

(No Model.)

R. DE SOLDENHOFF.

COKE OVEN.

No. 273,822.

Patented Mar. 13, 1883.

Fig. 1. Sectional Elevation.

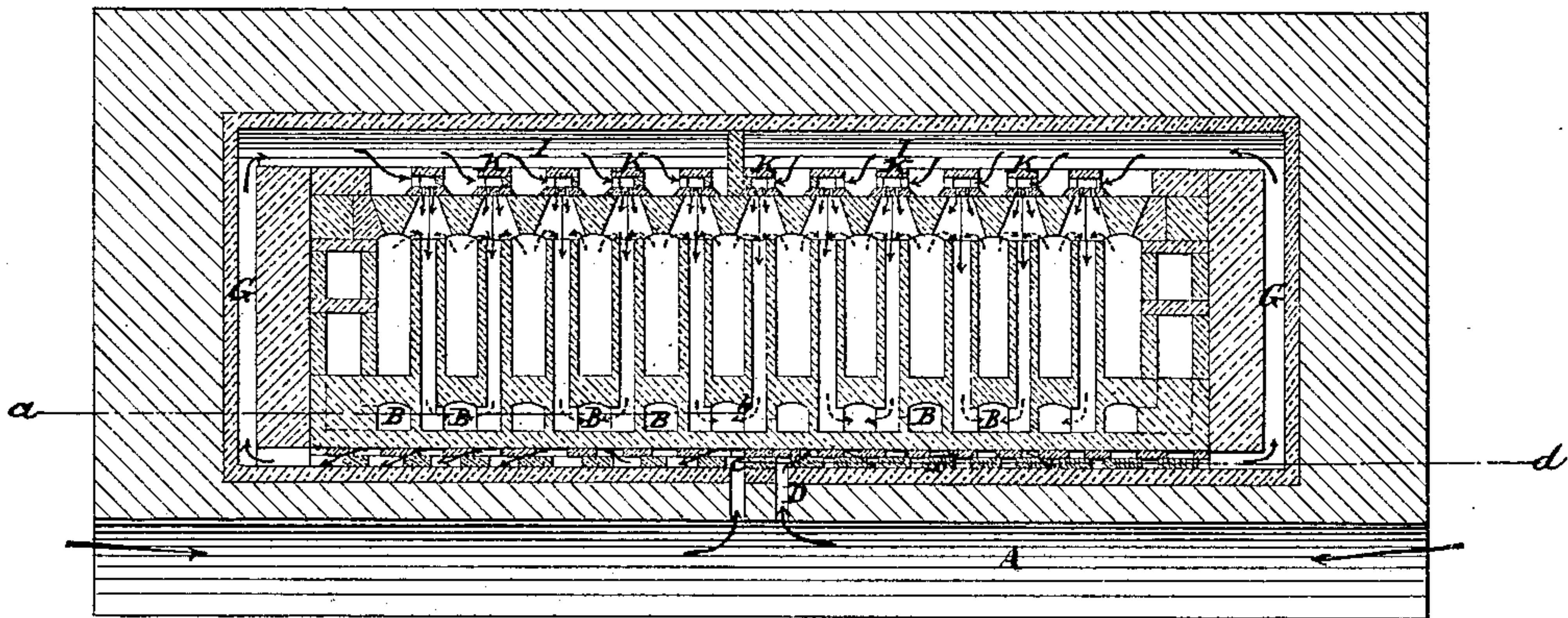
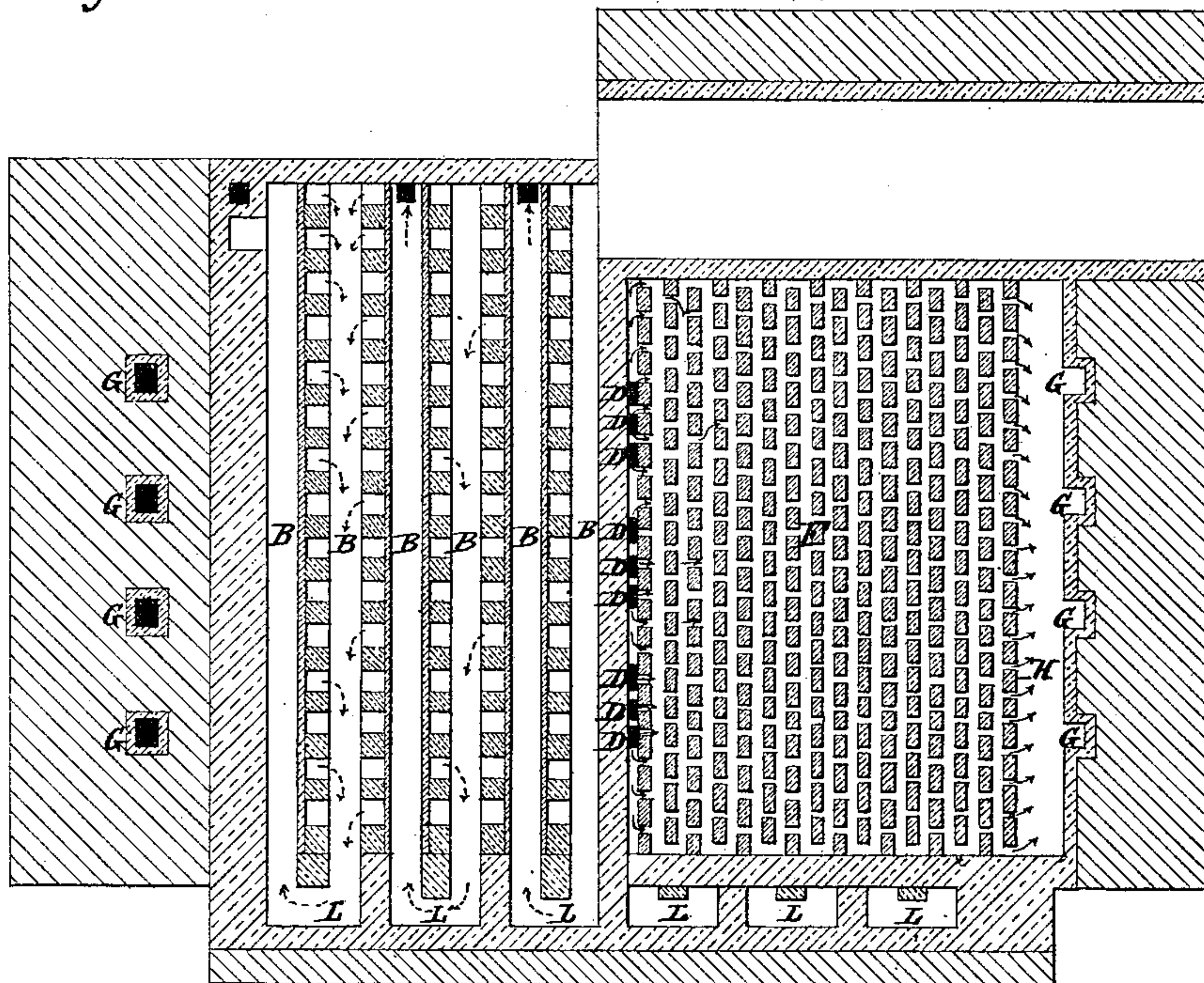


Fig. 2. Sectional Plan on line. a,b,c,d



Witnesses:

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UNITED STATES PATENT OFFICE.

RICHARD DE SOLDENHOFF, OF MERTHYR-TYDVIL, COUNTY OF GLAMORGAN, ENGLAND.

COKE-OVEN.

SPECIFICATION forming part of Letters Patent No. 273,822, dated March 13, 1883.

Application filed August 8, 1882. (No model.)

To all whom it may concern:

Be it known that I, RICHARD DE SOLDENHOFF, of Merthyr-Tydvil, in the county of Glamorgan, Wales, Great Britain, have invented new and useful Improvements in Coke-Ovens, of which the following is a specification.

My invention relates to certain improvements upon the well-known Coppée coke-ovens, as illustrated in the accompanying drawings, in which Figure 1 represents a sectional elevation, and Fig. 2 a sectional plan on lines *a b* and *c d* of Fig. 1, the object being to increase the output of coke per oven.

The Coppée coke-ovens are rectangular chambers surrounded with flues located in walls of the oven. The heat of the walls of the oven acts on the coal in the oven and disengages the gases, which, when burned in the flues, give back to these walls the heat taken from them just before. It will thus be seen that there is a continuous action of taking and returning the heat from and to the walls of the oven. Therefore it may be concluded that if the combustion of the gases is perfect the surrounding walls of the oven are nothing else but heating-surfaces.

My improvement consists, first, in increasing the heating-surfaces in the oven to their maximum. The increase of heating-surfaces is attained by giving to the oven the shape or form of a rectangle, in which the numerical value of its area is not more than half of the numerical value of its periphery. In order to illustrate this point, I will take, for example, an oven which is five feet high and one foot three inches wide. The area of the cross-section will be five feet by one foot three inches, giving six and one-fourth square feet. The periphery will be five feet by five feet by one foot three inches by one foot three inches, giving twelve and one-half feet. It will thus be seen that the dimensions given to the ovens are such that every cubic foot of coal in the oven gets no less than two square feet of heating-surface.

A second improvement consists in the means of restoring the heat to the ovens, which would be otherwise lost.

In the ordinary Coppée ovens the space between the foundation-arch *A* and the gas-flues *B* is composed of a series of flues having

the same width and running in the same direction as the ovens. Through this space air circulates, which necessarily cools the flues *B*, on one hand, while on the other it protects the foundation-arch *A* from the action of the heat. This air, when heated, is discharged outside without being utilized. From experiments made I have found that the temperature of this air thus heated is sometimes raised to 600° Fahrenheit, and even above. According to my improvement the space between the bottom of the flues *B* and the top of the foundation-arch *A* is filled in with two or three rows of refractory bricks. The arrangement of the bricks is shown in the drawings, and it may be added that the mode of arranging them is analogous to that of the Siemens regenerator. The cold air enters at the foundation-arch *A*, rises by a series of openings, *D*, formed therein, and enters the space *F*, where, in circulating between the rows of refractory bricks, it is heated. This heated air passes to a common conduit or passage, *H*, from which it issues by a series of conduits, *G*. From thence it enters into a series of conduits, *I*, situated above the ovens, and finally from the latter the hot air is distributed through the flues *K*, situated above the partition-walls. The space *F* may therefore be called a "regenerator of heat." This improvement does not increase the cost of construction and considerably increases the production of coke. The full arrows indicate the passage of the air from the cold-air entrance in the arch *A* to the entrance of heated air in the partition-walls of the ovens. The dotted arrows indicate the passage of the gases.

A third improvement consists in the arrangement of the cross-flues outside the oven.

In the ordinary Coppée ovens the cross-flues are situated inside the construction and beneath the partition-wall, whereas I place these cross-flues (for the return of the flames) as shown at *L* in the drawings—that is to say, outside the ovens. As these parts are those which are most likely to require repairing, I can effect this object without stopping the operation of the oven.

I am aware that a series of coking-ovens vertically arranged have been placed side by side, and that a series of walls constituting

flues are interposed between said ovens; that said flues are provided at their upper ends with chimneys, and that they communicate at their lower ends with a gas-generating furnace by means of an intervening chamber or passage; that said ovens are provided with a series of underlying air-passages communicating with the flues. I am also aware that coking-ovens have been constructed and arranged with a series of gas and air flues for the purpose of cooling by the latter the foundation and lower portions of the brick-work of the ovens, and also for using the air after becoming heated and intermixed with the escaping gas from the coal during the process of coking, to obtain heat by combustion of the gas. I therefore do not claim such construction and arrangement, broadly; but

What I do claim, and desire to secure by Letters Patent, is—

1. A coking-oven provided with a foundation-arch, A, and the series of openings D, formed therein, the bricks lying above said arch being arranged with intervening spaces,

whereby the air is received and heated, as specified, in combination with the passage H, conduits G I, and the flues K, constructed in the manner and for the purposes set forth.

2. A coking-oven provided with the foundation-arch A and the series of openings D formed therein, the air-heating spaces F, the passage H, conduits G I, and flues K, arranged and constructed as described, in combination with the gas-flues B, substantially as and for the purpose set forth.

3. A coking-oven provided with the foundation-arch A, having the openings D formed therein, the air-heating spaces F, formed by the bricks, as set forth, the passage H, conduits G I, and flues K and B, constructed as described, in combination with the cross-flues L, located away and outside of the ovens, as shown and specified.

RICHARD DE SOLDENHOFF.

Witnesses:

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