March 13, 1934. E. A. BROWN, JR., ET AL 1,951,047

CHECKERWORK

Filed Nov. 14, 1932

Fig. 1.

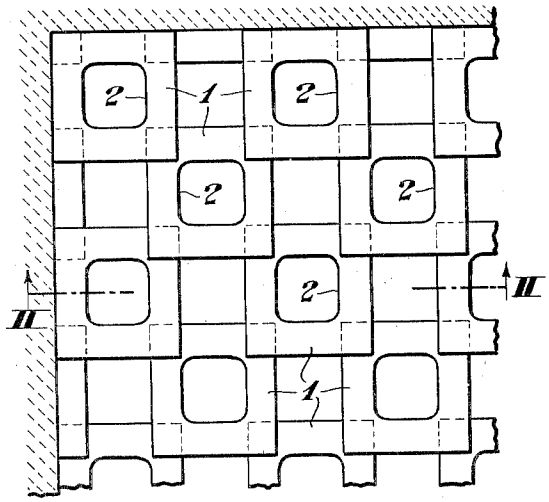


Fig. 2.

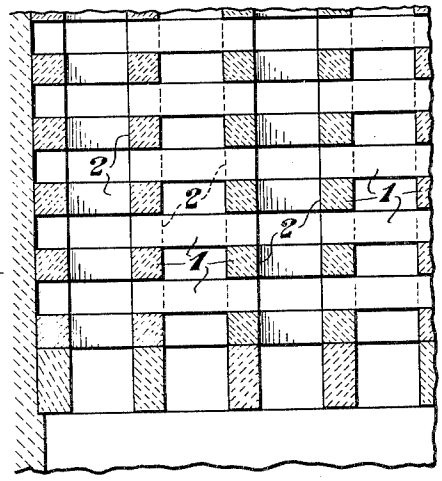


Fig. 3.

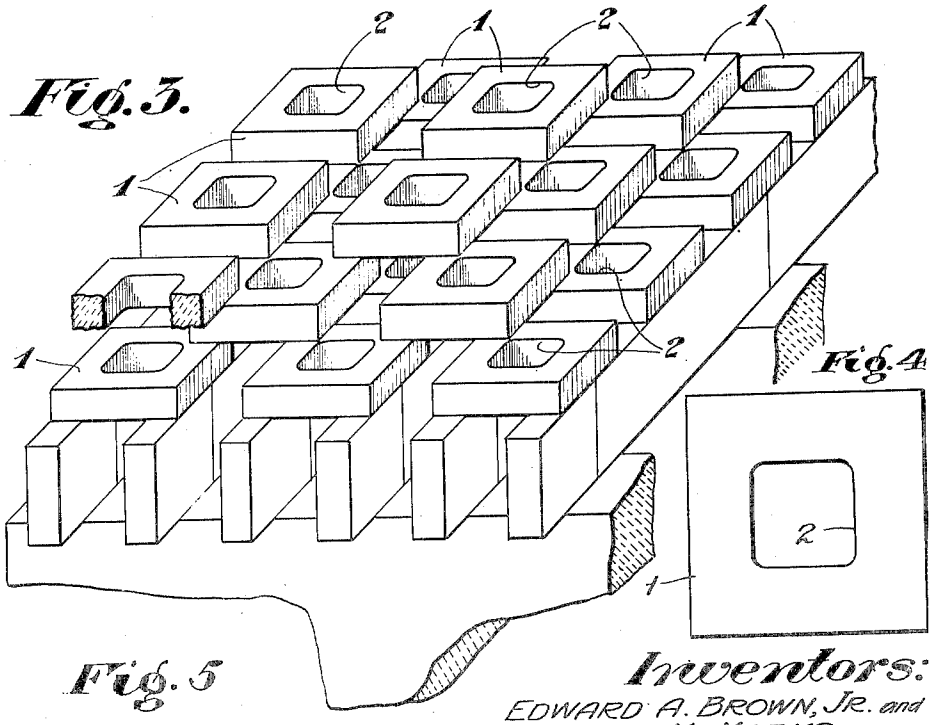
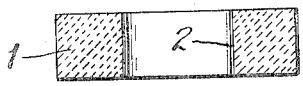


Fig. 4

Fig. 5



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CHECKERWORK

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Application November 14, 1932, Serial No. 642,648

1 Claim. (Cl. 263—51)

This invention relates to regenerator checkerworks such as are used to heat fuel gases and/or air for combustion in an open-hearth or other commercial furnaces, such as reheating furnaces, pit furnaces, glass tanks, etc., one of the objects being the production of a stable structure of high efficiency. Other objects may be inferred from the following disclosure of a specific example.

Referring to the drawing:

Figure 1 is a top plan of a checker-work embodying the first example.

Figure 2 is a cross-section from the line II—II in Figure 1.

Figure 3 is a perspective of Figure 1.

Figure 4 is a top plan of an element illustrated by Figure 1.

Figure 5 is a vertical cross-section of Figure 4.

Referring to the drawing, it is to be noted that the new checkerwork structure in general forms vertical and lateral passages, the latter running in two directions at right angles to each other and in the same plane throughout a series of levels. These passages are formed by a plurality of heat absorption elements.

This structure is particularly characterized by the fact that its vertical and right angular horizontal passages are formed by its individual elements to extend in perfectly straight directions so that a minimum resistance is offered the gases' flows while at the same time a maximum heat absorption total surface area is afforded.

This structure is preferably attained by the use of brickwork elements constructed and arranged to provide a plurality of rectangular forms with concentric rectangular openings and squarely associated corner portions. The openings provide the vertical passages and must have absolutely vertical faces and be arranged as exactly alined as is structurally possible. The outside of the rectangular shapes must also present absolutely vertical surfaces, as these also cooperatively form the vertical passages and must likewise be respectively alined with great exactness.

This construction results in a minimum unexposed surface area because it can only be attained by squarely associating the corner portions of respective forms for the support of the whole. These mutually engaged surfaces may be integral or not, depending upon the form of the checker-work used, and in any instance should not exceed in area the square of the distances through the individual elements between the surfaces forming the vertical passages.

The various features above indicated contribute towards a structure having the desired stability and maximum heat absorption area presented to the gases' flow in such a manner as to provide little resistance thereto.

By reference to the drawing it will be seen that in the present instance this structure is attained by the use of a plurality of rectangular units 1 which are preferably square and are formed with concentric rectangular openings 2. It will be noted that the faces presented by the exterior of these elements and their openings 2 are absolutely at right angles to their top and bottom faces.

To produce the desired structure they are staggeringly arranged with their corner portions squarely associated. Their entire surface areas are exposed with the exception of their corner portions which in each instance do not exceed the square of the distances between their exterior surfaces and those of the openings 2. The gases may drift vertically or horizontally at will, and are not forced to follow unnecessarily tortuous paths as they are in other structures constructed from elements somewhat similar to these here disclosed. These rectangular forms and their resulting structures constitute one example of the invention.

We claim:

A regenerator brickwork including a plurality of rectangular forms having concentric rectangular openings and right angular surfaces and being staggeringly laid with the corner portions of adjacent forms squarely registered and the respectively similar surfaces of alternate forms alined.

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