April 30, 1940. S. W. WILLIAMSON 2,198,688

BUILDING BLOCK

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Fig. 1.

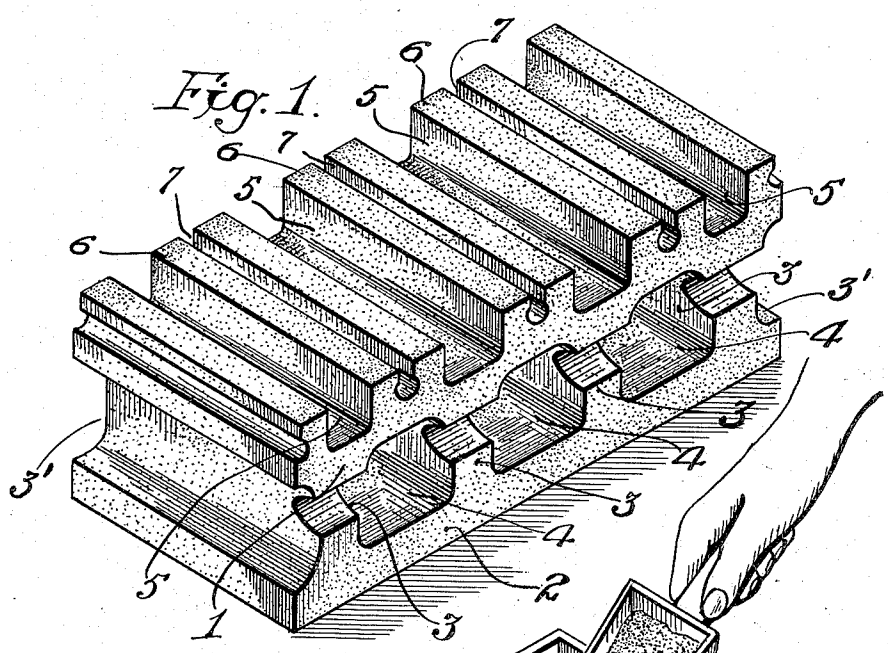
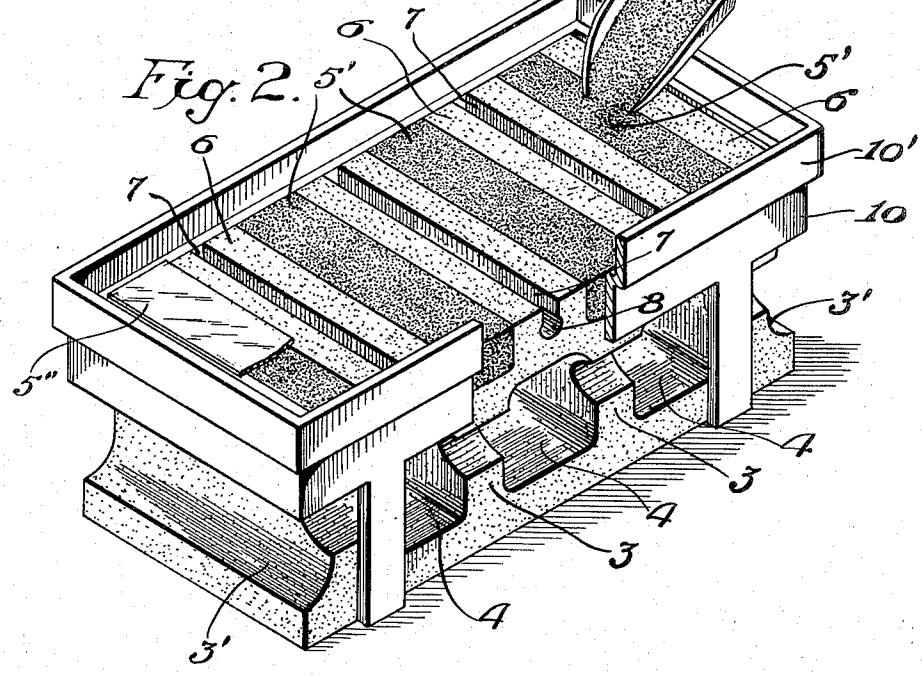


Fig. 2.



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Fig. 3.

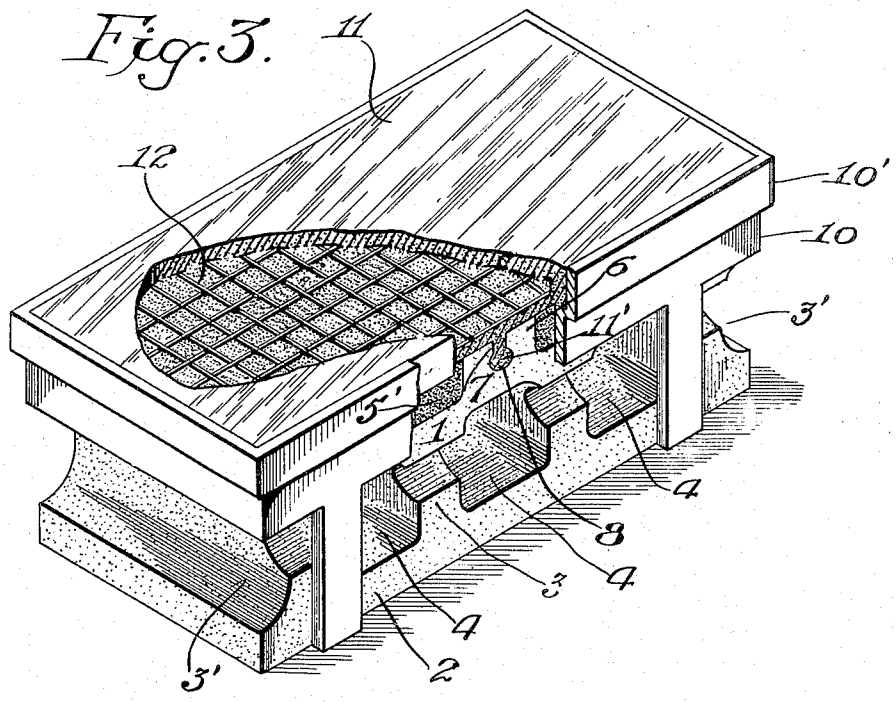
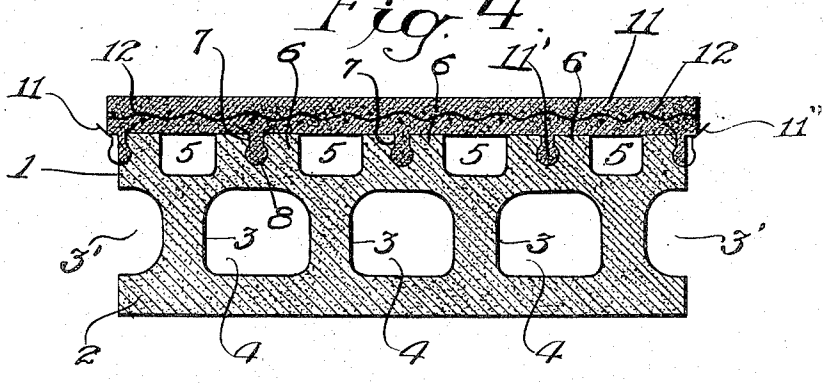


Fig. 4.



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Fig. 5.

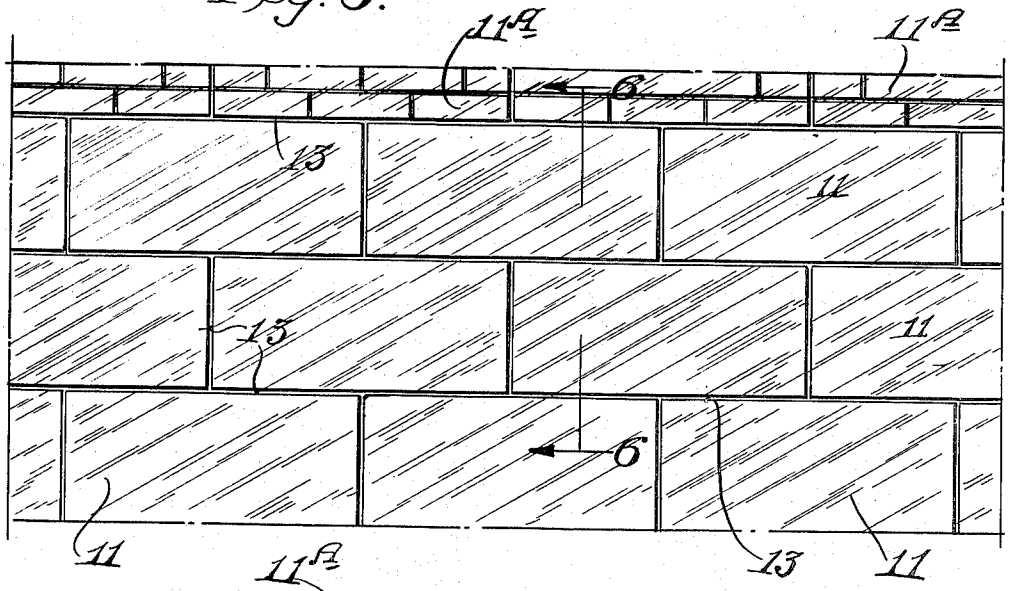
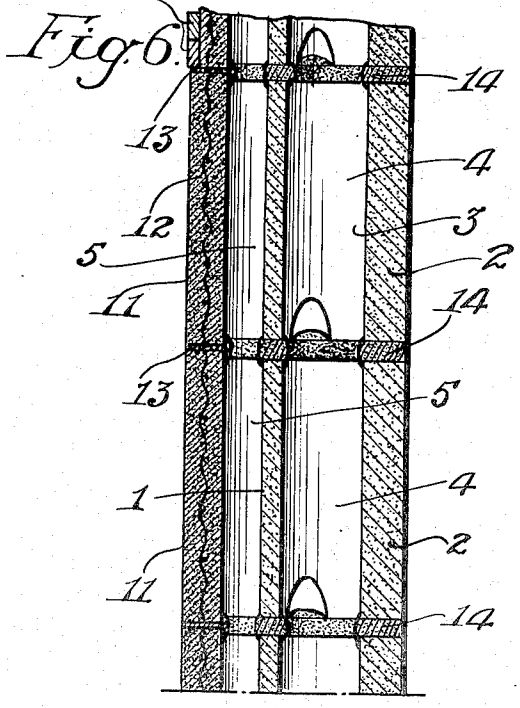


Fig. 6.



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UNITED STATES PATENT OFFICE

2,198,688

BUILDING BLOCK

Samuel Wilson Williamson, Upper Providence Township, Delaware County, Pa.

Application October 19, 1937, Serial No. 169,771

7 Claims. (Cl. 72—41)

My invention relates to building units having ornamental masonry facings for weathering applied to precast hollow blocks preferably made of light, inexpensive, and insulating material, such as cinder concrete, and to the method of combining such blocks and facings.

In accordance with my invention, I precast and cure in any usual manner a hollow masonry block with a plurality of longitudinally disposed rows of air cells each passing through the block from its top to its bottom. The air cells of one row are wholly within the body of the block and preferably intercepted by the longitudinal central vertical plane thereof. The cells of the other row are staggered relatively to the cells of the first row and are intercepted by the plane of the front face of the block. The cells are separated from one another by integral webs of the block shell, and the webs between the cells of the body row are of less thickness than the width of the face cells so that all straight lines passing from the front to the back of the block and normal to the longitudinal central plane thereof parallel with the axes of the cells are intercepted by at least one air cell. By this arrangement there is avoided any straight line seepage of moisture transversely through the block and any moisture seepage must pass through web sections or partitions greater in length than the thickness of the block and having extended surfaces exposed to air tending to evaporate such moisture. Such arrangement and proportioning further provides adequate joist bearings on both sides of the body cells.

The ends of each block are recessed in the form of substantially one-half of a body cell, hence when the blocks are laid up so that the joints of one course lie equidistantly between the joints of the next course, the body cells in the courses register with one another.

A moisture resistant and ornamental masonry facing is secured to the front face of the block so as to form a front wall or closure for the air cells in the face of the block. Preferably such facing is mechanically interlocked with the block by providing narrow key-ways in the partitions between the face cells.

The keyways preferably consist of grooves extending from the top to the bottom of the face of the block and each having its greatest width remote from the face of the block, thus forming a species of dovetail mortise. The mechanical interlocking of the facing with the block may result from the solidification and engagement in the mortise of a mortar key or feather having an expanded head and a shank integral with a mortar bed applied while plastic to the block and forming or holding the facing. Or the interlocking may result from the engagement in the mortises of expanded heads of metallic clips, anchors, or the like having shanks terminating in legs for engaging the facing and preferably embedded in the mortar.

By mechanically interlocking together the precast block member and the plastically applied facing member, there is avoided the splitting and separation of the members resulting from differences in their coefficients of expansion and contraction.

Plastic mortar, solidifiable into a masonry overlay, is applied to the grooved faces of the partitions and may itself form the ornamental facing for the block or may provide a bed for setting stone, brick or tile facing members, without, in either case, filling the face air cells of the block with masonry.

The formation of an ornamental facing, consisting of or including plastically applied mortar, without filling the face air cells therewith is facilitated, in accordance with my invention, by placing individual covers or hollow or cellular pallets over or in the face air cells or by placing therein a readily withdrawable filler until the plastic mortar has solidified.

The exclusion of the mortar from the face air cells is preferably effected by filling such cells with a granular water-absorptive material, such as sand or sawdust, which is preferably withdrawn from the cells through the end openings thereof when the plastically applied mortar has solidified. The thickness of the facing covering the air cells may be regulated by more or less completely filling such air cells, and the rate of drying of the mortar overlying the face air cells may be regulated by controlling the absorptive properties of the filler.

By using a water-absorptive filler, a wet fluid concrete or mortar can be used to facilitate the distribution and placement thereof in the keyways and to produce a dense facing. Such excess water as would be deleterious to the strength and hardness of the concrete may be rapidly withdrawn by absorption into the filler, and should the filler withdraw the water from the facing too rapidly, the filler may be dampened to retard its absorption of water.

The plastic water or cement composition will freely enter the keyways when applied and form integral ribs or anchors having expanded inner portions securely locking the facing to the block.

When the applied plastic layer is designed to provide the finished face there is incorporated therein marble dust, fine sand, granite chips, pebbles or the like to provide an attractive finish. If, however, finishing members of brick, stone or tile are to be set in the applied plastic mortar, such mortar may be of any usual composition and need not cover the air cells since the bricks, stones or tiles embedded in the mortar attached to the partitions between the cells will close the lateral openings of such cells.

The facing may be reenforced by embedding therein suitable metallic reenforcement and may be formed of a size to slightly overlap the edges of the backing block so that in assembling a wall narrow joints may be formed between the facings of adjacent blocks and wider joints between the adjacent backing blocks. If desired, several blocks may be juxtaposed and a continuous facing applied to the juxtaposed blocks.

The characteristic features and advantages of my invention will further appear from the following description and the accompanying drawings in illustration thereof.

In the drawings, Fig. 1 is a perspective view showing a backing block embodying my invention; Fig. 2 is a perspective view of the backing block showing how mortar may be excluded from the face air cells during the application of a facing within a form surrounding the block; Fig. 3 is a perspective view of the block and frame shown in Fig. 2 with a facing applied thereto and partly broken away to show the interior construction; Fig. 4 is a longitudinal sectional view through the block shown in Fig. 3; Fig. 5 is a front elevation of a wall panel constructed from the block embodying my invention; and Fig. 6 is a vertical sectional view taken on the line 6—6 of Fig. 5.

In the drawings, I have illustrated as a preferred embodiment of my invention a precast core cinder block consisting of a shell having a front web 1, a rear web 2, and transverse webs or partitions 3. A row of tapered body air cells 4 are enclosed laterally by the webs 1, 2 and 3, the cells preferably being open at the top and bottom. These body cells 4 are preferably so disposed that each of them lies partly in front and partly in back of a longitudinal central vertical plane of the block parallel with the axes of the cores. The ends of the block shell are recessed to provide hemi-cells 3' which form body cells of the same shape and size as the cells 3 when blocks are laid together. By laying courses of blocks so that the joints of one course lie midway between the joints of the next course, the body cells in the various courses register with one another, thereby facilitating the laying of pipe, cutting of chases, etc.

The front web 1 is recessed to form a row of air cells 5 spaced by webs or partitions 6 and staggered relatively to the air cells 4. The face air cells 5 are made wider than the thickness of the partitions 3 so as to require any moisture seeping through the block to follow a circuitous path through web sections of extended surface area exposed to the drying action of the air within the cells. The partitions 6 are wide enough to provide firm joist bearings and are provided with grooves 7 having expanded inner sections 8 to provide keyways for the mechanical interlocking of a facing with the block.

In a preferred practice of my invention, filling material 5', such as sand or sawdust, is packed in the air cells 5. A cover 5'' may be used in lieu of or in addition to the filler 5' to exclude extraneous matter from the air cells. While the block is surrounded by a frame 10, having an off-set flange 10' above the block when the latter is laid on its back, a facing mortar, such as a mixture of cement, marble dust, sand and water, is spread over the up-turned front of the block to form a facing 11 which may have a metallic reenforcement 12 embedded therein. The plastic facing material enters the grooves 7 and forms integral keys 11' on the facing, securely interlocking the backing block and facing together. The mortar keys may be supplemented by hooks 11''' inserted in some or all of the keyways and having enlarged heads secured in the grooves 7 and legs which bond with the facing.

By drying or dampening the filler before or after the application of the facing, such filler may be caused to absorb water from the facing mortar at a rate desired to give strength and hardness.

If desired, any suitable face finishing pieces, such as tile, brick, or rock, 11A, may be embedded in the facing mortar of some or all the blocks before the hardening thereof.

Blocks constructed in accordance with my invention may be assembled in a wall panel, as illustrated in Figs. 5 and 6, in which the projecting edges of the facing formed by the flange 10' closely abut to form a narrow joint 13, while permitting the formation of wide joints 14 between the backing blocks themselves and thereby expediting the laying of the blocks and the firmness of the joints between the building units. Such walls are substantially damp-proof, have continuous vertical openings therein, forming insulating cells and pipe-ways, and provide joist seats on both sides of the body air cells.

Having described my invention, I claim:

1. An article of manufacture comprising a hollow block having a plurality of longitudinally disposed rows of air cells, the air cells of one row being staggered relatively to the air cells of the other row, and facing-securing keyways between the air cells of one of said rows.

2. An article of manufacture comprising a hollow block containing a plurality of longitudinally disposed rows of air cells, the cells of one row being separated by partitions having a thickness less than the width of the cells of the other row, and the cells of the last named row being spaced by partitions containing keyways for the attachment of a facing to the block.

3. A building unit comprising a hollow backing block containing a plurality of longitudinally disposed rows of air cells, the cells of one row being staggered relatively to the cells of the other row, keyways in a face of said block and disposed between the cells of one of said rows, and a masonry facing secured to said block by said keyways and forming lateral closure for one of said rows of cells.

4. A building unit comprising a hollow block containing a plurality of longitudinally disposed rows of insulating cells, the cells of one row being staggered relatively to the cells of the other row, one of said rows of cells being wholly within the body of said block and the other of said rows of cells being intercepted by the plane of a face of said block, and a masonry facing secured to said face and forming a lateral closure for said last named row of cells.

5. A building unit comprising a hollow block containing a plurality of longitudinally disposed rows of insulating cells, the cells of one row

being staggered relatively to the cells of the other row, one of said rows of cells being wholly within the body of said block and the other of said rows of cells being intercepted by the plane of a face of said block, and a masonry facing secured to said face and forming a lateral closure for said last named row of cells, said facing having an area in excess of the area of the block face to which it is secured.

6. A building unit comprising a hollow block containing a plurality of rows of insulating cells, one of said rows of cells being wholly within the body of said block and intercepted by the longitudinal central vertical plane thereof, and the other of said rows of cells being intercepted by the plane of the face of said block, and a masonry facing secured to said face and forming a lateral closure for said last named row of cells, said facing overlapping the edges of the block face to which it is secured.

7. A building unit comprising a hollow block containing a plurality of rows of air cells, said air cells being separated from one another by partitions and the cells of one row overlapping the cells of the other row so that all straight lines passing from the front to the back of the block normal to the longitudinal central plane thereof parallel with the axes of said cells will be intercepted by an air cell.

SAMUEL WILSON WILLIAMSON.