No. 798,086. PATENTED AUG. 29, 1905.

G. WOLTERS.

COKING FURNACE.

APPLICATION FILED MAR. 14, 1904.

3 SHEETS—SHEET 1.

Fig. 1.

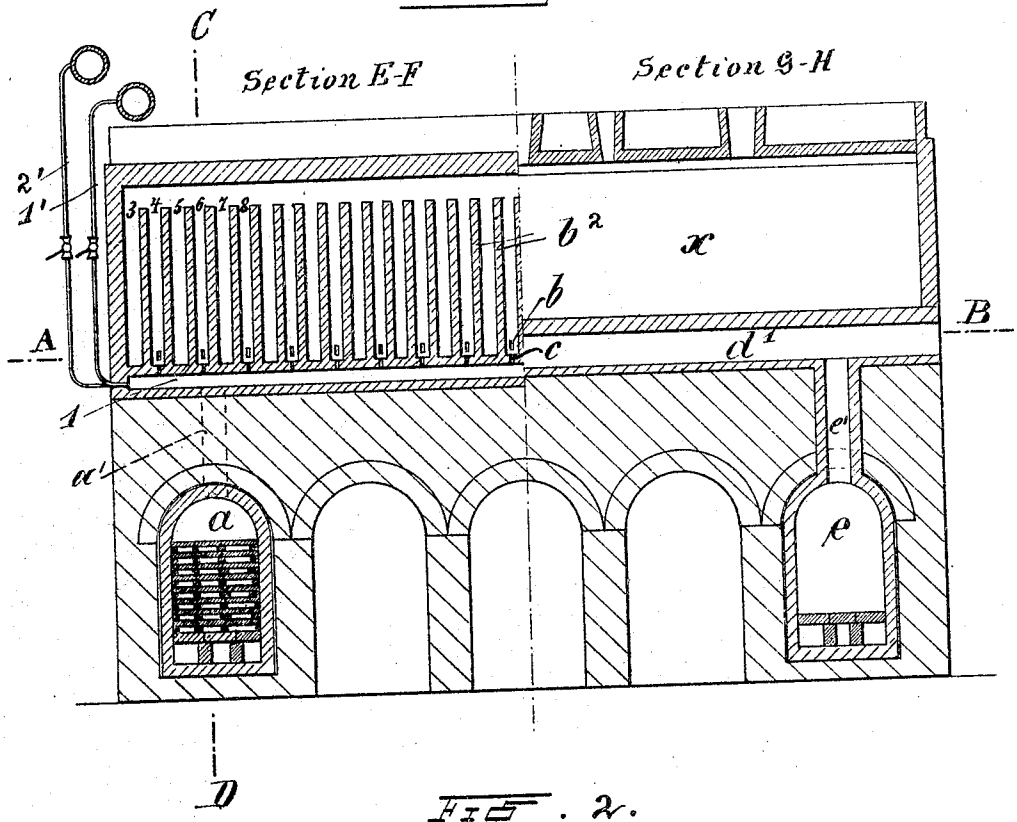
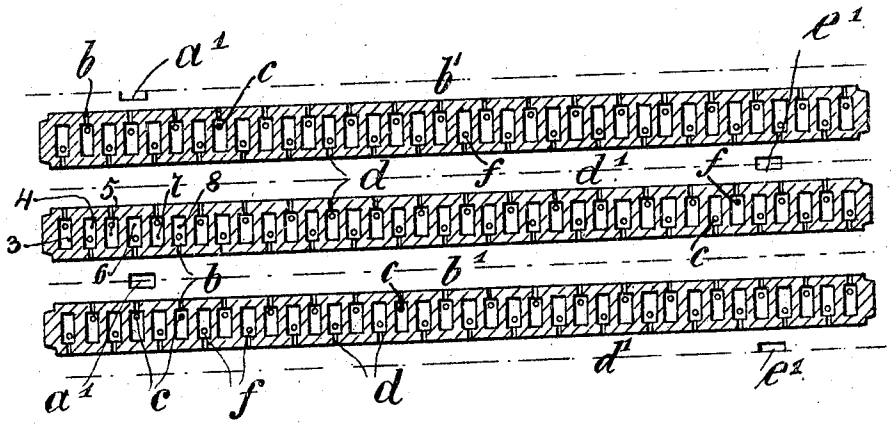


Fig. 2.



Witnesses:-

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by Gustave W. Hopkins

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ANDREW. B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

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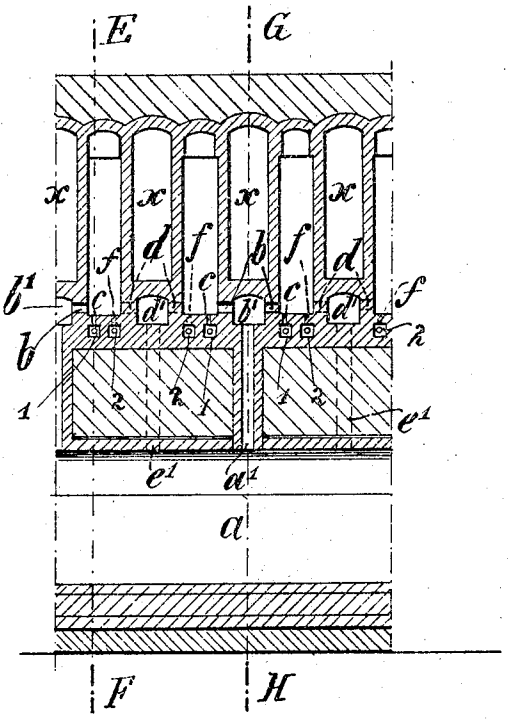
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3 SHEETS—SHEET 2.

Fig. 3.



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APPLICATION FILED MAR. 14, 1904.

3 SHEETS—SHEET 3.

Fig. 4.

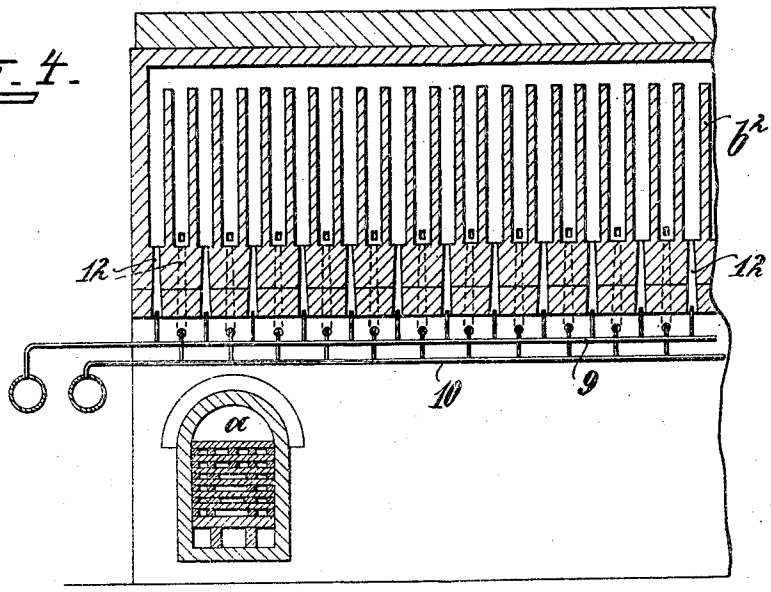
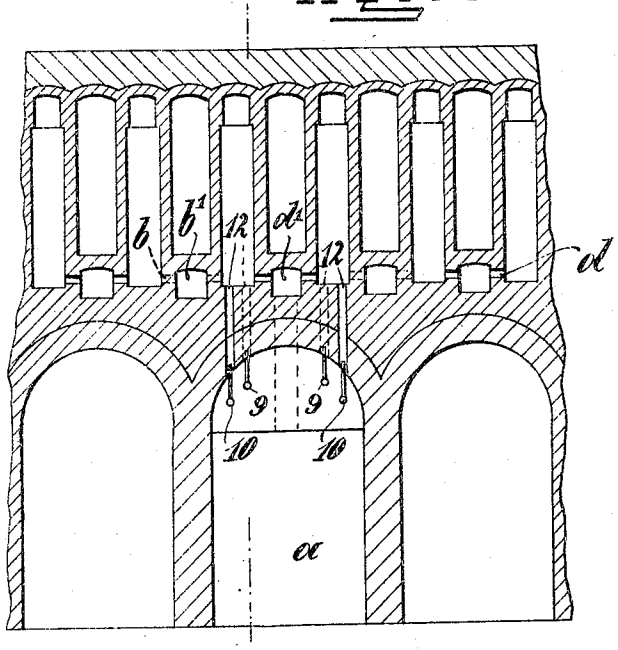


Fig. 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

GUSTAV WOLTERS, OF DORTMUND, GERMANY.

COKING-FURNACE.

No. 798,086. Specification of Letters Patent. Patented Aug. 29, 1905.

Application filed March 14, 1904. Serial No. 198,146.

To all whom it may concern:

Be it known that I, GUSTAV WOLTERS, a subject of the German Emperor, residing at Dortmund, Germany, have invented certain new and useful Improvements in Coking-Furnaces, of which the following is a description.

The present invention relates to that class of coking ovens or furnaces in which a series of coking-chambers is arranged side by side, so that each wall of each chamber forms at the same time the wall of the adjacent chamber and in which each wall is divided by partitions into a series of heating-chambers, wherein the combustion of a mixture of gas and air takes place in order to perform the coking of the coal filled into the coking-chambers. In this class of furnaces regenerators are employed which work alternately, so as to draw off the gases of combustion and to furnish the heating-chambers with air, whereby the supply of gas is correspondingly changed.

The object of the present invention is to provide means for equally distributing the heat of the gases supplied for combustion at the operation of each of the alternately-working regenerators over all parts of each wall of the said coking-chambers. This is accomplished by introducing the live gas and air at each working period of every regenerator into a series of heating-chambers of each wall of the furnace, which chambers alternate with a series of heating-chambers not supplied with the gas and air mixture at this working period of the regenerators. The series of heating-chambers may consist of single chambers or of sets of the same; but it is essential that each set should only cover a small part of the respective walls.

Figure 1 of the accompanying drawings is a vertical longitudinal section through a coking-oven embodying the present invention, the left-hand side being taken along the line E F and the right-hand side on the line G H of Fig. 3. Fig. 2 is a horizontal section on the line A B of Fig. 1, and Fig. 3 is a vertical cross-section on line C D of Fig. 1. Figs. 4 and 5 show partial longitudinal and cross-sections of a modified form of furnace.

Referring to Figs. 1 to 3, the coking oven or furnace usually consists of a series of coking-chambers x, the hollow walls of which are divided into a series of heating-chambers 3 4 5 6 by means of the partitions b^2. Flues b' d' are alternately arranged beneath the said coking-chambers x. a' e' are channels through which communication is established between the said flues b' d' and the regenerators a e, respectively. d represents openings leading from the flues d' to the said heating-chambers 3 5 7, while b b denote openings leading from the heating-chambers 4 6 8 to the flues b'. The channels 1 2 are provided at the bottom of the furnace beneath each wall of the said coking-chambers x, which channels 1 are connected to gas-feeds 1', so that on opening the cocks or the like provided in these feeds 1' the gas is fed into the said channels 1, while the channels 2 receive gas from the gas-feeds 2' when the respective cocks are opened. c represents openings for leading the gas from the channels 1 into the said heating-chambers 4 6 8, and f represents openings connecting the channels 2 to heating-chambers 3 5 7.

The operation of the furnace is as follows: Assuming, for example, that the regenerators a are working while the gas-feeds 1' are open, the air is blown by the regenerators a through channels a' into the flues b' and from thence through openings b into the heating-chambers 4 6 8 of each furnace-wall. Here the air is mixed with the gas passing through the openings c, so that the combustion takes place. The burning gases and the waste gases of each heating-chamber 4 6 8 enter the adjacent chambers 3 5 7, respectively, and pass through openings d and flues d' to the regenerators e. In the next heating period the regenerators and the gas-feeds are reversed, so that air is blown by means of the regenerators e through channels e', flues d', and openings d into the heating-chambers 3 5 7, while gas from the gas-supplies 2' 2 enters through openings f into the said chambers 3 5 7. Thus the burning gases and the waste gases pass the heating-chambers 4 6 8 and are drawn off through openings b, flues b', and channels a' by the draft of the regenerators a.

It is evident that at each heating period the walls of the coking-chambers are thoroughly heated throughout their entire length, as the burning gases are uniformly distributed over the whole surfaces of the walls. Consequently variations of temperature in different parts of the walls are effectually avoided when the regenerators are reversed.

According to the modification shown in Figs. 4 and 5 the vaults below the furnace and forming the foundation of the same are arranged parallel to the rows of chambers in the walls instead of transversely to the same, and instead of the channels 1 and 2 gas-pipes 9 and

10 are carried through the vaults and provided with branch pipes extending into or in open connection with the channels 12, leading to the chambers. These channels are longer than the ports *c* and *f*, since they extend through the thickness of the vaults. The operation of the device is otherwise exactly the same as that of the arrangement described with reference to Figs. 1 to 3 and needs no further description.

It need hardly be explained that instead of alternating chambers alternating sets of chambers may be similarly connected up to the gas and regenerator flues in so far as the sets are not sufficiently large to produce a wall area of varying temperature.

I claim as my invention—

1. In a coking-oven having a series of alternately-operated regenerators and alternately-operated gas-feeds, the combination of a series of chambers formed in the oven-walls and means for alternately feeding live gas and air to certain of these chambers in each wall, means for feeding the gases of combustion to the intermediate chambers of the same wall, to which said chambers the live gas was not fed, and means for simultaneously withdrawing waste gas from the latter chambers and vice versa.

2. In a coking-oven having a series of alternately-operated regenerators, and alternately-operated gas-feeds, the combination of oven-walls having a series of chambers therein, a series of gas-pipes extending through the furnace-vaults beneath the furnace-walls and having branch pipes, channels to connect said branch pipes to alternate chambers to supply the same periodically with gas, means for feeding the air for combustion, previously heated in the corresponding regenerator, into the chambers being fed with live gas and means for drawing off waste gas from the intermediate chambers and vice versa.

3. In a coking-oven having a series of alternately-operated regenerators, and alternately-operated gas-feeds, the combination of oven-walls having a series of chambers formed therein, means for feeding live gas to alternate chambers and for drawing off waste gas from the intermediate chambers, and vice versa according to which regenerator is in action substantially as described.

4. In a coking-oven having a series of alternately-operated regenerators, and alternately-operated gas-feeds, the combination of oven-walls having a series of chambers formed therein, a series of gas-pipes extending through the furnace-vaults beneath the furnace-walls and having branch pipes, channels to connect said branch pipes to alternate chambers to supply the same periodically with gas and means for drawing off waste gas from the intermediate chambers and vice versa according to which regenerator is in action substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

GUSTAV WOLTERS.

Witnesses:
ERNST NEUREL,
OTTO KÖNIG.