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BUILDING BLOCK
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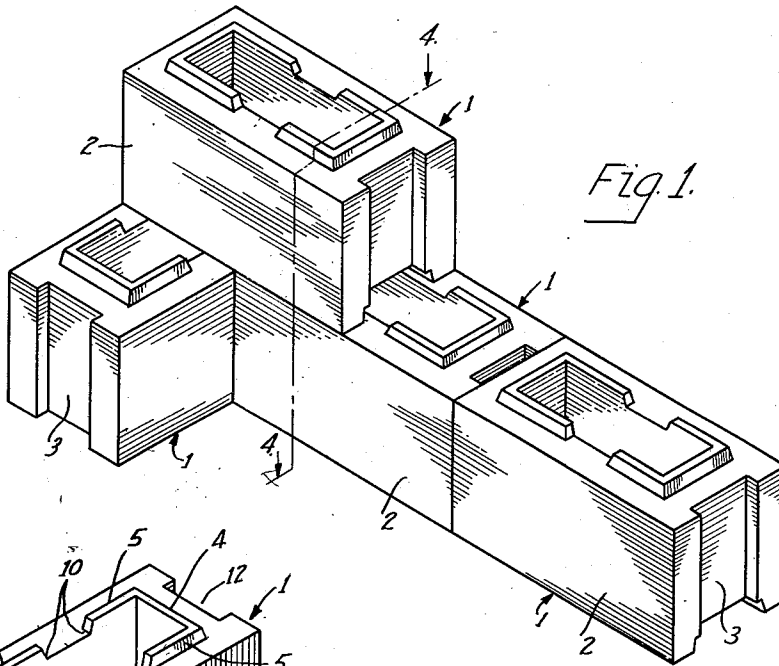


Fig. 1.

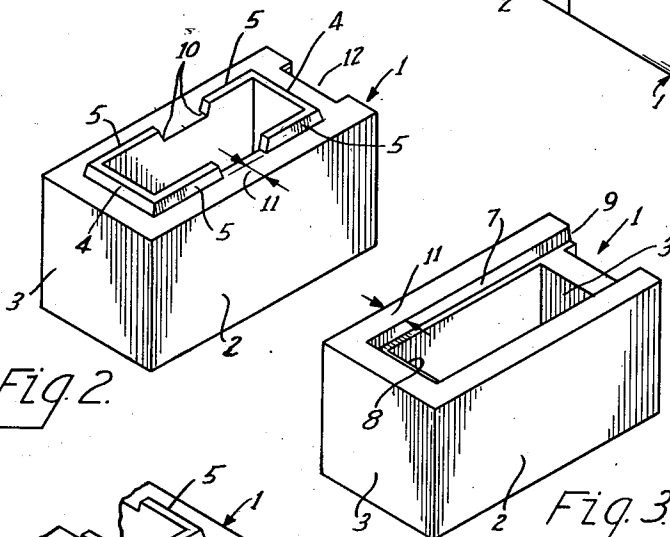


Fig. 2.

Fig. 3.

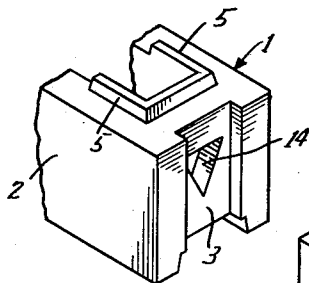


Fig. 6.

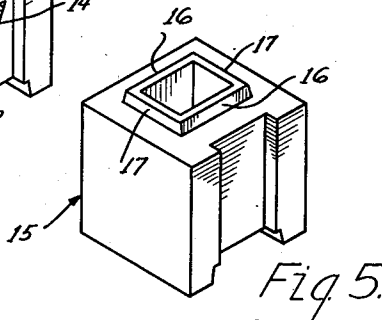


Fig. 5.

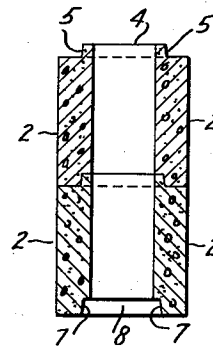


Fig. 4.

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BUILDING BLOCK

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3 Claims. (Cl. 72-41)

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This invention relates to building blocks, particularly to building blocks adapted to be laid in rows positioned one on top of the other with the joints between the blocks of each row staggered with respect to the joints between the blocks of the row superposed thereon.

One of the principal objects of the present invention is to provide a building block which is so constructed and arranged that a plurality of duplicate blocks can be laid in rows, one above the other, to form a wall, and interlocked with each other accurately.

Another object is to provide a block of this character of which duplicates may be laid one on top of the other and staggered longitudinally half of a block length and interlocked, or laid at right angles to each other and interlocked accurately.

A more specific object is to provide a building block having flanges on the top and suitable complementary grooves on the bottom so related to the other than when the blocks are laid in staggered or right angled relation with the flanges of one block engaged in the grooves of the other, the top and bottom surfaces of the side walls and end walls of the blocks, adjacent to the flanges and grooves, are in juxtaposition with each other and fit accurately so that they can be bound together along the juxtaposed surfaces by superficial or skin-like films of cementitious material instead of the usual thick levelling mortar layer.

Another object is to provide a block of the characterization described which is formed of extremely fine aggregate and cementitious binder and is molded precisely to shape under high pressure so as to produce smooth, accurate, and dense surfaces and interlocking flanges of a quality such that a thin film of liquid cement can be applied without being absorbed in the pores of the material.

Another object is to provide a block of this characterization which, though of dense material, is of light weight, and has a minimum of transverse walls with a maximum of dead air spaces between adjacent transverse walls so as to reduce the conduction of heat through the wall constructed therefrom and at the same time permit the installation of various conduits and the like within the resultant wall.

Another and more specific object is to provide a wall of blocks which are interlocked mechanically due to the configuration of the blocks, and are adequately secured by superficial films of cementitious material so that the exposed wall surface is substantially continuous and unbroken

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by the usual mortar or other joints between the blocks.

Other objects and advantages will become apparent from the following description wherein reference is made to the drawings in which:

Figure 1 is a perspective view of a wall formed of the blocks of, and embodying the principles of, the present invention;

Figure 2 is a perspective view of one of the blocks in upright position;

Figure 3 is a perspective view of the block illustrated in Figure 2 but in an inverted position;

Figure 4 is a cross sectional view of two superposed blocks and is taken on a plane indicated by the lines 4-4 of Fig. 1;

Figure 5 is a perspective view of a half block; and Figure 6 is a fragmentary perspective view of a modified form of the block illustrated in Figure 2.

Referring first to Figures 1 through 3, a block, indicated generally at 1, is illustrated and comprises upright side walls 2 which are parallel to, and spaced laterally from each other, and upright end walls 3 at right angles to the side walls 2, and spaced longitudinally from each other. The block is open at the top and bottom, as illustrated, and has a continuous passage there through which is unobstructed throughout its entire extent. The walls 2 and 3 are preferably of the same and uniform thickness throughout.

The block illustrated in Figure 2 is a full block of which the width and height are equal and of which the length is equal to twice the width. A satisfactory size of block for most purposes is one having a width and height of eight inches, respectively, and a length of sixteen inches.

In order to provide for interlocking the blocks, end flanges 4 are provided at the top of the end walls 3 and are parallel to and inset from the outer faces of the end walls. Correspondingly, lateral flanges 5 are provided on the tops of the side walls and are inset from and parallel to the outer surfaces of the side walls. It is preferred that each of the flanges 4 be joined at its ends to the ends of the adjacent lateral flanges 5 so as to provide accurate and solid sharp corners at the intersections of the flanges, and that the flanges terminate at their corners. The flanges 4 and 5 provide part of the interlocking means for interlocking the blocks when they are stacked one upon the other.

The complementary part of the interlocking means comprises grooves 7 formed in the bottom of the side walls, and a groove 8 formed in the bottom of one of the end walls 3. The grooves 7

extend from the opposite ends of groove 8 at right angles thereto entirely to the opposite ends of the side walls 2, respectively, and are open at said opposite ends, as indicated at 9, and also are open inwardly of the block. The end wall 3 of the open ends of the grooves 7 terminates in spaced relation above the bottom of the block a distance at least equal to the height of the flanges so as to clear the flanges 4 and 5, as hereinafter set forth. The grooves 7 preferably are aligned vertically of the blocks with the lateral flanges 5, and groove 8 is aligned vertically of the block with one of the end flanges 4 so that the grooves of one block can receive and accurately fit the flanges 5 and 4 respectively of a duplicate block when one block is placed directly on the other in vertical alignment. The flanges and grooves are so arranged and shaped that when the flanges of one block are engaged with the grooves of a superposed block which is in vertical alignment therewith, or is offset longitudinally half of a block length thereon, or is at right angles thereto, the top and bottom surfaces of the block walls adjacent to the flanges, are in juxtaposition with each other, from the flanges outwardly to the outer surfaces of the walls.

Since, as illustrated in Figure 1, it is necessary to place one block at right angles to another block in the same row to form a corner, and to superimpose on such blocks another row of blocks with their end faces staggered with respect to the end faces of the blocks of the row there beneath, each of the lateral flanges 5 of each block is in two portions which terminate inwardly endwise of the block from the end flanges 4 thereof and which are in spaced relation to each other at their inner or adjacent ends 10. The spaced inner ends 10 of the flanges 5 are preferably shaped so as to fit the grooves 7 or 8 whenever either of such grooves extends at right angles to the flanges 5 and is placed with its upright wall in abutment with the ends 10 of the flanges.

Assuming the side walls 2 and end walls 3 are of equal thickness, the space between the ends 10 of the flanges preferably is equal to twice the thickness of the walls 2 or 3 measured between the plane of the outer upright surface of the block wall and the plane of the upright wall of the groove parallel to such upright surface, as indicated at 11 in Figure 3.

Thus with a block of which the length is twice the width, wall corners can be formed conveniently. As illustrated in Figure 1, it is only necessary to turn an upper one of the blocks at right angles to the block there beneath and engage the flange 4 of the lower block in one of the grooves 7 of the upper, and one of the flanges 5 of the lower block with the groove 8 of the upper. The other groove 7 of the upper block engages the inner ends 10 of the flanges 5 which are connected to the engaged end flange 4.

When so related, the upper block is prevented from moving endwise inwardly transversely of the block on which it rests by engagement of its groove 8, with one of the flanges 5 of the lower block, and is prevented from moving transversely of its longitudinal axis parallel to the length of the lower block in one direction by engagement of one of its grooves 7 with the outer end flange 4 of the lower block, and in the opposite direction by the inner ends 10 of the flanges 5 of the lower block. When in this relation, the outer surface of the inner one of the side walls 2 of the upper block lies in the space between the transverse center line of the block therebeneath and the

ends 10 of the flanges of the lower block. The next block in the upper row at the corner can be placed with one of its end walls 3 in face to face contact with the inner side wall 2 of the upper corner block and when so positioned, its groove 8 engages the ends 10 of the flanges 5 of the block therebeneath on the opposite side of the transverse center line from the upper corner block, thus holding the added block in fixed position endwise of the row. When so held, grooves 7 of the added block are engaged the outer lateral flanges 5 of the block beneath, thus anchoring the added block against displacement transversely of the line of the wall. This same arrangement also results in staggering the joints between the ends of adjacent blocks of one row a half block length from the joints between the ends of adjacent blocks in the superimposed row.

Since the grooves 7 are open at one end of the block, as indicated at 9, and the end wall adjacent the open ends of the grooves 7 terminates in spaced relation to the bottom of the block a distance at least equal to the height of the flanges, the blocks can be laid one on the other with their side walls coplanar and then slid endwise to cause the ends of adjacent blocks to abut, the end wall adjacent the open end of the grooves 7 clearing the flanges 4. Likewise, when an upper block is turned at right angles to the one on which it is superposed so as to form a corner, the end wall of the block adjacent the open ends of the groove can clear the flange portions 5 with which it may be aligned transversely of the block, thus permitting the superposed block to be slid transversely of the block therebeneath into proper position. The lateral grooves and flanges guide the block into place and the end flanges and grooves 8 stop them at the proper longitudinal positions.

Since the blocks are accurately made so that they can be bound with a superficial or skin-like film of cementitious material, no allowance need be made for mortar joints in a running wall structure. If it is desired to make the end walls 3 and side walls 2 of different thickness, allowance is made accordingly between the ends 10 and flanges 5.

As mentioned, it is desirable that the upright passages through the blocks be clear and unobstructed for their full length, and that the wall surfaces of the passages be parallel to the outer surfaces of walls 2 and 3 respectively. When this is done, the flanges 4 and 5 preferably have their inner wall surfaces in the plane of and forming continuations of the walls of the upright passage, and the grooves 7 and 8 are open at the inside into the upright passage.

With the block described, the amount of material extending transversely is reduced to a minimum, no webs or other reinforcing walls being provided in the upright passage. However, in order to prevent a double thickness of end walls at the joints with its consequent increase in heat conductivity, both transversely and longitudinally, the side walls 2 may be extended at one end of the block slightly beyond the end wall at said end, forming a channel 12. When the flush end wall of an adjacent block is abutted with the channel end, a dead air space is provided. If desired, the amount of material in the end wall which is thus inset from the end of the block may be further reduced, as illustrated in Figure 6, by providing a passage 14 therethrough, and such a passage also is of value for accommodating conduits, cables and the like.

The block described is preferably made of a plastic mix of mineral aggregate, Portland ce-

ment, and water. The aggregate should be graded from 50 to 300 mesh and be of relatively hard and dense mineral material. A suitable dry mix comprises the aggregate of the mesh described and Portland cement in the amount of about 8 to 20% by weight of the dry mix. Sufficient water is added to provide a mass of damp consistency comparable to that of normal molding said but without any free flowing water or paste-like consistency. The material is placed in a suitable mold and compacted accurately to shape under a pressure of from 500 to 5000 lbs. per square inch.

The blocks may be bonded together in a wall with any liquid bond cement or a thin film of neat cement. Mastic and commercial caulking compounds are also suitable. The cementitious material may be applied with a brush or otherwise spread into a thin skin-line film, as a leveling thickness of binder is unnecessary.

As mentioned, the standard block is one in which the width is equal to the height and the length is equal to twice the width. A block 8 x 8 x 16 inches is suitable for most purposes. In some instances, a half block is desirable and such a block is illustrated in Figure 5 and is indicated generally at 15. This half block embodies all of the features heretofore described except that the end flanges 16 thereof are coextensive transversely of the block with the distance between the ends of the lateral flanges 17, thus forming a continuous flange at the top of the block. The same principles may be embodied in half width blocks used for an interior wall in the event a wall thicker than one block is desired. The interior wall blocks preferably are 4 x 8 x 16 inches with interior half blocks 4 x 8 x 8 inches. Half height blocks may also be used for window openings and the like. These may be 8 inches in width by 4 in height by 16 in length, with their half length blocks being 8 x 4 x 8 inches. All such blocks may be shaped and formed in the manner described in connection with the full blocks so that they may be inter-fitted with each other indiscriminately as the occasion demands.

Having thus described my invention, I claim:

1. A dense building block of aggregate and cementitious binder having spaced parallel upright elongated side walls and spaced parallel upright end walls at right angles to the side walls, flanges on the top of said side walls and on the top of at least one end wall, said flanges being inset from the plane of the outer upright faces of their associated walls, the flange on each side wall being in the form of two portions of which the adjacent ends are in spaced relation to each other near the longitudinal midportion of the block, the adjacent spaced ends being at opposite sides of the longitudinal midportion of the block, the bottoms of said one end wall and of the side walls having a continuous groove inset from the outer upright faces of the associated walls, said groove extending entirely to, and opening through, those ends of the side walls opposite to said one end wall and said groove, throughout its entire length, being open inwardly of the block, the outer face of the flange on each side wall and on said end wall being substantially parallel to, and aligned vertically of the block with, the upright wall of the groove in the bottom of its associated wall of the block, the other

end wall of the block terminating in spaced relation to the bottom of the block a distance at least equal to the height of the flanges, the outer face of the flange on said one end wall being spaced endwise of the block from the outer face of said one end wall a distance substantially equal to the thickness of one of the grooved side walls measured between the plane of the outer face thereof and the plane of the upright wall of its groove, the said adjacent ends of those portions of the flanges which extend from said one end wall toward the longitudinal midportion of the block being spaced endwise of the block from the outer face of said one end wall a distance substantially equal to the distance between the plane of the outer face of said one of said side walls and the plane of the upright wall of the groove of the opposite side wall, and being spaced from the said adjacent ends of said other portions of the flanges a distance at least equal to the sum of the thicknesses of said one end wall and said opposite side wall, each measured between the planes of its outer face and the upright wall of its groove, and the outer surface of each of the flanges on the side walls being spaced inwardly from the outer face of its associated side wall a distance substantially equal to the distance between the planes of the outer face of said one end wall and the upright wall of the groove of said one end wall.

2. A block according to claim 1 characterized in that the distance between the plane of the outer face of each side wall and the outer face of its associated flange is substantially equal to the distance between the plane of the outer face of said one end wall and the outer face of its associated flange.

3. A block according to claim 1 characterized in that said other end wall is inset endwise of the block a short distance from the adjacent ends of said side walls.

CLARENCE C. HALL.

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