

July 19, 1932.

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1,868,171

FURNACE WALL

Filed Oct. 11, 1928

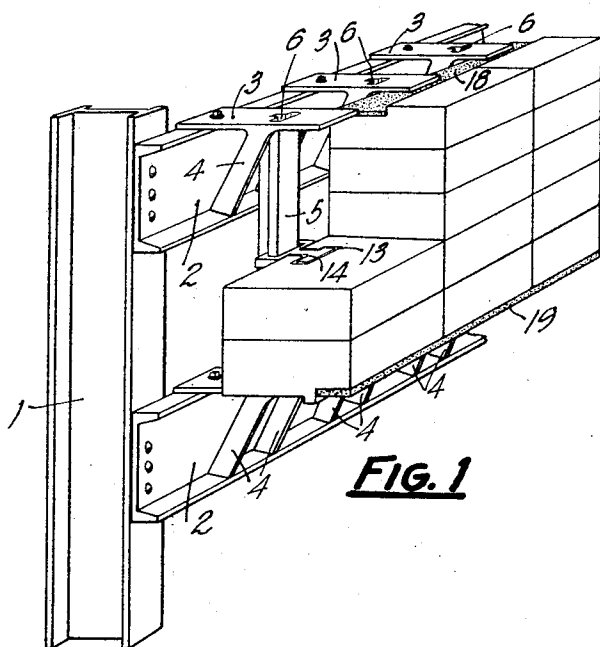


FIG. 1

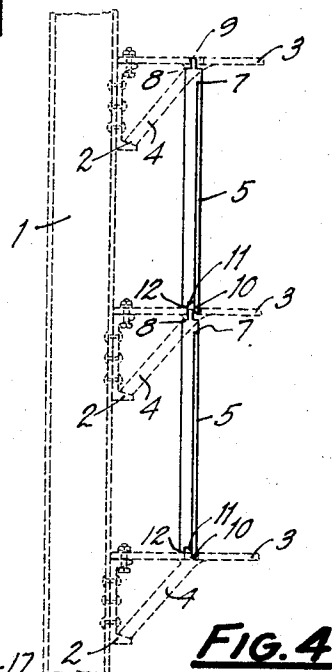


FIG. 4

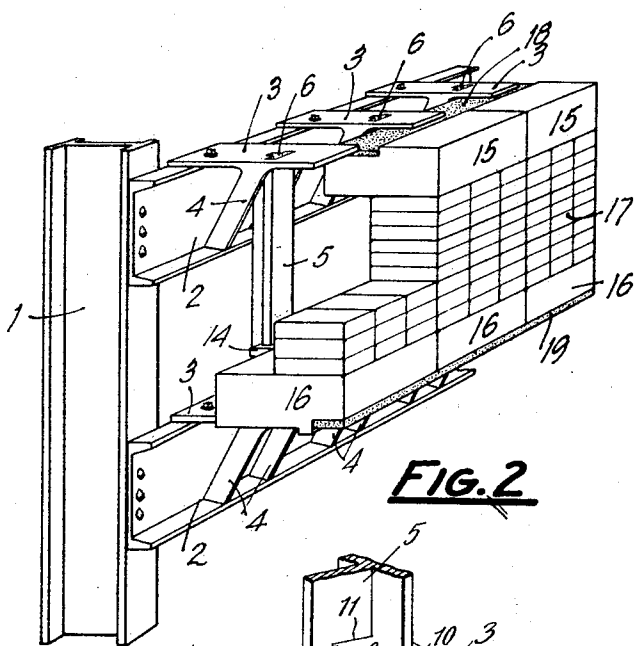


FIG. 2

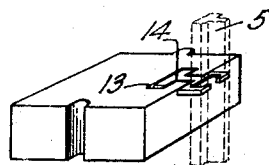


FIG. 3

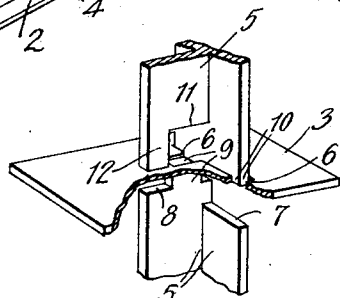


FIG. 5

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FURNACE WALL

Application filed October 11, 1928. Serial No. 311,916.

My invention relates to furnace wall construction and particularly to walls of the so-called suspended type in which horizontally extending sections thereof are supported independently of the sections above and below. It especially relates to the form of construction and means whereby some or all of the individual blocks comprising the wall are positively anchored in position and yet may be easily removed and replaced when necessary.

The objects of my invention are to provide a furnace wall of the type commonly known as "suspended" in which an improved method of anchoring the separate blocks is employed. A further object is to provide a means for positively anchoring the blocks in the wall without substantially weakening the block itself or impairing its heat resisting characteristics. A further object is to provide a wall which in any individual block or series of blocks may be comparatively easily removed and replaced when necessary.

With these and other objects in view which will appear as the description proceeds, my invention includes the novel elements and the combinations and arrangements of elements described below and illustrated in the accompanying drawing, in which—

Fig. 1 is a fragmentary perspective view of my preferred form of wall;

Fig. 2 is a fragmentary perspective view of a slightly modified type of wall embodying certain features of my invention;

Fig. 3 is a perspective view illustrating a slightly modified form of block and the general way in which the blocks are anchored in the wall;

Fig. 4 is an end elevation view of a portion of the wall frame; and

Fig. 5 is a perspective view illustrating a detail.

Referring to the drawings, my wall comprises a metal frame including vertical posts or columns, 1, to which are connected horizontally extending elements, 2, adapted to form independent supports for separate sections of the wall. Bolted, or otherwise secured to the members, 2, are shelves or brackets, 3, each of which forms a narrow, horizontal platform extending outwardly from the

top of element, 2, and adapted to form a support for a vertical section of the wall. These brackets are horizontally spaced from each other, on centers, a distance equal to the width of the blocks which are to rest thereon, and are provided with supporting legs or braces, 4, resting upon the lower flanges of the horizontal members.

Extending between vertically spaced shelves, is an element, 5, preferably, but not necessarily, a T-section. The extremities of elements, 5, preferably extend into slots, 6, provided in the shelves, 3, and are thus interlocked with the shelves to the extent that they cannot be directly pulled out without first raising the elements sufficiently to disengage their lower extremities from the slots.

Referring now to Fig. 4, it will be apparent that the ends of the elements, 5, are not cut squarely across. For example, at the upper end of each T-section the flange is cut off, as shown at 7, while the web extends somewhat beyond the point where the flange is cut off, as shown at 8, and a narrower portion of the web extends still further as shown at 9, so that it enters the slot, 6, in shelf, 3. At the bottom, the flange extends somewhat beyond the web, as shown at 10, so that it enters the slot, 6, in lower shelf, 3, and the web is notched, as at 11, so that the projecting portion, 9, of the next lower element, 5, may be pushed upwardly and enter therein. It will be apparent from an examination of Fig. 4 that the T-shaped slots in the shelves, 3, while of sufficient width to receive the flanges of the elements, 5, the stem portions of the T-slots are not long enough to receive the entire web portions. In other words, the portion, 12, of the web rests upon the upper surface of the shelf, 3. The purpose of cutting the ends of the elements, 5, in this way is to provide not only for interlocking them with the shelves, 3, but also for easily removing them. To remove any vertical element it is only necessary to lift it slightly so that the flange is raised from the slot in the shelf at the bottom, whereupon it may be pulled forward and out of the frame.

In the preferred type of wall, each block, at the rear, is provided with a shallow recess,

13, in the top surface thereof. This recess may be T-shaped, as shown in Figs. 1 and 3, and have the base of the T opening lying in the rear face of the block. Resting in these
 5 recesses and engaging the flanges of the vertical elements, 5, are the anchors or ties, 14. These anchors are simply slipped over the tops of the elements, 5, where the flanges are cut off and allowed to slide down the flanges
 10 until they rest within the recesses in the blocks, thus positively tying the blocks to the wall.

In the preferred type of wall, each block is anchored to the frame in this way. How-
 15 ever, where a cheaper form of construction is desirable, only the top blocks, 15, and the bottom blocks, 16, in each section may be anchored. Intermediate these blocks, ordinary fire bricks or blocks, 17, may be used
 20 without positive anchorage, as shown in Fig. 2.

Horizontal expansion of the wall may be provided for by leaving larger, vertically extending joints at proper intervals and filling
 25 these joints with asbestos, clay or other soft material which is well known and approved in the art of furnace construction. Vertical expansion is provided for by joints, 18 and 19, of such material, between each horizontally
 30 extending section of the wall.

In the broader aspects of my invention, no particular form or size of brick or block is contemplated so long as it is provided with an anchoring recess in the top or bottom.
 35 The design of the anchoring and supporting device is such as to accommodate practically any type of block provided with anchoring recesses therein. Furthermore, it will be apparent that the anchors themselves and the
 40 recesses in the blocks need not be of the precise shape shown, it being sufficient that a recess and anchor of such character be provided that they cannot be separated except by vertically lifting the anchor or block. If
 45 desired, the blocks may be provided with tongues and grooves as shown in Fig. 3.

While I have described my invention in its preferred embodiment it is to be understood that the words which I have used are words
 50 of description rather than of limitation, and that changes within the purview of the appended claims may be made without departing from the true scope and spirit of my invention in its broader aspects.

55 What I claim is—

1. In a furnace wall, the combination with a metal frame comprising vertically spaced, horizontally extending members forming independent supports for horizontally extending
 60 sections of said wall and vertical elements extending between said first mentioned members, of a facing comprising spaced refractory blocks, means positively engaging said blocks and said vertical elements to tie
 65 said blocks and frame together, and refrac-

tory facing blocks filling the space intermediate said tied blocks to form a complete covering for said frame.

2. A furnace wall comprising a metal frame provided with vertically spaced, horizontally extending members forming independent supports for horizontally extending
 70 sections of said wall, a facing comprising refractory blocks provided with recesses supported on said members, vertical elements
 75 extending between said horizontal members, and anchors engaging said vertical elements and said blocks in the recesses.

3. A furnace wall comprising a metal frame provided with vertically spaced, horizontally extending members forming independent supports for horizontally extending
 80 sections of said wall, a refractory facing for said wall comprising blocks supported on said members, vertical elements extending
 85 between said members, and anchors slidably engaging said elements and provided with portions interfitting with the blocks in complementary recesses provided in said blocks
 90 for tying the facing to the frame.

4. In a furnace wall, the combination with a metal frame comprising spaced, vertically extending members, of a facing for said wall comprising refractory blocks, and a plurality of anchors vertically slidable upon but
 95 positively engaging said members and having portions interfitting with the blocks in complementary recesses provided in the horizontal surfaces of said blocks for tying the
 100 frame and facing together.

5. In a furnace wall, the combination with a metal frame comprising vertically spaced, horizontally extending members forming independent supports for horizontally extending
 105 sections of said wall, of a facing comprising refractory blocks supported on said members, vertical elements extending between said members and interlocked therewith, and a plurality of tying elements vertically slidable upon but positively engaging
 110 said vertical elements and having portions interlocked with the blocks in shallow complementary recesses provided in the horizontal surfaces of said blocks for bonding the
 115 frame and facing together.

6. In a furnace wall construction, the combination with a metal frame including horizontally spaced, vertically extending members, of a refractory facing for said wall comprising blocks having comparatively
 120 shallow recesses in a horizontal face thereof, and anchors positively engaging said members and interfitting with said blocks in said recesses for tying the blocks to the frame.

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