March 1, 1938. T. DEE 2,109,942

WALL BLOCK

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Fig. 1.

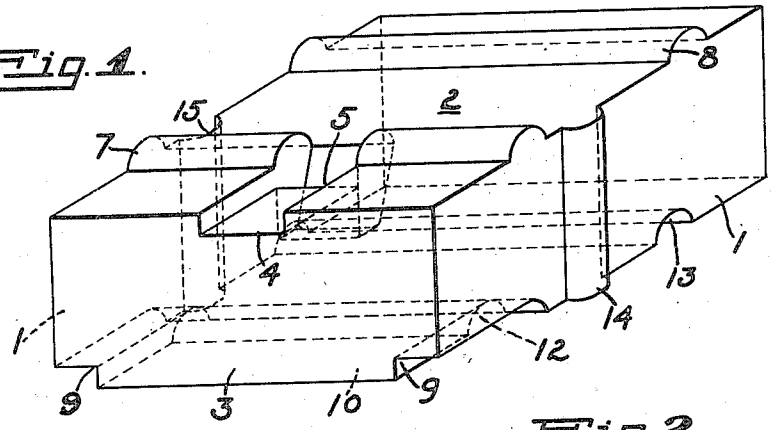


Fig. 2.

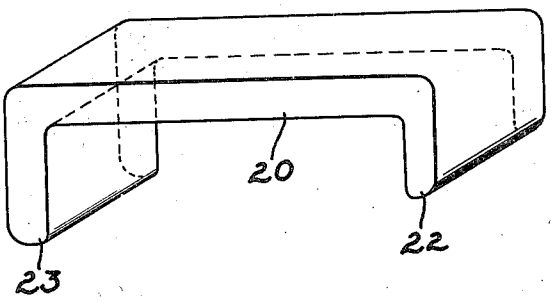
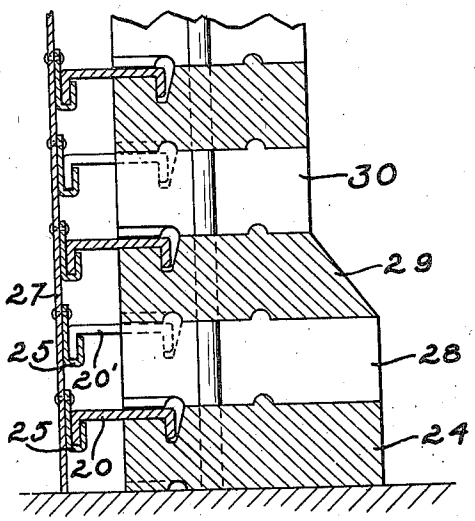


Fig. 3.



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WALL BLOCK

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7 Claims. (Cl. 72—101)

This invention relates to wall blocks, and particularly to blocks or tiles of fire clay or other refractory material for use in constructing boiler or furnace linings.

Among the objects of my invention are:

To provide a wall which, while self-supporting, may be anchored to the metal shells of furnaces or boilers of either marine or stationary type; to provide a wall block which can be laid up within the furnace, breaking joints to provide stability; to provide a wall block wherein anchor members may be inserted as the building of the wall progresses, securing the wall to the shell with substantially no additional time-consuming operations; to provide a wall block which will interlock with adjacent blocks to prevent slippage in any direction; to provide a type of wall construction which may be used either with or without a dead air space between the refractory wall and the furnace shell; and to provide a wall structure which, while anchored to the shell of the furnace, requires only a single standard type of anchor member, which is economical to manufacture and use, regardless of the thickness of the wall or the various parts thereof.

Other objects of my invention will be apparent or will be specifically pointed out in the description forming a part of this specification, but I do not limit myself to the embodiment of the invention herein described, as various forms may be adopted within the scope of the claims.

Referring to the drawing:

Figure 1 is an isometric drawing showing a single wall block or tile embodying my invention.

Figure 2 is a drawing showing an anchor member for use with the type of block shown in Figure 1.

Figure 3 is a fragmentary sectional view of a wall indicating the method of anchoring the wall blocks of my invention to a furnace shell.

A typical block for constructing the wall of my invention is shown in Figure 1. Such blocks will differ in dimensions in accordance with the type of wall to be constructed or with the portion of the wall which they are to form, but I prefer to standardize certain of the dimensions, making all of the blocks the same length between the end faces 1, preferably using the standard length of nine inches. Projecting forwardly across the upper face 2 of the block from the upper edge of the rear face 3 is a groove 4, preferably of rectangular section, which terminates in a pocket 5. One or more ribs 7, 8, of approximately semi-cylindrical cross-section, extend across the upper surface of the tile or block substantially parallel to the plane of the rear face 3, the rear rib 7 being preferably formed in the same plane as the pocket 5.

In each of the lower rear corners of the block is formed a notch 9, the combined width of the two notches being approximately equal to the width of the groove 4. There is also formed, in the lower surface 10 of the block, one or more grooves 12 and 13, these grooves being in the same vertical plane as the ribs 7 and 8, and of similar profile to the ribs. The radius of curvature of the grooves is preferably, however, slightly greater than that of the ribs, to leave room for a thin layer of cement when the blocks are laid up to form a wall.

A rib or tongue 14, similar to the ribs 7 and 8, is formed on one end face 15 of the block, this rib preferably being in a different vertical plane from the ribs 7 and 8. A corresponding groove 17 is formed in the opposite end face 18.

It will be seen that when these blocks are laid up, breaking joints in the customary manner used when laying bricks, the notches 9 will register with the groove 4, forming a hook-shaped pocket or recess into the rear surface of the wall. The ribs 14 and grooves 17 on adjacent blocks will also register, as will the ribs and grooves 7 and 12, and 8 and 13, preventing lateral movement of the blocks.

The hook-shaped recesses above described receive the anchor members 20, which are similar in form to short lengths sawed from channel section steel, although they are preferably cast and heat treated to withstand high temperature. This method of forming also permits the two ends 22 and 23 of the anchor to be made slightly asymmetrical, the end 22 which engages the recess, having a slightly smaller hook than the end 23.

Figure 3 shows a fragmentary section of a wall as laid up with these blocks. This section is taken in the plane of the line of joints between the blocks on even numbered tiers, the section of the cement between the blocks not being shown. When such a wall is laid up a lower tier of blocks 24 is laid in the ordinary manner. The first anchors 20 are then dropped in place into the pocket 5, the end 23 engaging a channel 25 riveted to the back wall 27 or shell of the fire box. The next tier of blocks 28 is then laid, and the anchors 20' dropped in place. This process continues as the wall is built up. As will be seen, the thickness of the fire wall may be reduced as the height is increased by the use of intermediate blocks of the cross-section shown in tier 29, and

the wall then carried on with narrower blocks as shown in tier **30**.

If it is desired to have the wall set up closely against the boiler shell, shorter anchors may be used. If not, the space **32** between the shell and the block wall may either be left as a dead air space or be filled with heat-insulating material. The anchors may be used on each block if desired, on alternate blocks, or even less frequently as circumstances require.

I claim:

1. A wall block or tile having a groove extending forwardly from the medial portion of its upper rear edge and terminating in a pocket in the upper face thereof, and notches in the lower rear corners of said block whose combined width is substantially equal to that of said groove and which terminate in the plane of said pocket, so that when said blocks are laid with broken joints to form a wall the notches and grooves of adjacent blocks will register to form hook-shaped recesses extending into the rear face of such wall.

2. A wall block or tile having a groove extending forwardly from the medial portion of its upper rear edge and terminating in a pocket in the upper face thereof, notches in the lower rear corners of said block whose combined width is substantially equal to that of said groove and which terminate in the plane of said pocket, so that when said blocks are laid with broken joints to form a wall the notches and grooves of adjacent blocks will register to form hook-shaped recesses extending into the rear face of such wall, a rib formed on one horizontal face of said block and a groove of like profile to said rib formed in the opposite face in substantially the same plane as said rib.

3. A wall block or tile having a groove extending forwardly from the medial portion of its upper rear edge and terminating in a pocket in the upper face thereof, notches in the lower rear corners of said block whose combined width is substantially equal to that of said groove and which terminate in the plane of said pocket, so that when said blocks are laid with broken joints to form a wall the notches and grooves of adjacent blocks will register to form hook-shaped recesses extending into the rear face of such wall, ribs formed on one horizontal face and one end face of said block, and grooves of like profile to said ribs formed in the opposite faces of said block, said ribs and grooves of adjoining blocks registering to prevent relative movement of said blocks when laid as a wall.

4. A wall block or tile having a groove extending forwardly from the medial portion of its upper rear edge and terminating in a pocket in the upper face thereof, notches in the lower rear corners of said block whose combined width is substantially equal to that of said groove and which terminate in the plane of said pocket, so that when said blocks are laid with broken joints to form a wall the notches and grooves of adjacent blocks will register to form hook-shaped recesses extending into the rear face of such wall, ribs formed on one horizontal face and one end face of said block, grooves of like profile to said ribs formed in the opposite faces of said block, said ribs and grooves of adjoining blocks registering to prevent relative movement of said blocks when laid as a wall, and the grooves and ribs on the end and horizontal faces respectively being in different planes.

5. A wall block or tile having a groove extending forwardly from the medial portion of its upper rear edge and terminating in a pocket in the upper face thereof, notches in the lower rear corners of said block whose combined width is substantially equal to that of said groove and which terminate in the plane of said pocket, so that when said blocks are laid with broken joints to form a wall the notches and grooves of adjacent blocks will register to form hook-shaped recesses extending into the rear face of such wall, a rib formed on one horizontal face of said block in substantially the plane of the pocket, and a groove of like profile to said rib formed in the opposite face in substantially the same plane as said rib.

6. A wall block or tile having a groove extending forwardly from the medial portion of its upper rear edge and terminating in a pocket in the upper face thereof, notches in the lower rear corners of said block whose combined width is substantially equal to that of said groove and which terminate in the plane of said pocket, so that when said blocks are laid with broken joints to form a wall the notches and grooves of adjacent blocks will register to form hook-shaped recesses extending into the rear face of such wall, and interlocking means formed on the horizontal and end faces of said block for preventing relative movement of adjacent blocks when laid as a wall.

7. A wall structure comprising a back-wall, metal anchor members projecting forwardly from said back-wall each comprising a substantially horizontal shank and a downwardly bent hooked end, and a ceramic wall comprising blocks medially grooved in their upper faces to receive the lower portions of said anchor members and notched at their lower corners to receive the upper portions of similar anchors.

THOMAS DEE.