May 2, 1933. C. J. A'HEARN 1,907,170

CHECKER BRICK

Filed April 20, 1931

Fig. 1.

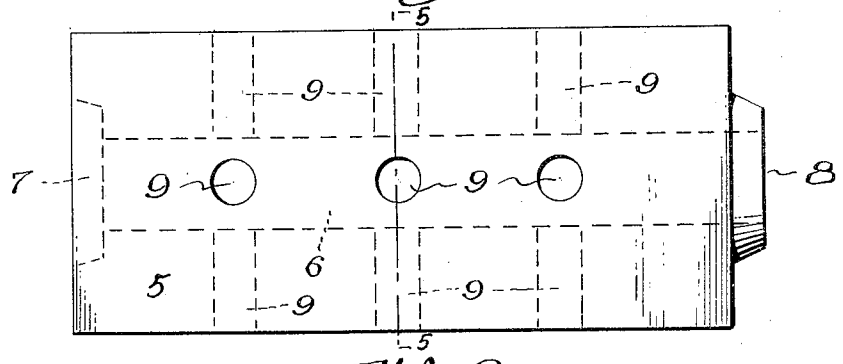


Fig. 2.

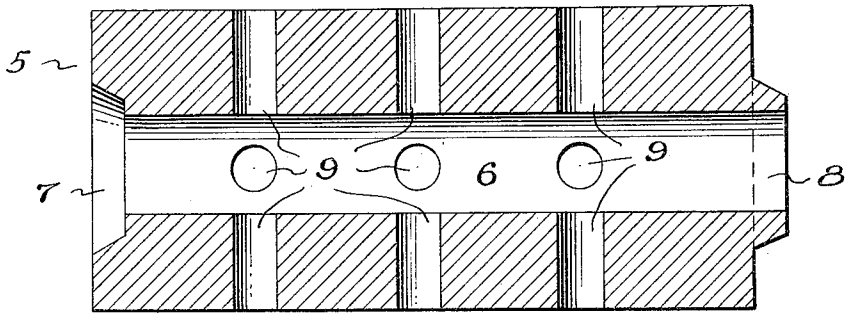


Fig. 3.

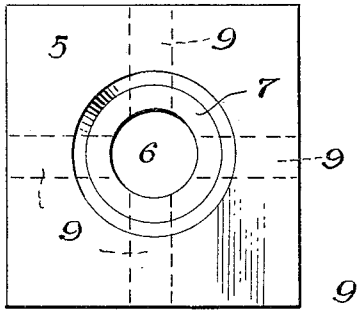


Fig. 4.

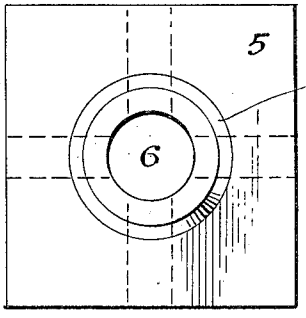
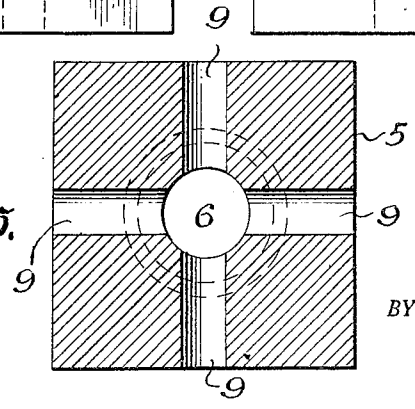


Fig. 5.



INVENTOR:
C. J. A'Hearn
BY: J. T. Newton
ATTORNEYS.

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UNITED STATES PATENT OFFICE

CHARLES J. A'HEARN, OF MIDLAND, PENNSYLVANIA

CHECKER BRICK

Application filed April 20, 1931. Serial No. 531,516.

This invention relates to improvements in checker-bricks, such as are used in the regenerative chamber of open hearth furnaces, soaking pits, heating furnaces and blast furnace stoves. It has for its object the provision of a brick of this type made of refractory material and designed to provide an extensive heating surface for a given chamber volume and at the same time permit a ready cleaning of the chamber while the furnace is in operation. The invention will be described in detail hereinafter, pointed out in the appended claim and illustrated by the accompanying drawing.

In the accompanying drawing, in which similar reference characters designate corresponding parts,

Figure 1 is a side elevation of a checker-brick embodying the invention.

Figure 2 is a longitudinal sectional view.

Figures 3 and 4 are views of the respective ends.

Figure 5 is a cross-section on the line 5—5 of Fig. 1.

Referring to the drawing in detail, 5 designates the brick as a whole, made of suitable refractory material. It is square in cross-area and of a length considerably greater than its cross dimension. Extending through the longitudinal axis of the brick is the bore 6, preferably circular, but it may be differently shaped to meet different requirements. In one end of the brick is the flared socket 7 and at the other end is the nipple 8, the socket and nipple being concentric with the axis of the bore. When the ends of two bricks are placed in abutting relation, the nipple of one fits the socket of the other to form a tight joint therebetween. Extending transversely through the wall of the brick are the lateral passages 9 leading radially from the longitudinal bore 6 through the several faces of the brick. The lateral passages have considerably less diameter than the main bore. As shown in the drawing, the checker-brick is of unitary structure and is square in cross-section. The lateral passages or ducts 9 are arranged in four series, extending respectively along the longitudinal faces of the four side walls. The passages are normal to the main bore 6 and to the faces of the side walls through which they pass. The relative positions of the passages in the four series are such that the passages are arranged in transverse groups, with each group including a passage of each series extending from a common center in the axis of the main bore. The passages in each group are arranged in diametrical alinement through the opposite walls. In laying the bricks for regenerating purposes, they are positioned end to end with the nipple of one seated in the socket of the adjacent brick, forming a tight fit therewith. The bricks are laid in the usual manner in furnace construction and the bores and passages provide the required flues. The four longitudinal faces of the brick are uniform as to the lateral passages; consequently, no care is required to position a particular side of the brick in the furnace structure. Also, the plurality of lateral passages opening through each side of the brick permits one of them, perhaps two, to be closed to meet incidental requirements of furnace structure, without impairing to a marked degree the functions of the brick, for the remaining enclosed passages, or passage, would provide for a substantial flow of gases through the obstructed side of the brick.

What I claim is:—

An undivided checker-brick of elongated rectangular shape, approximately square in cross-section, provided with a main circular bore of large diameter extending longitudinally therethrough and also provided with a circular socket at one end and a circular nipple at the other end, said socket and nipple being in axial relation to the circular

bore, and the brick having a longitudinal series of alined lateral passages of comparatively small diameter leading from the central bore through each side wall of the brick with the lateral passages normal to the axis of the main bore and to the faces of the side walls through which they respectively lead and with the passages in diametrical alinement through the opposite side walls.

In testimony whereof I affix my signature.

CHARLES J. A'HEARN.