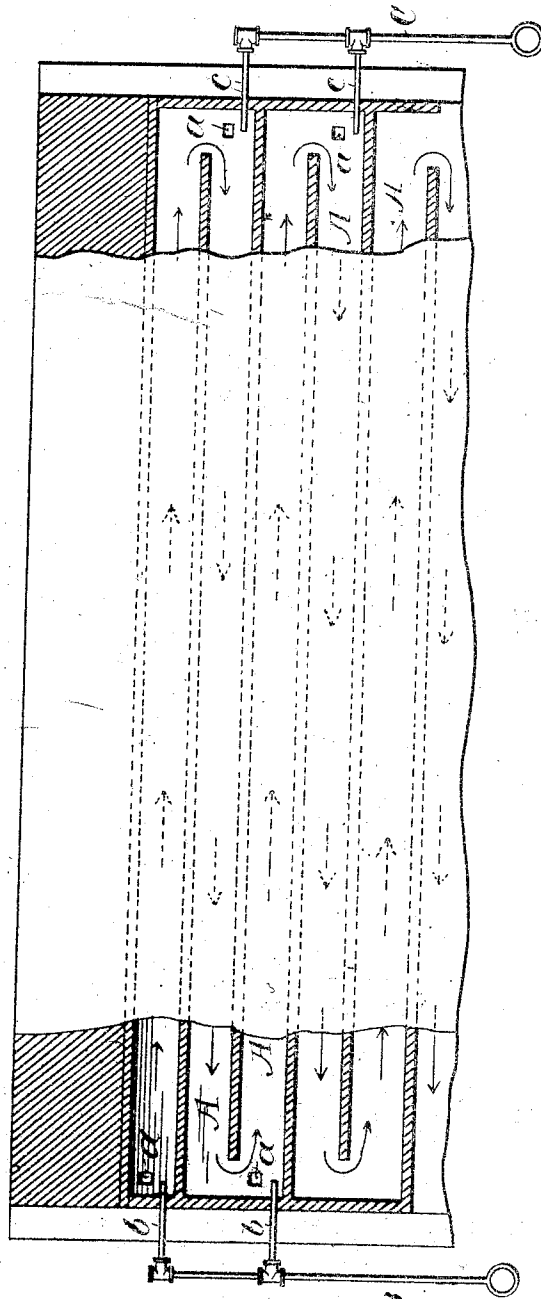


A. F. HILLEKE.  
ART. OF OPERATING RETORT COKE OVENS.  
APPLICATION FILED SEPT. 15, 1909.

973,044.

Patented Oct. 18, 1910.



Witnesses:  
*John H. Mulechay*

Inventor  
*August F. Hilleke*  
By his Attorney  
*Clarkson A. Collins.*

# UNITED STATES PATENT OFFICE.

AUGUST F. HILLEKE, OF ENSLEY, ALABAMA, ASSIGNOR TO SEMET-SOLVAY COMPANY,  
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## ART OF OPERATING RETORT COKE-OVENS.

973,044.

Specification of Letters Patent.

Patented Oct. 18, 1910.

Application filed September 15, 1909. Serial No. 517,778.

*To all whom it may concern:*

Be it known that I, AUGUST F. HILLEKE, a citizen of the United States, residing at Ensley, in the county of Jefferson and State of Alabama, have invented certain new and useful Improvements in the Art of Operating Retort Coke-Ovens, of which the following is a specification.

My invention relates particularly to the use of tar as a fuel for use in connection with such ovens.

Heretofore, as is well-known, the reduction of coal to coke in retort ovens has been effected by heat derived from the combustion in the oven flues of the whole or a portion of the gases driven off from the coal in the process of distillation. These gases, however, are rich in hydro-carbons, and therefore available for illuminating purposes, and a commercially cheap substitute for these, by means of which the coal should be efficiently coked so that the gases driven off therefrom could be more profitably employed for other than heating purposes has long been a desideratum in the art. Such a fuel, as far as its heating qualities are concerned, is found in tar, which is produced in considerable quantities as a by-product in the operation of such ovens. A heretofore insuperable difficulty in the use of tar for this purpose has been the fact that its combustion produces a short, intense flame of great local energy, the heat of which, however, is not so distributed throughout the heating flue, or flues, as to give the substantially even heat in all parts of the oven required for the production of a coke of uniform quality. Moreover, by reason of the intense local heat there is danger of overheating, and thus destroying the flue material in the immediate vicinity of the flame.

To the end of obviating these difficulties and enabling the use of tar as a fuel for heating retort coke ovens, my process, broadly stated, consists in producing the bulk of the heat required for the coking of the coal by the combustion of the tar and at the same time admitting to the heating flues a current of gas whereby the heat produced by the combustion of the tar is evenly distributed throughout the heating flues. Any cheap form of combustible gas, such as producer gas, or an inert gas, such as the products of combustion from the chimney flue, may be used for the purpose. The producer gas or inert

gas employed is preferably preheated before being admitted to the flues, and is admitted to the flues in the same manner as the combustible gas heretofore used for heating the oven. In case producer gas is employed, the air required for its combustion must also be admitted, as in the case of the other combustible gases. The producer gas being very low in calorific value, or the products of combustion being without calorific value, act as a distributor of the highly heated products of combustion of the tar and carry them forward at a much more rapid rate, distributing them evenly throughout the flues and producing a uniform and proper heating of the oven.

Whether producer gas or an inert gas is employed in any given case will depend somewhat on the relative commercial values of producer gas and tar. Generally, however, I prefer to use producer gas, as it not only distributes the highly heated products of combustion of the tar and equalizes the heat throughout the flues, but at the same time its combustion assists in heating the oven.

Any usual or suitable apparatus may be employed for carrying my process into effect.

The drawing filed herewith, showing a side elevation of an oven, broken away at the ends to show the heating flues, indicates a general arrangement that may be employed.

Referring to the drawing, A, A, indicate the heating flues and, a, a, openings for the admission of air thereto.

B, b, b, indicate main and local pipes for the admission of the gas to the heating flues, and C, c, c, main and local tar pipes.

Any suitable or well known form of tar burners and means for delivering the tar at the burners, examples of which will readily occur to those skilled in the art, may be employed.

My invention not only makes practicable for heating retort coke ovens a cheap and abundant fuel hitherto inapplicable for the purpose, but at the same time enables the rich oven gases to be drawn off and applied to purposes commensurate to their real value, the advantages of which will be readily understood by those skilled in the art.

What I claim as new and desire to secure by Letters Patent is:

1. The hereinbefore described improve-

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ment in the art of heating retort coke ovens which consists in producing local heat centers in the heating flues by the combustion of tar therein and distributing the heat so  
5 produced through the flues by introducing thereto a lean or inert gas.

2. The hereintofore described improvement in the art of operating retort coke ovens which consists in heating the oven by  
10 the combustion of tar in the heating flues and distributing the heat so produced by means of an independently introduced gas.

3. The hereinbefore described improve-

ment in the art of operating retort coke ovens which consists in heating the oven by 15 the combustion of tar and an independently introduced gas whereby the heat produced by the combustion of the tar is distributed and equalized.

In testimony whereof, I have hereunto 20 subscribed my name, this 10th day of September A. D., 1909.

AUGUST F. HILLEKE.

Witnesses:

MASON H. SHERMAN,  
CHAS P. FITZGERALD