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BATTERIES OF COKE OVENS

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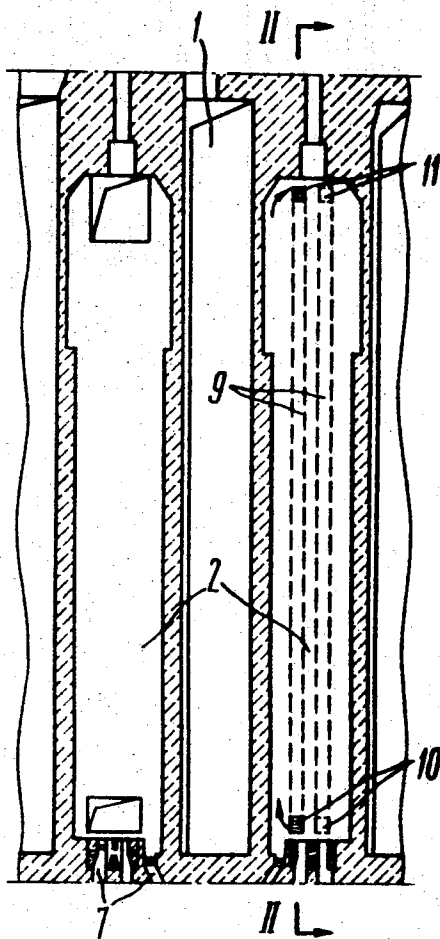


FIG. 1

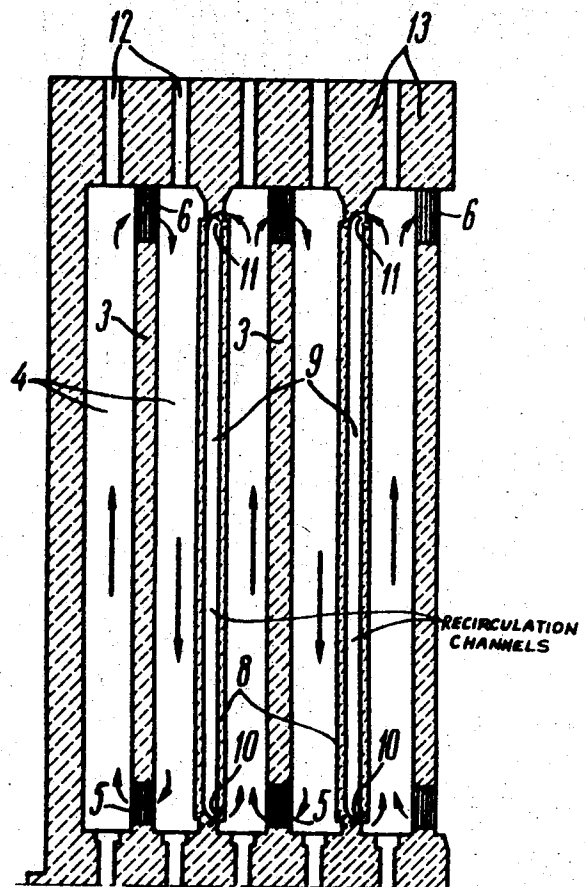


FIG. 2

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BATTERIES OF COKE OVENS

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1 Claim

ABSTRACT OF THE DISCLOSURE

A battery of coke ovens comprises a plurality of horizontal coking chambers having hollow firing members disposed on both sides thereof, and provided with vertical firing chambers arranged in pairs by means of separating partitions with communicating doors at the top and bottom thereof and additional hollow partitions separating each pair of channels from an adjacent pair. The firing channels in a pair operate alternatively as firing and exhaust channels respectively. The hollow partitions are provided with two vertical recirculating channels with openings at the top and bottom thereof, one of the recirculation channels being in communication with a vertical firing channel of one adjacent pair, while the other vertical recirculation channel is in communication with a vertical firing channel of the adjacent pair.

The present invention relates to batteries of coke ovens, consisting of horizontal coke ovens.

Known in the prior art are coke-oven batteries, composed of a plurality of horizontal coking chambers, on both sides of which are disposed firing hollow members with chambers wherein a gaseous fuel is burnt. Provided in the chambers of the firing hollow members are partitions connected in pairs by doors in the top and bottom portions of said partitions. Each pair of the firing channels is separated from another pair by an additional partition. Horizontal coke ovens of such construction are known as Koppers ovens.

The doors in the lower portion of the partitions are intended for effecting the recirculation of products of combustion in the firing hollow members with a view to elongating the flame so as to obtain a uniform heating of the coke burden in the chamber. Hence, a uniform heating of the coke burden can be obtained when the coking chamber is up to 5 m. high. The existing method of recirculation is unsuitable for the coke ovens having a coking chamber above 5 m. high.

Attempts have been also made for elongating the flame, using stepped supply of air through channels, disposed in separating partitions of the firing hollow members, or a supply of gas into vertical firing channels at various vertical levels, as in the case of the Otto furnaces.

In this case, the distribution of air as to the height of the firing channels is uncontrollable. Besides, an incomplete combustion constantly occurs throughout the height of the vertical firing channel, which considerably reduces the radiation capacity of the flame. For these reasons, the existing engineering solutions are considered to be insufficiently effective for coke ovens having the coking chamber above 5 m. high.

Also known are coke ovens with recirculation of the products of combustion along the channels in each partition of the firing hollow member, the recirculation channels leading into adjacent firing channels of the partition ("Giprokoks" coke ovens of the type IIK-2K with recirculation).

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These furnaces suffer from the same disadvantages as those described above.

An object of the present invention is to provide, in coke oven batteries firing hollow members allowing uniform heating of a coking chamber above 5 m. high.

To achieve the object of the invention, a battery of coke ovens is proposed, composed of a plurality of coking chambers, on both sides of which are disposed firing hollow members. These hollow members are provided with vertical firing channels, connected in pairs to one another through doors in the top and bottom portions of separating partitions between said channels. Each pair of firing channels is separated from an adjacent pair by an additional partition. In conformity with the invention, at least two recirculation channels are provided in said additional partitions, which emerge into respective channels adjacent pairs of the vertical firing channels.

It is desirable that the exit ends of the recirculation channels into the adjacent pairs of the firing channels be disposed at the top and bottom portions of the firing hollow members.

Hence, the invention is characterized by the well known particular features. However, the adopted engineering solution allows it to effect two-sided recirculation of the products of combustion and hence to considerably increase the length of the flame and the uniformity of heating of coking chambers of a greater height (above 5 m.).

The nature of the present invention will become more fully apparent from a consideration of the following description of an exemplary embodiment thereof, taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a longitudinal cross-sectional view of a portion of a battery of coke ovens according to the invention; and

FIG. 2 is a cross-sectional view taken on the line II—II of FIG. 1.

The battery of coke ovens is provided with coking chambers 1 (FIG. 1), on both sides of which are disposed hollow firing hollow members 2. Said members have vertical firing channels 4 divided by partitions 3 (FIG. 2) which intercommunicate in pairs through doors 5 and 6 in the bottom and top portions of these partitions. In one of the vertical channels 4, the combustion of gas occurs, while the products of combustion are drawn off through another one, the direction of gas flow in the channels varying in prescribed time intervals.

Fuel gas and air are supplied into vertical firing channels 4, while the products of combustion are exhausted therefrom by a device 7, provided with corresponding gas and air channels.

Each pair of the vertical firing channels 4 is separated from the next pair by an additional partition 8, in which there are provided two recirculation channels 9 disposed in parallel with each other.

The recirculation channels 9 are provided at their bottom and top portions with apertures 10, 11 which emerge into adjacent pairs of the vertical firing channels.

When the combustion takes place, for example, in odd vertical channels 4 (FIG. 2), part of the products of combustion is sucked off from even channels 4 on both sides through recirculation doors 5 and apertures 10 into said odd channels 4, thus delaying the combustion process and contributing to an elongation of the flame throughout the height of the vertical channel.

It is obvious that the number of recirculation channels in the additional partitions 8 may be different.

The combustion process is controlled in firing channels through peep channels 12 provided in the roof 13 of the coke ovens.

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The present invention is not limited by its exemplary embodiment thus described, and there may be conceived modifications thereof which do not depart from the spirit and scope of the invention.

What is claimed is:

1. A battery of coke ovens comprising a plurality of horizontal coking chambers; firing hollow members disposed on both sides of said coking chambers and provided with vertical firing channels; partitions provided with communicating doors in the upper and lower portions thereof, separating said vertical firing channels into pairs, the vertical firing channels in a pair operating alternatively as firing and exhaust channels, respectively; and hollow partitions separating each pair of said vertical channels from an adjacent pair, each additional hollow partition having at least two vertical recirculation channels with openings at the top and bottom of said additional partition, one of the two vertical recirculation channels disposed in each hollow partition being connected by the top and bottom openings thereof with a vertical firing channel of one adjacent pair, while the other vertical

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recirculation channel disposed in the same hollow partition is connected by the top and bottom openings thereof with a vertical firing channel of the adjacent pair of vertical firing channels.

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