stack draft. Fig. 2 is a section taken under the oven at the floor line of Fig. 1. Fig. 3 is a section taken at the gas inlets of Fig. 1. Fig. 4 is a section at the air inlets of Fig. 1. Fig. 5 is an outside view showing an opening in the side through which the coke is removed, as well as a hopper or chest on top of the producer through which the coal is charged and through which the volatile matter distilled off of the coke is carried away from the oven.

In Fig. 1 I have shown a coking chamber of the oven proper at A. This may be of any dimensions according to the capacity required. The wall of this chamber shown at 2 is preferably formed of bricks having tongue and groove connections as shown in Fig. 1. Surrounding this wall 2 is a series of vertical ports or flues E in which the combustion of the producer gas takes place for the purpose of heating the oven from the outside. These ports or flues are formed in part by an outer wall 3 arranged to leave an annular space between its inner surface and the outer surface of the wall 2. This annular space is divided into the flues by radially arranged vertical walls 4 which are shown in Fig. 3 are set opposite the joints in the inner wall so as to prevent leaking through the said vertical joints. They also serve to sustain the inner walls by transmitting any pressure upon the inner wall to the outer. In the top of the outer wall and around the upper ends of the vertical flues are two passages H, G. One of these passages H is for gas and the other, G, is for air. They are connected with all the vertical flues by orifices 5 and 6 shown in Fig. 1, and Figs. 3 and 4. Gas is admitted to the passage H by pipe E, and air to the passage G by a pipe D. The oven A is closed except at the bottom where a door N is provided for the removal of the coke. The vertical flues E are connected at the bottom through passages 7 with a flue connecting with the chimney for conducting away the products of combustion. On the top of the oven is a hopper K provided with a movable lid L and an outlet M. The lid being removed, coal may be introduced through the hopper, and the gas from the coal within the oven is conveyed away through the outlet M to any suitable main.

The gas for heating the oven is supplied from any ordinary producer, or some modification of the Siemens producer, and the air is delivered to the point of combustion preferably by means of a fan. The combustion takes place at the top of the oven and the products of combustion are drawn down through the flues and in contact with the wall of the coke chamber. The oven is first heated and then the coal is introduced into the coke chamber, the lid closed and the connection made with the main. After the plant has run until the volatile matter is all driven off from the coal the connection with the main is shut off, the door at N opened and the coke drawn out. After this operation is performed the oven is

again filled with coal, the lid L is allowed to remain partly opened until the gas begins to come through, when it is closed and the connection again made with the main.

I claim—

1. In combination with an outer wall 3, an interior oven within, a series of vertical flues between the wall and oven and encircling the latter, an annular gas flue H arranged horizontally in the upper part of the outer wall and in connection with the vertical flues and a second annular horizontal flue G for the air with passages therefrom to the vertical flues, gas and air supply pipes connecting with the flues H and G, a draft stack leading from the base and passages from said vertical flues to said stack, substantially as described.

2. In combination with an oven A, an outer wall encircling said oven, a series of vertical flues around said oven between it and the outer wall, annular horizontal flues H, G, for gas and air in the top of the outer wall, gas and air supply pipes connecting with the flues, a draft stack from the base of the structure, passages leading from the vertical flues at the upper end thereof to the flues H and G and passages at the lower end leading to the stack, a hopper K forming an extension of the oven, a lid thereon and a gas outlet, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

MARTIN V. SMITH.

Witnesses:
J. W. HARTLEY,
G. A. HILLEMANN.