March 22, 1949. W. F. ROCHOW 2,465,170

METAL CASED COMPOSITE SUSPENDED ROOF UNIT

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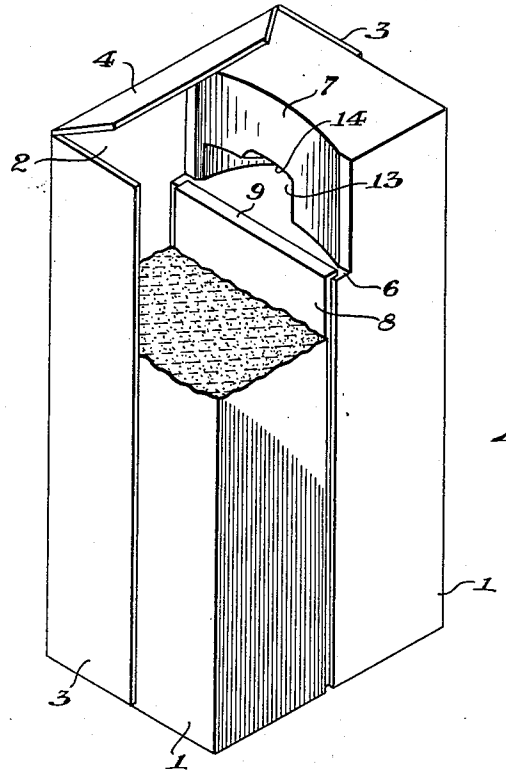


Fig. 1.

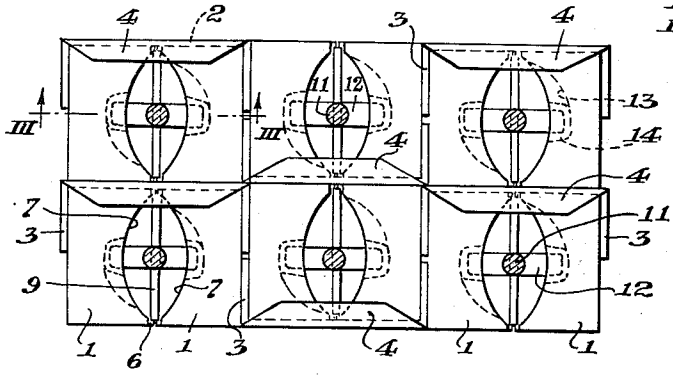


Fig. 2.

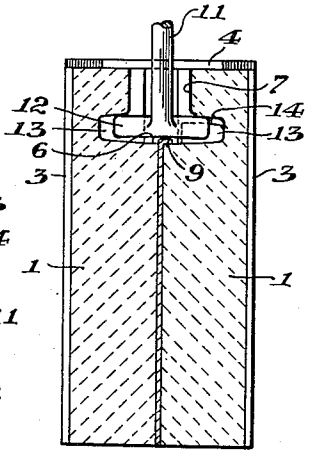


Fig. 3.

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METAL CASED COMPOSITE SUSPENDED ROOF UNIT

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12 Claims. (Cl. 110—99)

1

This invention relates to blocks from which suspended refractory roofs for furnaces and the like are formed, and more particularly to blocks formed from basic refractory bricks and metal plates.

Suspended refractory roofs frequently are formed from basic bricks individually supported from their upper ends by metal hangers. Between the bricks there are plates of metal which oxidizes and increases in thickness when the furnace is heated. The advantages of such a construction are well known and are disclosed in several patents.

It is among the objects of this invention to provide a furnace roof block which is formed from two refractory bricks, which is simple in construction, which can be assembled in final form at the brick making plant, and with which a hanger can be interlocked at the time the furnace roof is constructed.

In accordance with this invention, a pair of refractory bricks are disposed on end and side by side. Between the bricks and engaging their inner faces throughout most of their areas there preferably is a plate of oxidizable metal. The bricks are held together with this plate between them by means of a channel shape metal case, also of oxidizable metal. The body of this case extends vertically along one side of the bricks perpendicular to the plate, while the side flanges of the case press against the parallel outer faces of the bricks to hold the bricks in the case. These flanges preferably extend no more than half way across the bricks so that alternate blocks can be reversed in order to provide only a single thickness of flange between them. The upper portion of at least one of the bricks is provided with a recess extending laterally into it from its inner face. A portion of this brick above the recess is spaced from the adjoining brick to provide a vertical opening between them. The block is suspended in place by means of a metal hanger extending down through this vertical opening and having a foot projecting into the recess. Preferably, both bricks are recessed so that the foot of the hanger will extend into both of them, and the vertical opening extends far enough across the bricks to permit the hanger foot to be moved down between them and then turned 90° to lock it in place in the recesses.

The preferred embodiment of the invention is illustrated in the accompanying drawings in which Fig. 1 is a perspective view of the block with one of the bricks broken away; Fig. 2 is a reduced plan view of an assembly of several of

2

the bricks forming part of a suspended roof; and Fig. 3 is a vertical section of one of the blocks taken on the line III—III of Fig. 2.

Referring to the drawings, a pair of refractory bricks 1, made of basic material such as magnesia or chrome, are disposed vertically or on end and side by side. The two bricks are held together by means of a channel shape case formed from a sheet of oxidizable metal. The web or body 2 of the case is vertical and engages a side of the bricks perpendicular to their inner faces. The case has side flanges 3 bent at right angles to its body and engaging the two outer faces of the bricks that are parallel to their inner faces. The flanges initially are bent inwardly slightly so that they are sprung outwardly by the bricks between them. This causes the flanges to press tightly against the bricks so as to clamp them together and hold them in the case. The flanges preferably extend no more than half way across the bricks for a purpose to be described presently. The upper end of the case may be provided with a narrow flange 4 that overlies the tops of the bricks to help keep the case from sliding down and to position the bricks lengthwise of the case.

Near their upper ends, the inner faces of the bricks are offset away from each other to form horizontal shoulders 6. The central areas 7 of the offset faces preferably are curved away from each other so that an oval opening is formed between the bricks extending from their upper ends down to the shoulders. Below the shoulders a plate 8 of oxidizable metal is disposed between the inner faces of the bricks and in engagement with them. The upper end of this plate may have a laterally bent projection or lip 9 which overlies one of the shoulders to hold the plate in position while the block is being assembled and to help keep the plate from sliding down between the bricks.

The vertical opening at the upper end of the block is for the purpose of receiving the leg 11 of a conventional metal hanger by which the block is suspended in position as part of a furnace roof in well known manner. The opening is wide enough and extends far enough across the bricks to receive the foot 12 of the hanger which projects horizontally in opposite directions from the lower end of the hanger leg. In order to interlock the hanger and block, each brick is provided with a lateral recess 13 extending into it from its shoulder 6. The inner wall of each recess curves outwardly toward one end of the

curved area 7. When two recesses are disposed opposite each other in a block, their curved inner walls extend in opposite directions as shown in dotted lines in Fig. 2, so that the hanger foot, which initially is parallel to plate lip 9, can be rotated 90° to swing its ends into the recesses. The inner end portions of these recesses extend up into the bricks farther than the rest of the recesses to form notches 14 that receive the ends of the hanger foot so that it can not turn in the block after it is in interlocking position.

As shown in Fig. 2, when the blocks are assembled into a group to form a roof, all of the blocks in any given row face in one direction while those in the two adjoining rows face in the opposite direction. Therefore, the case flanges 3 between any two blocks face in opposite directions with each flange extending about half way across the blocks. The result is that the two flanges form a substantially continuous metal plate of single thickness between the two blocks. If the flanges extended all of the way across the blocks, there would be a double thickness of metal between the blocks. The arrangement of blocks shown in Fig. 2 causes each pair of associated bricks to be surrounded by metal, although each case extends only half way around them.

The block disclosed herein has the advantage that all of the bricks can be made alike, and then pairs of bricks can be clamped together in a metal case at the brick plant before the blocks are shipped to the location where they are to be assembled into a furnace roof. The hangers can be connected to the blocks without taking the bricks out of their cases. Consequently, a roof can be formed from these blocks considerably faster than heretofore, because two bricks are handled and hung in place simultaneously as a unit.

According to the provisions of the patent statutes, I have explained the principle and construction of my invention and have illustrated and described what I now consider to represent its best embodiment. However, I desire to have it understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

I claim:

1. A block for use in forming a furnace roof, said block comprising a pair of refractory bricks disposed on end and side by side, and a metal case having a vertical body engaging one side of both bricks, said case having side flanges pressing against parallel outer faces of the bricks to hold the bricks together, and the upper portion of at least one of the bricks being recessed to receive the foot of a hanger.

2. A block for use in forming a furnace roof, said block comprising a pair of refractory bricks disposed on end and side by side, a metal plate disposed between and in engagement with the inner faces of the bricks, and a metal case having a vertical body perpendicular to said plate and engaging one side of the bricks, said case having side flanges pressing against parallel outer faces of the bricks to hold the bricks together, and the upper portion of at least one of the bricks being recessed to receive the foot of a hanger.

3. A block for use in forming a furnace roof, said block comprising a pair of refractory bricks disposed on end and side by side, a metal plate disposed between and in engagement with the inner faces of the bricks, and a metal case having a vertical body perpendicular to said plate and engaging one side of the bricks, said case having side flanges pressing against parallel outer faces of the bricks to hold the bricks together, and the upper portion of at least one of the bricks having a recess extending laterally into it from its inner face with said face above the recess spaced from the other brick to provide a vertical opening between the bricks, said recess being adapted to receive the foot of a hanger extending down into said opening.

4. A block for use in forming a furnace roof, said block comprising a pair of refractory bricks disposed on end and side by side, the upper portions of the bricks being provided with recesses extending laterally into them from their inner faces, and a metal case having a vertical body perpendicular to the inner faces of the bricks and engaging one side of the bricks, said case having side flanges pressing against parallel outer faces of the bricks to hold the bricks together, said inner faces being provided with spaced apart portions above said recesses to provide a vertical opening between the bricks, and said recesses being adapted to receive the foot of a hanger extending down into said opening.

5. A block for use in forming a furnace roof, said block comprising a pair of refractory bricks disposed on end and side by side, the upper portions of the bricks being provided with recesses extending laterally into them from their inner faces, and a metal case having a vertical body perpendicular to the inner faces of the bricks and engaging one side of the bricks, said case having side flanges pressing against parallel outer faces of the bricks to hold the bricks together, said inner faces being provided with spaced apart portions above said recesses to provide a vertical opening between the bricks, and said recesses being adapted to receive the foot of a hanger extending down into said opening, said opening extending far enough across the bricks to permit said hanger foot to be moved down through the opening and then turned to swing it into said recesses.

6. A block for use in forming a furnace roof, said block comprising a pair of refractory bricks disposed on end and side by side, the upper portions of the bricks being provided with recesses extending laterally into them from their inner faces, a metal plate disposed between and in engagement with said inner faces below the recesses, and a metal case having a vertical body perpendicular to said plate and engaging one side of the bricks, said case having side flanges pressing against parallel outer faces of the bricks to hold the bricks together, said inner faces being provided with spaced apart portions above said recesses to provide a vertical opening between the bricks, and said recesses being adapted to receive the foot of a hanger extending down into said opening.

7. A block for use in forming a furnace roof, said block comprising a pair of refractory bricks disposed on end and side by side, the upper portions of the bricks being provided with recesses extending laterally into them from their inner faces, a metal plate disposed between and in engagement with said inner faces below the recesses, and a metal case having a vertical body perpendicular to said plate and engaging one side of the bricks, said case having side flanges pressing against parallel outer faces of the bricks to hold the bricks together, said inner faces being provided with spaced apart portions above said recesses to provide a vertical opening between the

bricks, and said recesses being adapted to receive the foot of a hanger extending down into said opening, the upper end of the plate having a laterally projecting portion overlying one of the bricks at the lower end of said opening to support the plate.

8. A block for use in forming a furnace roof, said block comprising a pair of refractory bricks disposed on end and side by side, the upper portions of the bricks being provided with recesses extending laterally into them from their inner faces, a metal plate disposed between and in engagement with said inner faces below the recesses, and a metal case having a vertical body perpendicular to said plate and engaging one side of the bricks, said case having side flanges pressing against parallel outer faces of the bricks to hold the bricks together, the top of said case having a laterally projecting portion engaging the upper ends of the bricks, said inner faces being provided with spaced apart portions above said recesses to provide a vertical opening between the bricks, and said recesses being adapted to receive the foot of an hanger extending down into said opening.

9. A block for use in forming a furnace roof, said block comprising a pair of refractory bricks disposed on end and side by side, a metal plate disposed between and in engagement with the inner faces of the bricks, and a metal case having a vertical body perpendicular to said plate and engaging one side of the bricks, said case having side flanges pressing against parallel outer faces of the bricks to hold the bricks together, and the upper portion of at least one of the bricks being recessed to receive the foot of a hanger, said flanges extending substantially half way across the bricks.

10. A block for use in forming a furnace roof, said block comprising a pair of refractory bricks disposed on end and side by side, the upper portions of the bricks being provided with recesses extending laterally into them from their inner faces, a metal plate disposed between and in engagement with said inner faces below the recesses, and a metal case having a vertical body perpendicular to said plate and engaging one side of the bricks, said case having side flanges pressing against parallel outer faces of the bricks to hold the bricks together, said inner faces being provided with spaced apart portions above said recesses to provide a vertical opening between the bricks, and said recesses being adapted to receive the foot of a hanger extending down into said opening, said opening extending far enough across the bricks to permit said hanger foot to be moved down through the opening and then turned to swing it into said recesses.

11. A block for use in forming a furnace roof, said block comprising a pair of refractory bricks disposed on end and side by side, the inner faces of the bricks being offset away from each other at their upper ends to form shoulders, each brick being provided with a lateral recess extending into it from its shoulder, said recesses being adapted to receive the foot of a hanger extending down between said offset upper faces of the bricks, a metal plate disposed between and in engagement with said inner faces below the shoulders, the upper end of the plate having a lip bent laterally over one of said shoulders to support the plate, and a metal case having a vertical body perpendicular to said plate and engaging one side of the bricks, said case having side flanges pressing against parallel outer faces of the bricks to hold the bricks together, the top of said case body being provided with a flange engaging the upper ends of the bricks.

12. A block for use in forming a furnace roof, said block comprising a pair of refractory bricks disposed on end and side by side, the inner faces of the bricks being curved away from each other at their upper ends, each brick being provided with a lateral recess extending into it from the lower end of said curved face, said recesses being adapted to receive the foot of a hanger extending down between said curved faces, a metal plate disposed between and in engagement with said inner faces below the recesses, and a metal case having a vertical body perpendicular to said plate and engaging one side of the bricks, said case having side flanges pressing against parallel outer faces of the bricks to hold the bricks together.

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