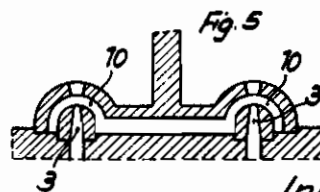
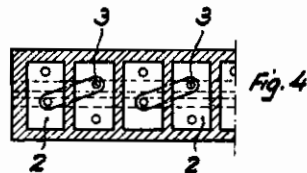
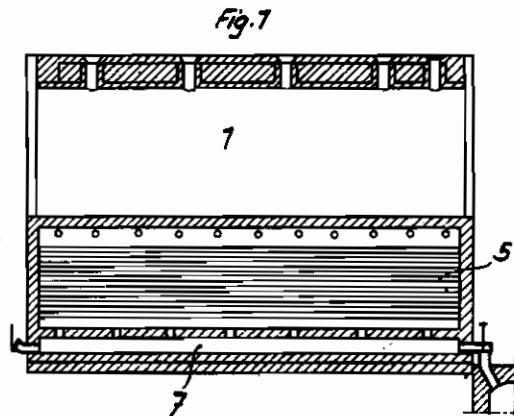
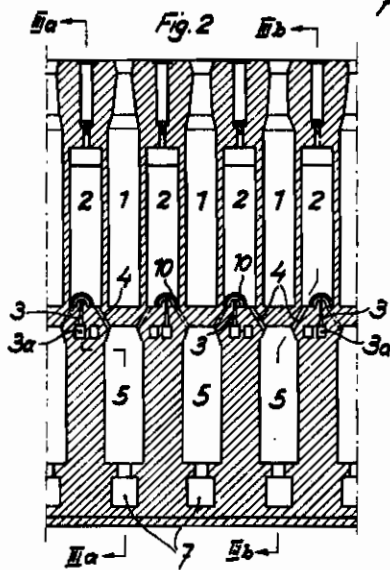
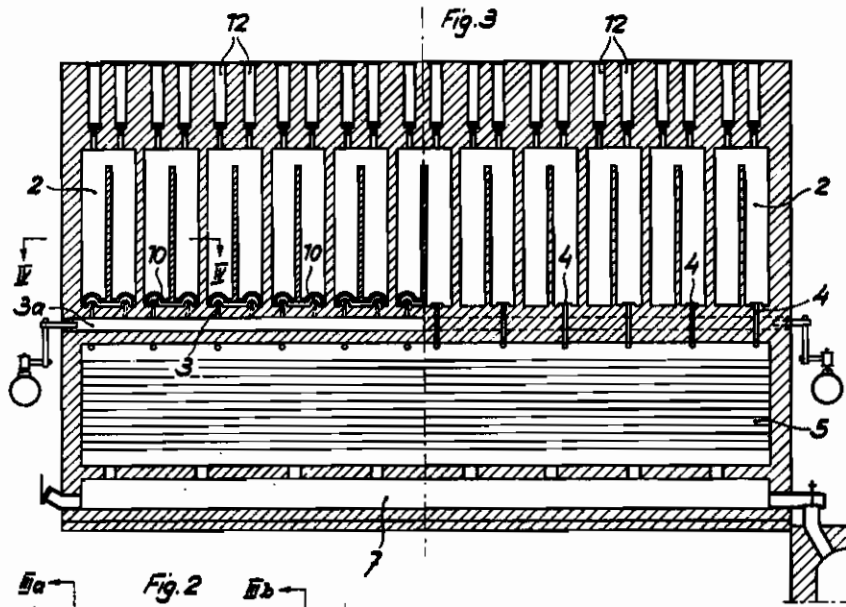


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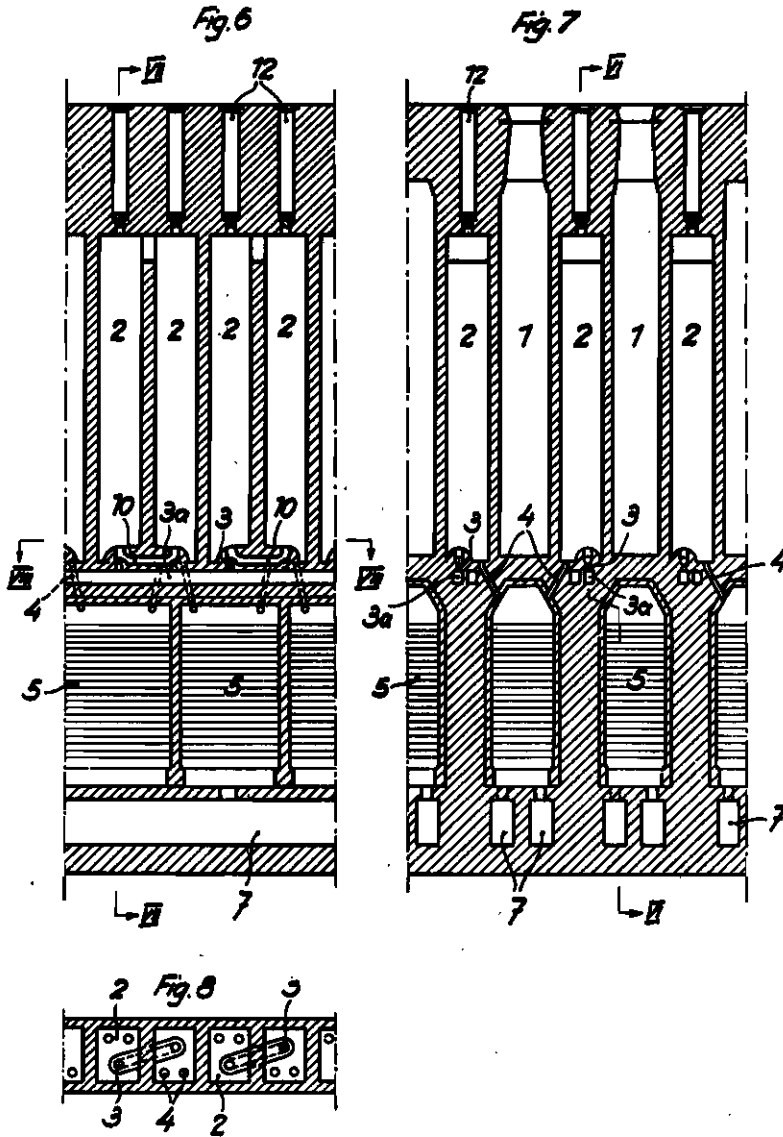
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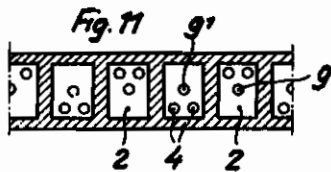
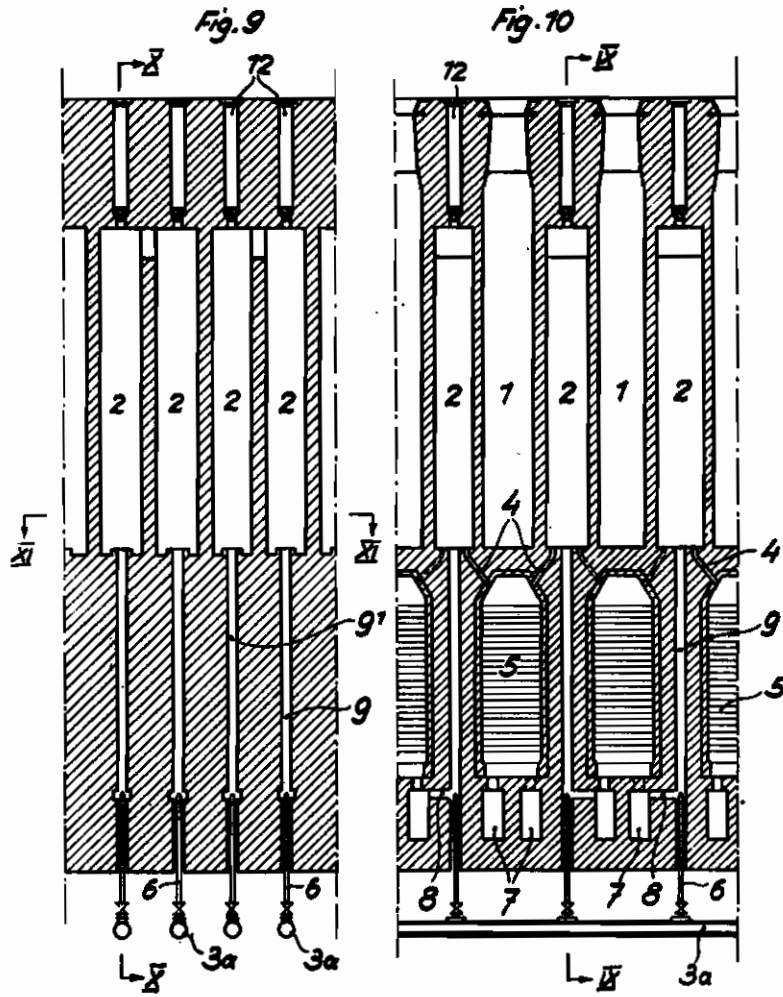


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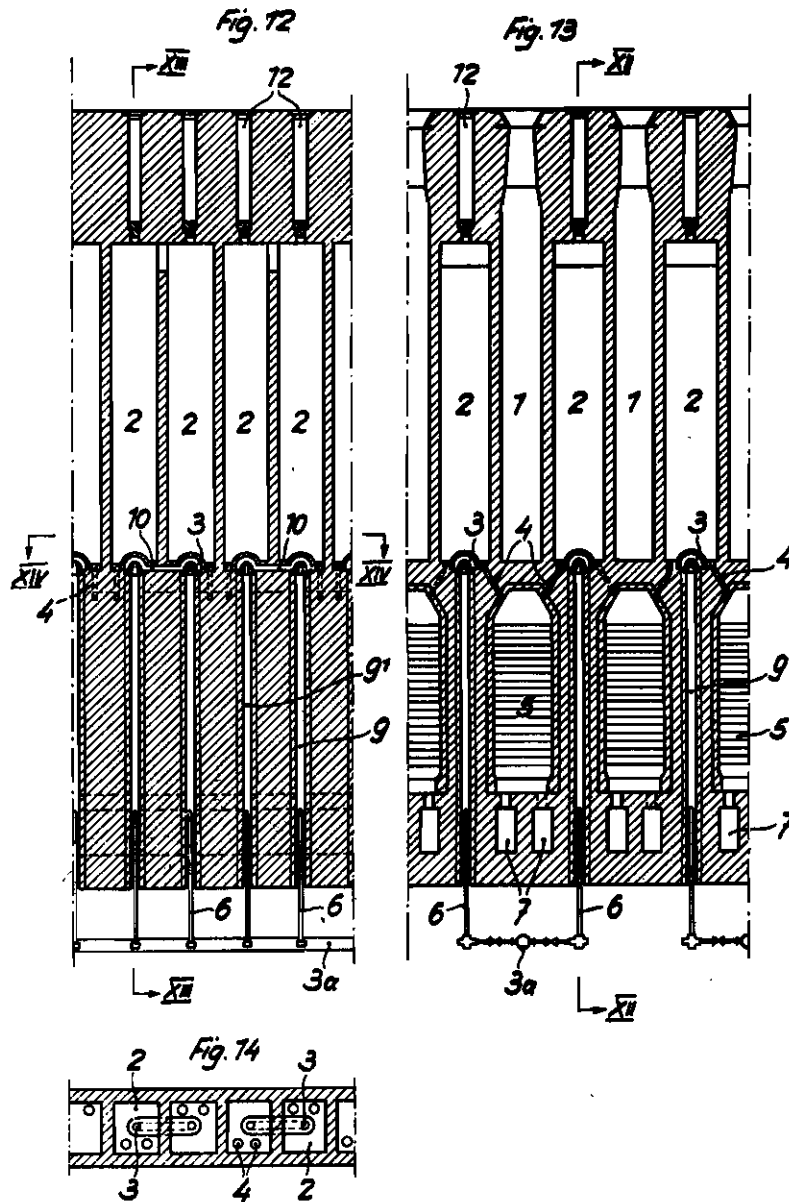


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# ALIEN PROPERTY CUSTODIAN

## COKE OVENS

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Alien Property Custodian

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The invention relates to coke ovens and more particularly to the arrangement of the gas burners or nozzles in connection with the heating flues of such an oven. There are coke ovens known being heated by rich gas only i. e. by coking gas gained during the coking process. Other types of coke ovens, the so called compound ovens are heated alternatively by rich gas and by poor gas i. e. by a gas generated in special gas producers burning cheap coals of a low calorific power. If rich gas is burnt it is very useful to add to the rich gas the waste gas from the heating flues of the coke oven in order to produce an elongated flame extending over the entire altitude of the heating flue. If the coke oven is heated with poor gas an adding of waste gas is not necessary respectively undesirable as a sufficiently long flame is already produced and thus an admission of waste gas would only cause a reduction of temperature.

The object of the present invention is to admit waste gas to the rich gas in a very useful and simple manner. The idea of the invention is as well directed to the use of compound ovens as to the use of ovens heated by rich gas only.

Hitherto the admission of waste gas to the rich gas was generally effected in such a way that one part of the waste gas coming from the heating flues was added to the rich gas conduction by means of a blower. This arrangement required a very complicated structure of the plant and besides this it demanded special precautionary measures in order to avoid explosions when a change of the gas admission was made.

Further-more coke ovens are known in which one part of the waste gas is circulated through couples of heating flues and in which special channels or flues for the waste gas are avoided. For this purpose at both ends of the heating flues a connection is provided by disposing openings in the separating wall. However, this arrangement has the drawback that, if poor gas is used, the circulation of the waste gas cannot be eliminated and the aforementioned reduction of temperature takes place.

It is the object of the invention to connect directly the rich gas burners or nozzles ending into the single heating flues with the waste gas channels in such a manner that an ejector is formed. The structural features of this arrangement may be varied. It is very useful especially if rich and easily sooting gas is used to connect the rich gas nozzles by special little channels with the collecting channel for the waste gas or with the lower part of the regenerative furnace or the re-

cuperators. Thus already cooled waste gas—of a temperature of about 300° C—is added to the rich gas and the danger of sooting is diminished. However, it is also possible to conduct the waste gases before passing the regenerators or recuperators to the rich gas nozzles or rich gas burners. For this purpose a couple of coaxial heating flues may be connected at the end by an U shaped or curved channel into which end the rich gas nozzles like ejectors.

At all events the inventive idea may be brought into practise at already existing ovens with only a few little alterations, i. e. only the little channels for the waste gas are to be provided. The arrangement of special fans is not necessary as the rich gas draws the desired quantities of the waste gas by the burners or nozzles.

The effect of the ejector may be controlled in different manners, f. i. by adjusting or altering the position of the nozzle tubes through which the rich gas is led or by exchange of the nozzle heads thus effecting the suction of smaller or greater quantities of waste gas.

In the accompanying drawings several examples are shown how the invention may be brought into practise.

Fig. 1 shows a longitudinal section of a coke oven heated with rich gas in connection with the regenerator.

Fig. 2 shows a cross section of a part of a range of coke ovens.

Fig. 3 shows at the left side a section on line IIIa—IIIa of Fig. 2 and at the right side on line IIIb—IIIb of Fig. 2.

Fig. 4 is a horizontal section on line IV—IV of Fig. 3 on an enlarged scale.

Fig. 5 shows the ejector-like connection of the rich gas nozzles with the waste gas channels according to Fig. 2 on an enlarged scale.

Figs. 6-8 represent the structure according to the invention in a coke oven alternatively heated by rich gas and by poor gas.

Fig. 6 is a vertical section on line VI—VI of Fig. 7.

Fig. 7 is a vertical section on line VII—VII of Fig. 6.

Fig. 8 is a cross section on line VIII—VIII of Fig. 6.

Fig. 9-11 show an other example of an oven alternatively heated with rich gas and poor gas.

Fig. 9 is a section on line IX—IX of Fig. 10.

Fig. 10 is a section on line X—X of Fig. 9.

Fig. 11 is a section on line XI—XI of Fig. 9.

Figs. 12-14 show a third example of an oven alternatively heated with rich gas and poor gas.

Fig. 12 is a vertical section on line XII—XII of Fig. 13.

Fig. 13 is a vertical section on line XIII—XIII of Fig. 12.

Fig. 14 is a longitudinal section on line XIV—XIV on Fig. 12.

The heating of the coal chambers 1 is effected in an already known manner over the pairwise coating heating flues 2, beneath which the regenerators are provided. The admission of the rich gas is effected according to the example shown in Figs. 1-5 through the channels 3a and the nozzles 3 which end like ejectors into the flues 10. These flues or channels join the two coating heating flues. Through the nozzles 4 air being heated in the regenerators 5 is admitted to the heating chambers.

The rich gas entering the heating flues 2 through the nozzles 3 draws the necessary quantity of waste gas over channel 10 from the approximated heating flue and is mixed with it before ignition takes place. Through the air channels 7 the air is led to the regenerators 5.

The working of the oven is effected in an already known way by changing the way of the gases within certain intervals and—with reference to Figure 5—alternatively sending them over the right or the left channel 3 into the heating flues 2.

For controlling the ejector effect changeable nozzles 3 may be provided. The changing may be done over the pits 12 being disposed above the heating flue 2.

The structure represented by Figs. 6-8 shows an oven being alternatively heated with rich gas and with poor gas. Beneath each regenerator 35

two channels 7 and 7' are provided of which the one admits the air and the other one the waste gas alternatively to the regenerative furnace in order to be heated. The admission of the rich gas and the admixture of the waste gas is effected in the same manner as described with reference to Figs. 1-5 only the waste gas channels show a somewhat different form.

The structure represented by Figs. 9-11 also refers to an oven alternatively heated with rich gas and poor gas. The rich gas is led through nozzle tubes 6 disposed in the channels 9 and 9'. The air enters the heating flues through the little channels 4 as it is already shown in the before described example. The admission of the gas is effected alternatively through the channels 9 and 9' in an already known manner.

In order to control the ejector effect the tubes 6 may be displaced upward or downward or the nozzle heads may be changed.

The Figs. 12-14 show a further modification of a coke oven being alternatively heated by rich gas or by poor gas. As it is already shown in the Figures 9-11 the rich gas conduction 3a is placed beneath the regenerators and the rich gas is led into the channels 9 respectively 9' through the nozzles 3 and 3' but the waste gases are not taken from the regenerator respectively from the collecting channels 7—as is shown in the Figures 9-11—but from the lower part of the heating flues 2 directly, using the connecting channels 10 as is shown in Figs. 1-5.

The invention may also be applied to other kinds of ovens.

JOSEF SCHÄFER.