Dec. 15, 1925. 1,565,959

R. S. REQUA

HOLLOW TILE

Filed Aug. 26, 1921

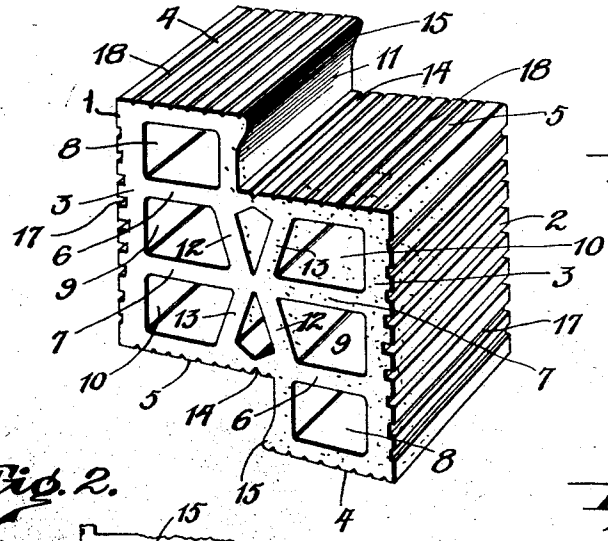


Fig. 1.

Fig. 2.

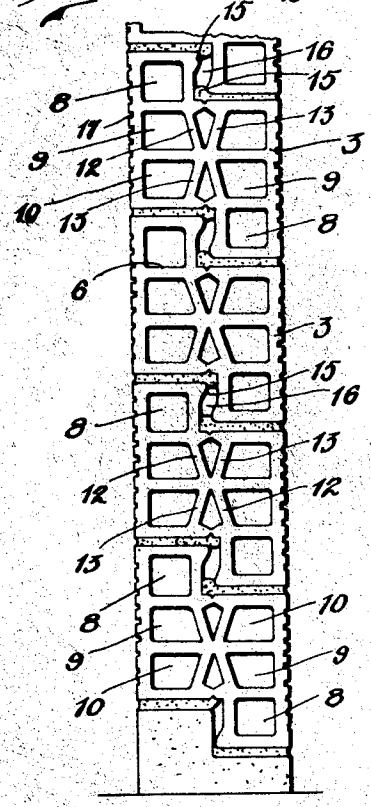
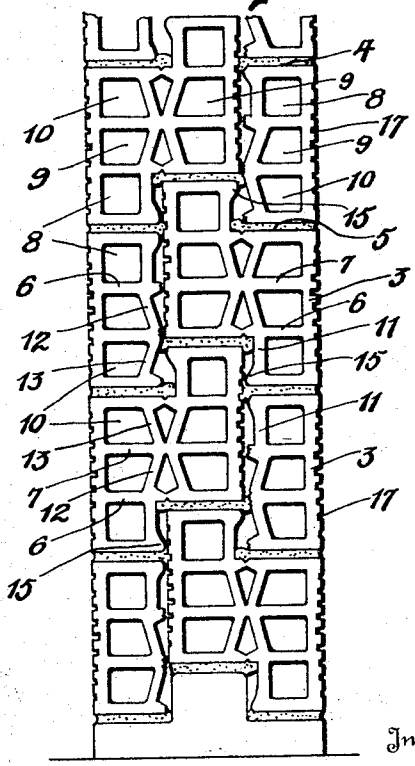


Fig. 3.



Inventor

Richard S. Requa

By Gould & Gould.

Attorney

Patented Dec. 15, 1925. 1,565,959

UNITED STATES PATENT OFFICE.

RICHARD S. REQUA, OF SAN DIEGO, CALIFORNIA, ASSIGNOR TO UNION TRUST COMPANY OF SAN DIEGO, OF SAN DIEGO, CALIFORNIA, A CORPORATION OF CALIFORNIA.

HOLLOW TILE.

Application filed August 26, 1921. Serial No. 495,452.

To all whom it may concern:

Be it known that I, RICHARD S. REQUA, a citizen of the United States, residing at San Diego, in the county of San Diego and State of California, have invented certain new and useful Improvements in Hollow Tiles, of which the following is a specification.

This invention is directed to an improvement in interlocking hollow building tile or block, of the type described and claimed in a patent issued to me May 25, 1920, No. 1,341,071.

The hollow tile of the patent referred to is characterized by a structure including a plurality of hollow offset body parts, with angularly-related webs in such body parts in alignment with and forming direct-line continuations of the normally outer wall section of another body part, whereby the tile may be divided along the line of any web to provide any of the special form tile required in a building. Thus, the tile unit described in such patent provides a single unit capable of being divided into a plurality of different usable shapes.

The tile referred to in the patent, however, is not as perfectly resistant to building-load strains as it may be, due primarily to the fact that the junction of each web and wall is a true right angle. Under such construction, a crushing stress, so long as it is in direct line with a wall or web, is perfectly resisted by the inherent strength of such wall or web, but any crushing stress deviating from such direct-line, is resisted in part by the angularly-related webs and walls, and this resistance can only be that of the junction of such webs and walls. As these junctions of webs and walls are at direct right angles, any angular stress on the tile naturally tends to a breakage of such junctions and may result in a breakage of the tile under a stress materially less than that required for crushing of the tile under direct load stress. When it is understood that the floor weight and roof weight in a tile wall building must necessarily be at an angle to a direct vertical line pressure, it follows that the resultant of this stress and the direct vertical wall stress must be at an angle to a direct downward stress on the tile, and hence the joints of the webs and walls are called upon for an undesirable breaking resistance.

The principal object of the present invention is, therefore, to so arrange certain interior webs of the tile of the type referred to, that this necessarily present angular stress, so called, will be perfectly resisted, and such stress transmitted in substantially direct line to the co-acting webs and walls in their lines of greatest resistance.

The improved inclined arrangement of certain interior webs of the present tile is so particularly designed that the resultant tile still possesses all the important features of the patented tile referred to, and particularly the complete divisibility into all the special shapes of which said patented tile was capable, as well as the interlocking function.

The present tile is also constructed with slight inner edge extensions of the extreme upper and lower faces of the tile, whereby to provide a broader mortar surface, and so reduce the space between interfitting tile at the respective ends of the vertical length of the interlocking area as to preclude the entrance of mortar into such space and thus insure an unobstructed air void, preventing the direct or capillary passage of moisture thru the mortar joints of the wall.

With these and other somewhat less important objects which will later appear, the invention consists in a more or less specific embodiment, which will be described in the following specification, reference being had to the accompanying drawings, in which:—

Fig. 1 is a perspective view of the improved tile.

Fig. 2 is a view in elevation, showing the tile arranged in an 8-inch wall.

Fig. 3 is a similar view, showing the tile unit, and divisions thereof used in building a 13-inch wall.

The improved hollow tile is exactly similar in outline to the patented tile referred to, and in those particulars similar to that of the patented tile may be briefly referred to as follows:

The tile unit comprises two substantially identical body-sections 1 and 2, each including an outer wall, as 3, a top wall, as 4, and a bottom wall, as 5.

Each body section has two interior webs

6 and 7, hereinafter referred to as horizontal webs, which are substantially parallel to the top and bottom walls 4 and 5, and divide the interior of the body-section into three hollow lobes 8, 9, and 10.

The respective body sections are arranged in offset relation, and in reversed position, that is, the top wall 4 of one body section is so positioned with respect to the top wall 4 of the other body section, as to make the tile completely reversible and identical with either end uppermost.

As this was an important feature of the patented tile, the respective body sections are each substantially the proportions of three superimposed ordinary bricks with connecting mortar beds, and the respective body sections are so offset that the uppermost horizontal web 6 of each aligns with the bottom wall 5 of the other body section, and the remaining horizontal web 7 of one with the web 7 of the other. Thus, the body sections may be divided horizontally to cause any original interior web to become in part or wholly an outer wall of a new shape of tile, as will be plain from the description of the patented tile referred to.

In the patented tile referred to, the relative inner or meeting faces of the body sections were made up of vertical webs at right angles to the top and bottom walls and spaced apart by connecting webs representing the mortar space between the brick assemblage referred to. These internal vertical webs were at right angles to the top and bottom walls of the tile unit, and hence were not as completely resistant to angular thrust as was desired.

In the improved tile, the inner walls of the projecting lobes of the tile, as 11, are at right angles to the top and bottom walls of the body section, exactly as in the patented tile described, but the remaining inner walls of each body section are at an angle to such top and bottom walls.

Thus, the inner face of each body section is made up of two webs 12 and 13, extending respectively, that is web 12, from the juncture of the web 6 and wall 11 at an outward inclination to the web 7, while web 13 extends from the bottom wall 5 of the section at an outward inclination to the juncture of webs 12 and 7.

Thus, in the completed tile unit, the webs 12 and 13 have a common meeting point in line with and at the juncture of the web 7 of the body sections, and incline outwardly therefrom in both upward and downard direction. The inclined interior web formation is thus provided in the inner upright web construction of the tile, and it will be at once apparent that this formation will effectively take care of angular load stress on the tile.

The respective bottom walls 5 of each body section are continued over or between the spaced ends of the upright webs, and this portion of the wall is scored at 14 to provide a line of cleavage when dividing the tile into vertical halves.

Attention is here called to the fact that when divided into vertical halves, the truss-webs 12 and 13 constitute an outer wall of the resultant tile, and that such resultant tile is closed on all sides, except at the ends, exactly as is the original unit.

The inner edges of the top wall 4 of each body section are projected as an extension 15 slightly beyond the plane of the vertical wall 11. This is an important feature, as it not only increases the mortar area of such top wall 4, but when the tile units or sections divided therefrom, are laid in interlocked relation, as in Figs. 2 and 3, the projections 15 approach closely to the wall 11 of the adjacent tile, and thus materially restrict the mortar entrances to the space between the walls 11 of interlocking tile. Thus the said space is kept free of mortar, thru the reduction of space thru which mortar may enter, so that space 16 is a void to prevent moisture passage thru the wall, as previously stated.

Furthermore, the projections 15 provide for more convenient gripping of the tile by the mason in handling the same.

Another feature of the improved tile is the outer wall scoring 17, designed primarily as a plaster interlock or support. Under a crushing strain, the normal tendency of the outer walls 3 is to bulge outwardly, thus breaking away from the webs 6 and 7. To obviate this, the outer wall scorings 17 are of different depths, being of greatest depth at the central or intermediate scoring, and gradually of less depth in both directions therefrom.

By this construction the tendency of the outer walls to buckle, will direct the central portions of such walls inwardly, and thus against the resistance of the webs 6 and 7 and transmitting such thrust thru the webs 12 and 13 to the top and bottom walls.

In Fig. 2, an 8-inch wall is shown constructed of the improved tile units with the interior truss web formation. From the arrangement herein shown, it is apparent that any angular load stress is directed along one or the other of the inclined webs and by this direction converted into a directly vertical load stress. Thus any angular load stress or stress is distributed by such inclined webs, so that practically all webs of the tile, both upright and horizontal, sustain their proportion of the load. Therefore, as a direct result of the converging arrangement of the inclined webs, the improved tile will distribute and equalize the wall strains; bridge over and transfer the stress from inherently weak tile sections; change angle stresses

and lateral thrusts to perpendicular stresses; and compel the horizontal webs to bear their proportion of load stresses, a result not appreciable in ordinary hollow tile having vertical webs.

Furthermore, a distinct commercial advantage incident to such load transference of the improved construction is in the protection afforded under fire damage. Extreme heat as in fire, cause expansion of the tile face or wall exposed thereto, and sudden cooling under application of water, results in contraction of such tile face, so that such face will break away from the horizontal webs. With ordinary hollow tile, as tested under fire conditions, this breakage of the tile face from the webs, results in buckling or bulging of the wall and usually its collapse. With the inclined interior webs being arranged in converging directions, however, the load strain is directed so as to utilize the full strength of all tile wall faces and webs as load supports, and hence the failure of one tile wall face is only a failure of a portion of the load support, and with the tile constructed with the proper margin of safety in this respect, the tile is still completely effective as a load support.

The interior web formation is also of material value in the manufacture of the tile, as it tends to prevent any lateral or angular distortion due to necessary handling while in a green state.

A 13-inch wall is shown in Fig. 2, where the tile units and half units, formed as previously described, are used. Here again, the load stress is taken up by the truss formation of the tile units and by the angular webs 12 and 13 of the half tile, with the full effective load transference as described.

The upper and lower faces of the tile may be scored as at 18 for bonding the mortar.

Having thus described the invention, what is claimed as new, is:—

1. A hollow tile having outer walls and interior webs alining with certain of the said walls, and internal webs joining the upper outer wall at points intermediate the side walls and converging towards the center of tile and similar internal webs joining the bottom outer wall at points intermediate the side walls and converging towards the center of the block.

2. A hollow tile having outer walls and interior webs alining with certain of said walls, other internal webs joining the upper outer wall at points intermediate the side walls and converging towards the center of the tile, and similar webs joining the bottom outer wall at points intermediate the side walls and converging towards the center of the block, the upper and lower walls of the tile being shaped to interlock with adjacent upper and lower tiles when arranged in a wall structure.

3. A hollow building tile having outer walls and interior webs, certain of the interior webs joining one of the horizontally directed outer walls at points intermediate the side walls, said webs being arranged in X-shape to permit a division of the tile into separate useful tile units in which the said webs form side outer walls.

4. A hollow building tile having outer walls, certain of which are shaped to provide interlocking engagement with adjacent tile when arranged in a wall structure, horizontal interior webs alined with certain of said outer walls, other interior webs joining one of the horizontally directed outer walls at points intermediate the side walls, and said last-mentioned webs being extended in converging directions and arranged to permit a division of the tile into separate useful tile units in which tile units the said webs form outer side walls.

5. A hollow building tile comprising outer walls, the upper and lower walls providing horizontal offset portions, horizontally directed interior webs, and other interior webs arranged X-shaped within the tile to to provide angular stress-resisting members, said members joining the upper and lower outer walls at points intermediate the sides, thereby providing a divisional tile in which said angular webs form side outer walls of the divisional tile.

In testimony whereof, I affix my signature.

RICHARD S. REQUA.