Oct. 19, 1926.

1,603,699

J. D. LAWRENCE

INTERLOCKED STRUCTURE

Filed Nov. 21, 1925

Fig. 1.

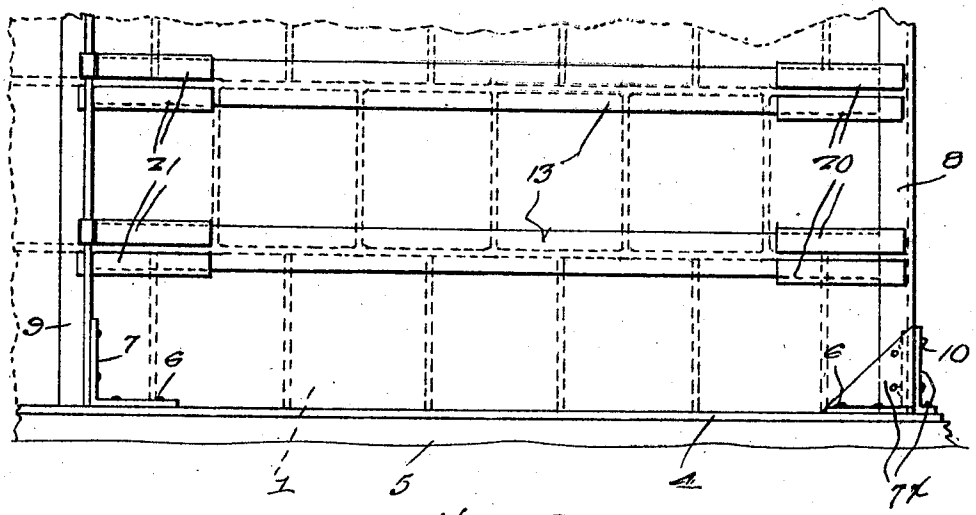


Fig. 2.

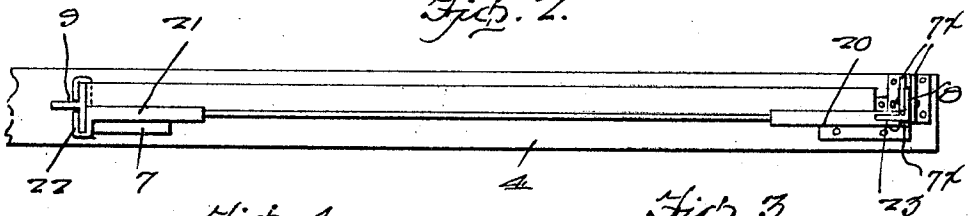


Fig. 4.

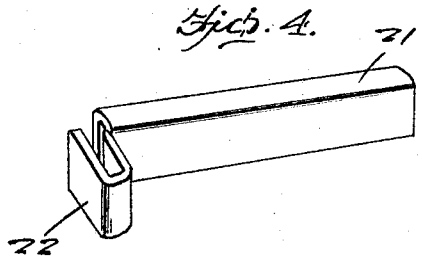


Fig. 3.

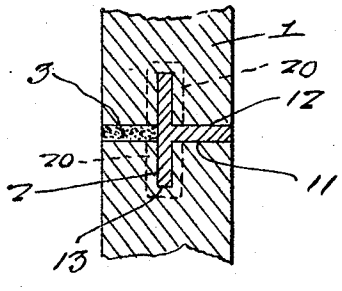
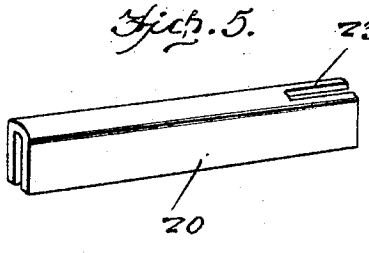


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN D. LAWRENCE, OF LONG BEACH, CALIFORNIA.

INTERLOCKED STRUCTURE.

Application filed November 21, 1925. Serial No. 70,527.

My present invention has to do with structures for incorporation in buildings and the like, and it has for its object the provision of an interlocked structure of fire proof quality, well adapted to withstand the pressures and shocks of earthquakes, cyclones and the like, and susceptible of being expeditiously and easily fabricated, and the latter in a peculiar and advantageous manner whereby the strength of the structure is enhanced.

Other objects and advantages of the invention will be fully understood from the following description and claims when the same are read in connection with the drawings, accompanying and forming part of this specification, in which:—

Figure 1 is an elevation illustrating a portion of a wall constructed in accordance with the best practical embodiment of my invention of which I am cognizant.

Figure 2 is a top plan view of the same.

Figure 3 is a fragmentary section illustrative of the manner in which tiles, preferably fireproof tiles, are interlocked with uprights of the structure frame.

Figures 4 and 5 are perspectives of elements that enter into the structure frame.

Similar numerals of reference designate corresponding parts in all of the views of the drawings.

As before indicated the tiles 1 of my novel structure are of fireproof quality, and said tiles are characterized by kerfs 2 in their horizontal edges for a purpose hereinafter set forth.

The tiles 1 are set in vertical series, and the spaces between confronting portions of the sets or series of tiles at the outer side of the wall illustrated are filled with cement or other appropriate plastic material, the fillings 3 being arranged flush with the outer sides of the tiles so as to contribute to the finished appearance of the outer side of the wall.

The vertical series of tiles are superposed on a metallic base plate or bar 4, and the said bar 4 is superposed, in turn, on a concrete footing or base 5, the bar 4 being connected to the footing or base 5 by bolts 6 appropriately anchored in the concrete, and the said bolts 6 are also utilized for the connection of right angle members 7, the horizontal arms of which are superposed on the metallic bar 4 as clearly shown in Figure 1.

At one end of the series of tiles illustrated I employ an upright metallic member 8, and at the opposite end of the series of tiles I make use of an upright metallic member 9. The upright member 8 is of right angle form in horizontal section, and its lower portion is set on the metallic bar 4. Four triangle plates are employed in the connection of the corner upright 8 to the sills below said upright. There are inside and outside plates at opposite sides of each of the two parts of the L of the upright, and the plates have flanges and bolt holes for the bolting thereof to the sills. Moreover said plates numbered 7 are bolted or riveted to the upright. The upright member 9 is of T-form in horizontal section, Figure 2. The tiles of the vertical series immediately adjacent to the upright member 8 have vertical edges disposed in the member 8 after the manner illustrated in Figure 1. The vertical series of tiles immediately adjacent to the upright member 9 have vertical edges opposed to and arranged against the T-head of the member 9.

The upright members 8 and 9 referred to are disposed at the ends of one section of my improvement, and as indicated by dotted lines at the left of Figure 1, as many sections may be fabricated end to end as conditions demand.

The horizontal edges of the tiles in the several vertical series are separated by intervening spaces 11, Figure 3, and in the said intervening spaces are arranged the webs 12 of horizontal bars 13, the said bars 13 being of T-form in vertical section. The edges of the webs of the bars 13 are arranged flush with the adjacent sides of the tiles, or with a space to be filled in with plaster or mortar and in this connection it will be understood that in Figure 1, the tiles 1 are shown by dotted lines only. The portions of the heads of the T-bars 13 are disposed in the kerfs 2 in the confronting or superposed horizontal edges of the tiles, Figure 3. As appears in Figure 1, the T-bars 13 are spaced apart throughout the height of the structure and the said T-bars 13 operate to reinforce the series of tiles and at the same time interlock the horizontal courses of tiles together so as to contribute materially to the strength and stiffness of the structure as a whole.

Joinder of the upright member 8 to the metallic T-bars 13 is accomplished through the medium of channel irons 20, Figures 1, 2 and 5, and joinder of the T-bars 13 to the

upright member 9 is effected through the medium of combined channel irons 21 and hooks 22, Figures 1, 2 and 4, the hooks 22 being integral with the channel irons 21 at the outer ends of the latter, and being disposed generally at right angles to the said channel irons 21. The channel irons 20 are provided in the outer ends of their bights with longitudinal kerfs or bifurcations 23, the same serving to receive one portion of the upright member 8 so as to tie the adjacent ends of bars 13 to the said upright member 8 and thereby preclude lateral deflection of the horizontal T-bars 13 with respect to the said upright member 8. The hooks 22 are designed to straddle the head of the upright member 9, channel irons 21 coupled to the said hooks 22 are arranged to straddle the T-head portions of the horizontal bars 13, and this latter is true also of the channel irons 20, and from this it follows that the irons 20 as well as the irons 21 will strongly hold the bars 13 to the two members 8 and 9, and this in the manner and for the purpose set forth; it being understood here that the bars 13 are supported each by the horizontal course of tiles disposed below and interlocked with the same.

I would have it understood here that when my improvement is to be incorporated in a building higher than one story, a sill is superposed on and appropriately connected to one horizontal section of my improvement, the said sill being substantially the same as the base bar 4 hereinbefore described, and the structure above the sill being substantially the same as that shown and hereinbefore explicitly described.

At this point I would have it distinctly understood that the term tiles as herein employed is intended to comprehend cement blocks, sections of stone, and sections of various kinds of plastic materials.

I would also have it uderstood that the upright member 8 of right angle form in horizontal section is adapted to serve the purpose of a corner upright and for incorporation in portions constructed in accordance with my invention and disposed at right angles to each other.

Manifestly it follows from the foregoing that the upright 9 is one of several that may be arranged intermediate of two corner uprights such as 8.

An important factor of my invention resides in the fact that the tiles 1 and the horizontal T-bars or members 13 are interlocked and held together of themselves and without the employment of any extraneous means whatsoever, it being understood in this connection that the cement or plastic material 3 in the spaces between the confronting horizontal sides of the tiles is used purely for filling purposes and to contribute to the finished appearance of the side of the wall at which the said cement or plastic material 3 is arranged.

Figure 1 shows the preferred embodiment of my invention, and in said embodiment and in addition to the channel irons 20 and 21, I employ auxiliary inverted channel irons 20 and 21. The inverted channel irons 20 and 21 are laid in kerfs in the tile precedent to the placing of the T-bar 13 in the kerf, portions of the T-bar being received in the inverted channel irons 20 and 21, and the upper channel irons 20 being arranged to straddle other portions of the T-bar or bars. This is also true of the channel iron 21 of each pair, and with reference to the channel irons 21 it is to be understood that the hook portions 22 of the adjacent channel irons 21 are arranged at opposite sides of the upright 9, this arrangement manifestly contributing to the strength of the connection between the bars 13 and the upright 9.

The upright joints between the tiles are arranged as shown in accordance with accepted practice in buildings for the breaking of joints.

The webs of the bars 13 are preferably at the inner side of the wall in order to attain the greatest possible resistance to wind pressure and to preclude the possibility of iron rust streaking and rendering unsightly the outer surface of the wall.

Manifestly when the wall is of a thickness considerably greater than the T-bars 13, the spaces between the edges of the webs of the T-bars and the faces of the tiles will be filled with plaster, cement or other plastic material compatible with wall construction.

I have specifically described the characteristics and the relative arrangement of the parts embraced in the present embodiment of my invention in order to impart an understanding of the said embodiment, in all of its details. I do not desire, however, to be understood as confining myself to the specific construction and arrangement of parts disclosed, my invention being defined by my appended claims within the scope of which changes in structure and arrangement may be made without departure from my invention.

Having described my invention what I claim and desire to secure by Letters Patent, is:—

1. A structure of interlocked type, comprising spaced upright members of angular cross-section, one of the said members being of right angle cross-section and the other of T-form in cross or horizontal section, spaced horizontal members of T-form in vertical section abutting at their ends against the upright members, tiles arranged above and below the horizontal members and having kerfs in their confronting horizontal edges receiving the head portions of the T-mem-

bers, joining members straddling the vertically disposed portions of the horizontal members and having kerfs in their bight portions receiving one portion of the right angle upright, and joining members straddling vertically disposed portions of the horizontal members at the opposite ends thereof and having lateral hooks engaging portions of the other upright member.

2. In a structure of interlocked type and in combination, horizontal courses of tiles with kerfs in their confronting edges, an upright member, and horizontal bars of T-form in vertical section joined to the upright member and arranged between horizontal courses of tiles and having portions disposed in the kerfs of said tile.

3. In a structure of interlocked type and in combination, horizontal courses of tiles with kerfs in their confronting edges, an upright member, and horizontal bars of T-form in vertical section joined to the upright member and arranged between horizontal courses of tiles and having portions disposed in the kerfs of said tiles; said upright member being of T-form in horizontal section, and the said joining of the horizontal bars to said upright member being effected by members straddling the upright portion of the horizontal bars and disposed in kerfs of the tiles and hooked into engagement with the upright member.

In testimony whereof I affix my signature.

JOHN D. LAWRENCE.