Aug. 14, 1934. C. S. BROWN 1,970,414

WALL STRUCTURE

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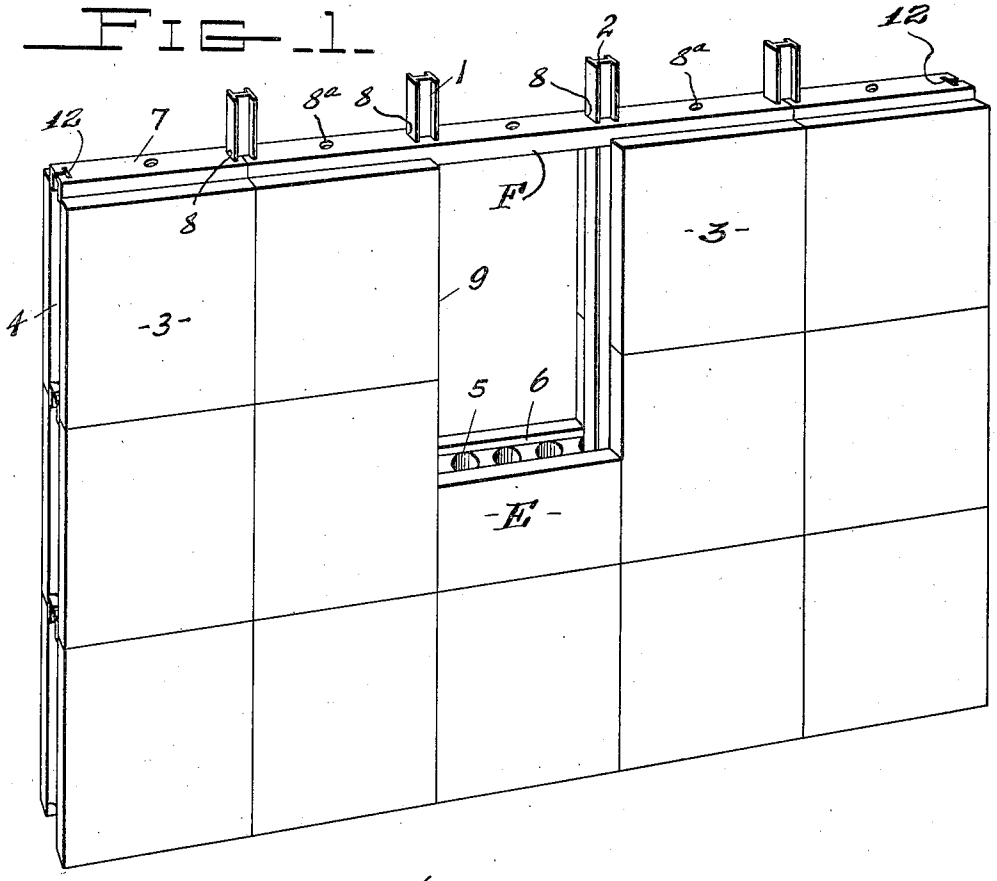
FIG. 1.



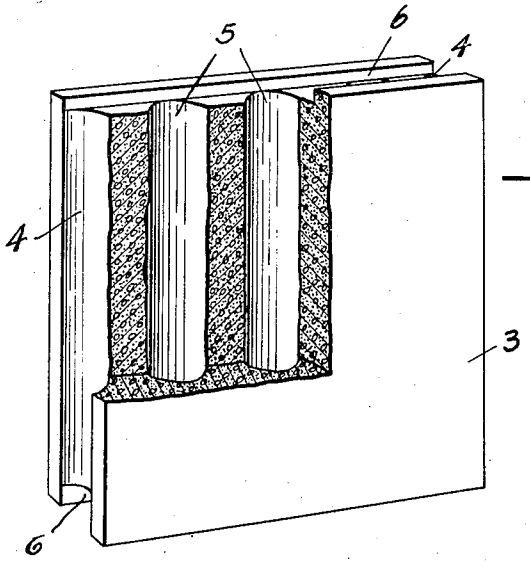


FIG. 2.

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WALL STRUCTURE

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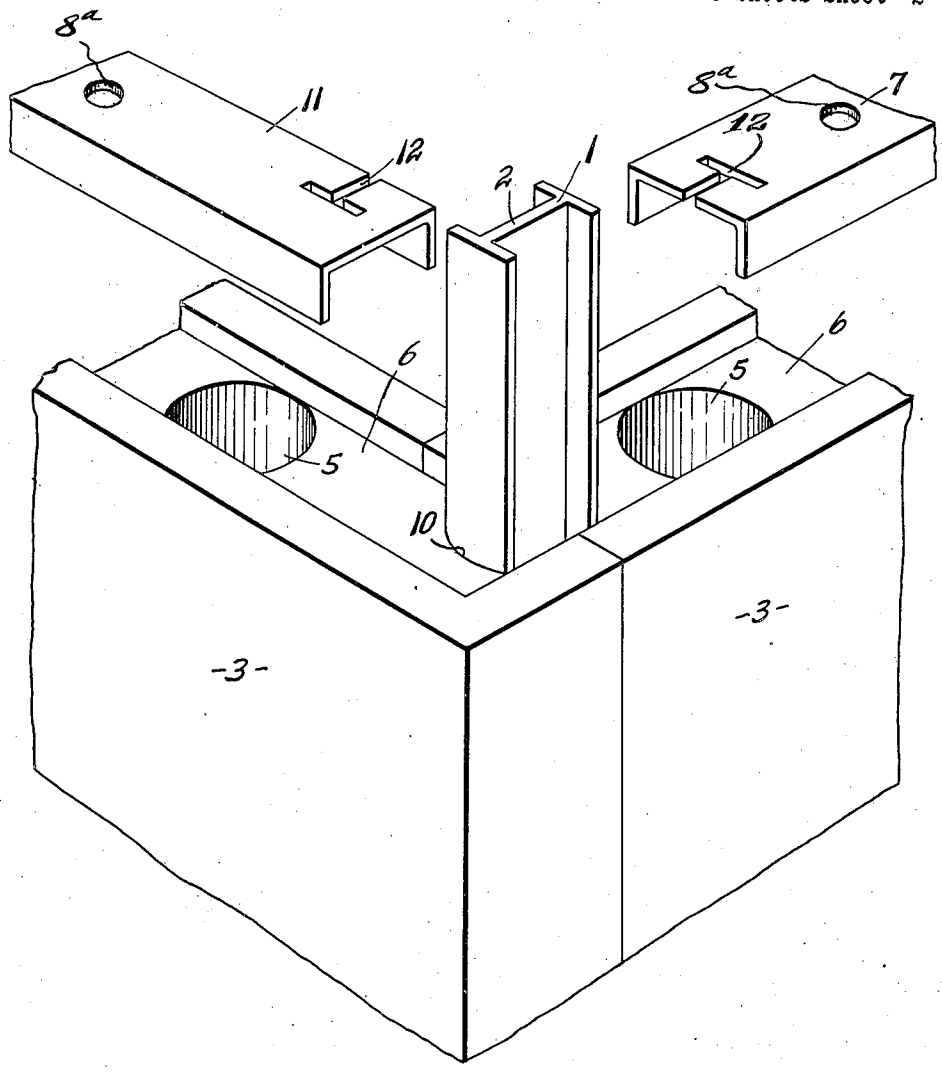

FIG. 3.

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WALL STRUCTURE

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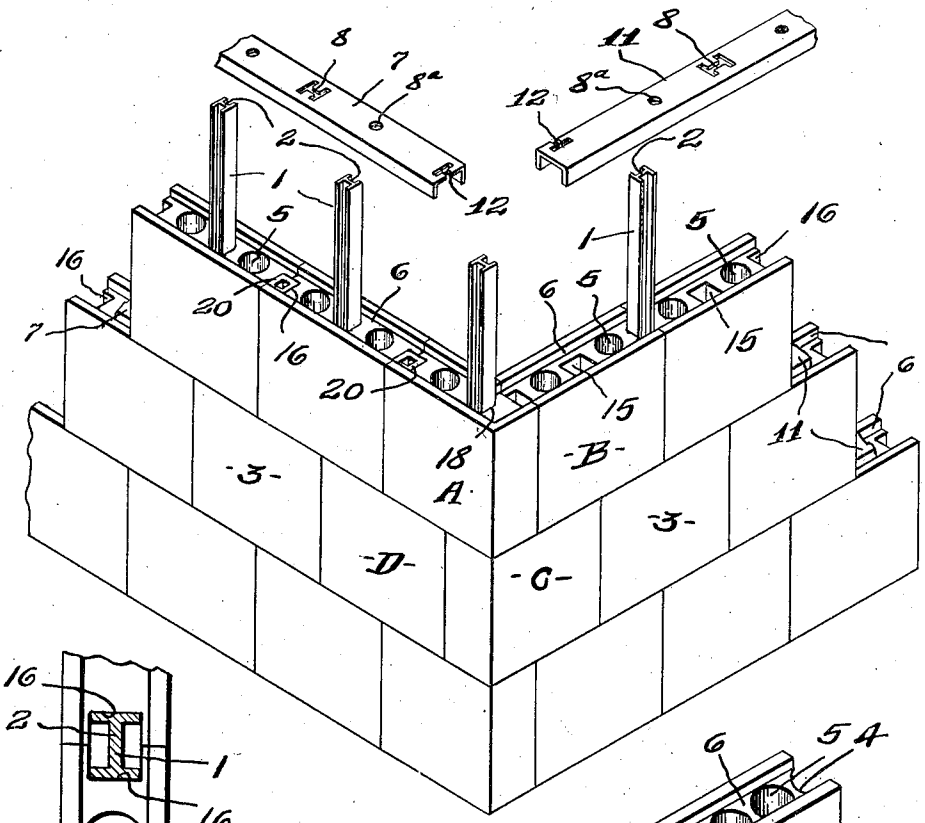
FIG. 4.



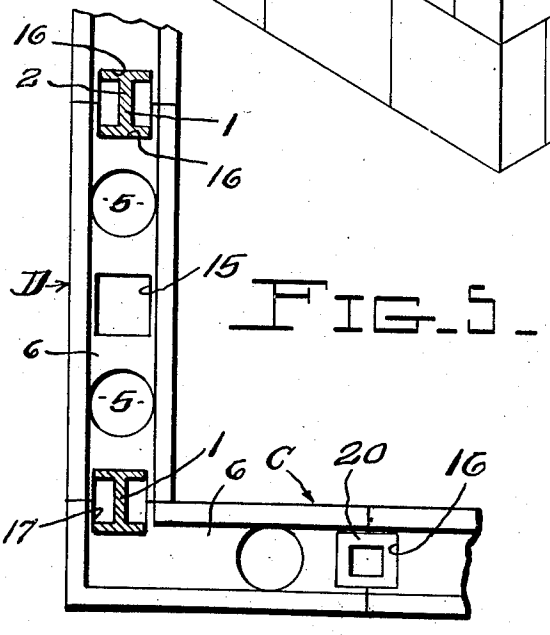


FIG. 5.

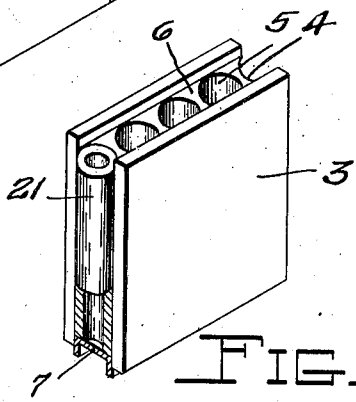


FIG. 6.

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Patented Aug. 14, 1934 1,970,414

UNITED STATES PATENT OFFICE

1,970,414

WALL STRUCTURE

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Application February 21, 1933, Serial No. 657,816

5 Claims. (Cl. 72—42)

This invention relates to wall structures, and has for its object a particularly simple and efficient arrangement of the uprights of the frame of a wall and of blocks forming the wall, whereby the blocks are interlocked with the uprights, and also particularly simple and efficient horizontal frame members which interlock with the uprights, and also with the blocks of the tiers.

It also has for its object, a wall structure which can be fabricated from stock materials as I beams, channel irons, and blocks, as cement blocks, in a simple and efficient manner, and without skilled labor.

It further has for its object, a corner construction for such a wall built up of I beams, channel irons, and end blocks.

The invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawings in which like characters designate corresponding parts in all the views.

Figure 1 is a perspective view of a section of a wall embodying my invention.

Figure 2 is a detail view, partly broken away, of one of the blocks.

Figure 3 is a fragmentary, partly exploded, view of the corner construction.

Figure 4 is a view similar to Figure 3 showing the blocks arranged staggered, or laid as the bricks of a brick wall.

Figure 5 is an enlarged plan of the corner structure shown in Figure 4.

Figure 6 is an isometric view of one of the blocks showing a tile in section for keying two blocks of a tier together when the upright does not extend between them and key them together.

This wall structure comprises generally, spaced apart frame members, or uprights, which are preferably I beams, tiers of blocks arranged one upon the other and interlocked with the I beams, and means between the tiers and interlocking with the blocks and with the I beams or uprights.

1 designates the uprights which are preferably I beams, these being set into a suitable support, as a foundation of cement, the I beams extending with their web portions 2 in a plane lengthwise of the wall, so that their I heads extend in the direction of the thickness of the wall.

3 are blocks arranged in tiers. These blocks are formed of cement, or some analogous material, and are formed with grooves or recesses 4, and also with vertical air passages 5. As shown in Figure 1, the blocks are arranged in alinement in columns between the beams, and the recesses 4, are formed in the end edges of the blocks, the recesses in the abutting ends of any two blocks mating and receiving one I beam. When the blocks are placed one on the other between the I beams 1, the recesses 4 of each block embrace one-half of the I beam at the end of the blocks, and the adjacent blocks in the next column embrace the other half of the I beam. Thus, the I beams are concealed within the recesses and interlocked therewith. The recesses 4 are here shown as rounding in cross section or may be square to fit the I heads, as seen in Figures 4 and 5, in order to make the joint between the beams and the recesses wind tight.

The blocks are also formed with grooves 6 in their upper and lower horizontal edges, and means is provided for locking the blocks together along their horizontal edges, and for interlocking with the uprights, or I beams. This means is here shown as channel irons 7 preferably located with their channels facing downwardly in the grooves of the upper edges of the lower tier, these channel irons being of greater width than the depth of the groove and forming a tenon for receiving the groove in the lower edges of the next upper tier. The channel irons are provided with slots 8 for interlocking with the upright I beams and also with ventilating openings 8^a so that the interiors of the blocks of the wall are ventilated from top to bottom of the wall. These channel irons, or frame members, are preferably of greater length than a single block, and may be as long as desired, and are long enough to span any gap, as a window opening 9 that may be provided in the wall. The frame members or channel irons 7 are provided with I slots or T shaped slots 8 and 12 for interlocking with the I beams and hence, slide vertically thereon, and do not support the weight of the blocks, except where the irons 7 bridge a door, or window opening, and the weight of the blocks is borne by the foundation, and not by the members 7.

The intermediate slots are therefore I shaped, while the slots in the ends of the channel irons are T shaped. One of the I beams is located at the corner of the wall, and one-half of this corner I beam extends beyond the end thereof, and the blocks of a second wall meeting the first to form a corner are formed with recesses 10 in their side faces for receiving the protrud-

ing half of the corner I beams. Also, the channel iron 11 of the second wall of the corner is formed with a T slot 12 in its side and near its end for receiving the protruding half of the corner I beam.

Owing to this wall construction, the frame of a wall can be economically formed out of stock I beams, channel irons, and blocks molded to interlock with the I beams, and to be interlocked together with the channel iron.

Also, by this wall structure, any opening, as window and door openings, can be readily provided by omitting some of the blocks, or using segmental blocks E, and the space across the top of the opening bridged by one of the channel irons, as at F.

If instead of arranging the blocks in columns, the blocks are laid staggered, as the bricks in a brick wall, some of the blocks are slid down over the uprights with the uprights passing through one of the passages 5 and the corner blocks would be similarly arranged. Thus every alternate tier extends beyond the corner I beam.

In Figure 4, the wall structure is shown in which the blocks of each tier, or course, are laid staggered with those of the next tiers, and the upright I beams extend through the mating passages, or recesses, at the ends of the blocks of some tiers, and through intermediate passages in the blocks of the intermediate tiers and in such constructions, the blocks may be formed with the intermediate passage 15 rectangular or with flat ends to fit the heads of the I beams. Also, the passages in the ends of the blocks are shown as formed with flat bottoms at 16 to fit the heads of the I beams.

In the wall structure, such as shown in Figures 4 and 5, the corner blocks of alternate tiers of one wall must lap the corner blocks of the other wall, and some of the corner blocks are formed with recesses, or passages 17, Figure 5, in the sides for receiving the corner I beams, as seen in Figure 5, or are formed with passages 18 therethrough, Figure 4, in block A for receiving the corner I beams, and the block B meets block A and abuts against it but is not interlocked with the I beam. The corner blocks C, D, of adjacent tiers above and below the tier containing the blocks A, and B, are interlocked as shown in Figure 5. Block B is held in place at its unlocked end by over and underlying channels.

In the wall structure of Figure 4, the abutting blocks of any tier between which blocks the uprights or I beams do not pass, may be locked together by a tile 20 or 21, Figure 6, in the passages or recesses in the abutting ends thereof. In Figure 5, where the passages are rectangular, the tiles 20 are rectangular. In Figure 6, the tiles 21 are cylindrical to fit the cylindrical passages in the abutting ends of the blocks.

By my wall structure, a wall can be quickly and economically built with I beam uprights and channel iron horizontal frame members and with molds for standard wall blocks and corner blocks.

What I claim is:

1. A wall structure comprising upright I beams arranged with their webs extending in a plane lengthwise of the wall, and their heads extending widthwise of the wall, blocks mounted in tiers between the I beams and having recesses therein at their abutting ends for interlocking with the I beams, horizontally extending frame members between the tiers having slots for interlocking with the flanges or heads of the I beams, the blocks being formed with lengthwise grooves in their horizontal edges and the frame members being in the form of channel irons lying in the grooves of a lower tier and extending into the groove of the blocks of the upper tier forming a tenon between the tiers, the webs of the channel iron being provided with slots for interlocking with the flanges or heads of the I beams.

2. In a wall structure, an upright I beam arranged at the end of the wall, blocks arranged in tiers, one upon the other, the end blocks being formed with a channel in their ends for interlocking with one flange or head of the corner I beam, a second similar wall forming a corner with the first wall, and the end blocks on the second wall at the corner being formed with a channel in their side faces near their ends for receiving the other flange or head of the corner I beam.

3. A wall structure comprising upright I beams spaced apart with their webs extending in a plane lengthwise of the wall, blocks arranged in tiers, one upon the other, and formed with recesses in their abutting ends for embracing one half of the adjacent I beam between abutting ends of the blocks, the blocks being formed with channels in their horizontal edges, and channel irons arranged in the channels and forming a tenon connecting the tiers of blocks, the webs of the channel irons being formed with slots for receiving the I beams, the upright I beam at the end of the corner projecting beyond the ends of the end blocks, a second similar wall meeting the former wall at an angle forming a corner, the end blocks of the second wall having recesses in their side faces near the corner ends thereof for receiving the other half of the corner I beam, and the channel irons of the second wall having T slots in their sides and near the end thereof at the corner, for receiving the other half of the corner I beam.

4. A wall structure comprising uprights, blocks arranged in tiers and having recesses through which the uprights extend, the blocks having lengthwise grooves in their horizontal edges, frame members in said grooves and extending out of the grooves of one tier and into the grooves of the blocks of the overlying tier, thereby forming tenons interlocking the tiers together, the frame members having means for interlocking with the uprights.

5. A wall structure comprising uprights, blocks arranged in tiers and having recesses through which the uprights extend, the blocks having lengthwise grooves in their horizontal edges, frame members in said grooves forming tenons interlocking the tiers together, the frame members having slots interlocking with the uprights, the uprights being I beams, and the frame members being channel irons having slots in the webs fitting the I beams.

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