

Feb. 1, 1949.

F. P. BACCARO
BUILDING BLOCK

2,460,330

Filed May 8, 1944

3 Sheets-Sheet 1

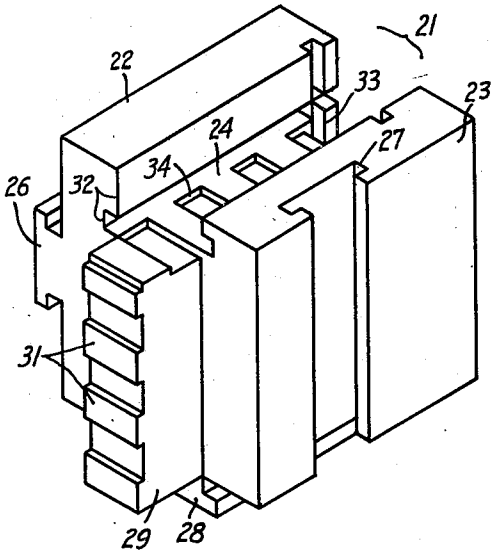


Fig. 1

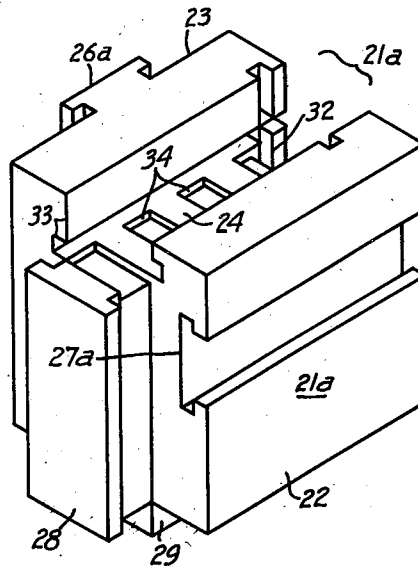


Fig. 2

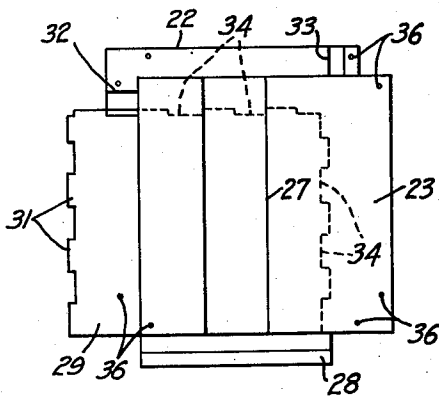


Fig. 3

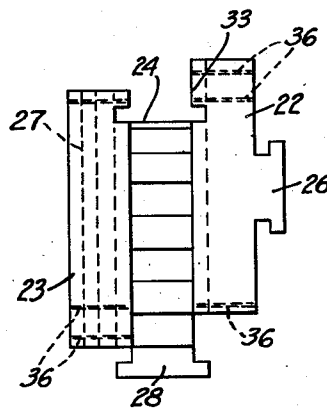


Fig. 4

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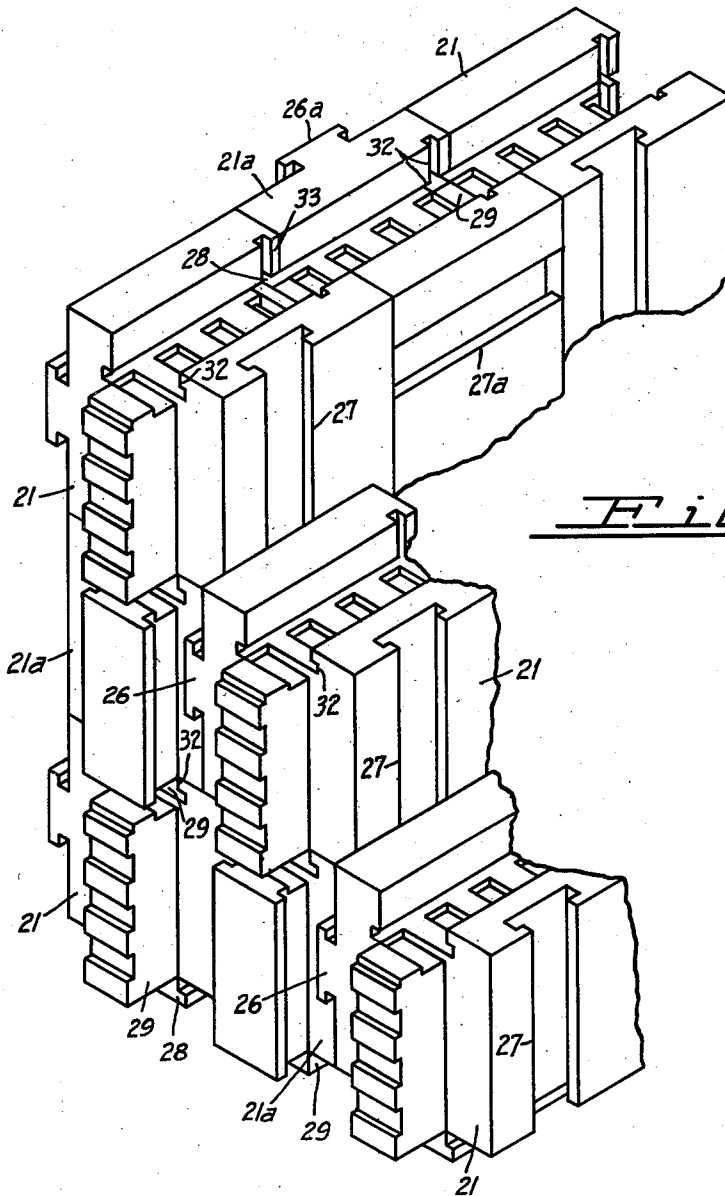


Fig. 5

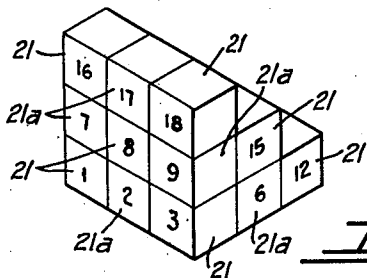


Fig. 6

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3 Sheets-Sheet 3

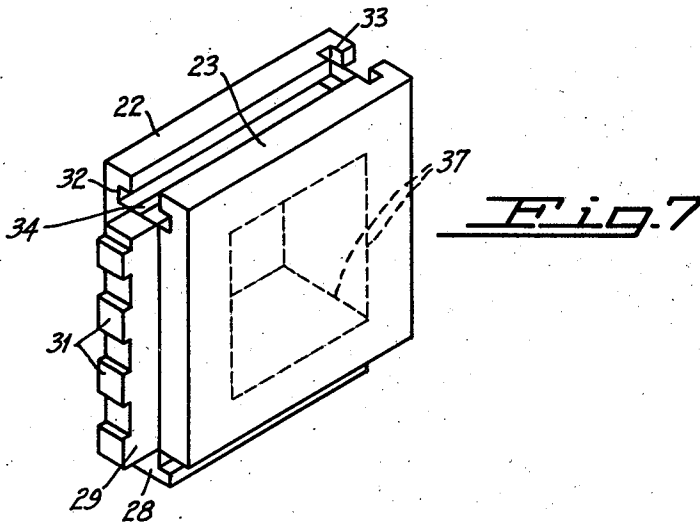


Fig. 7

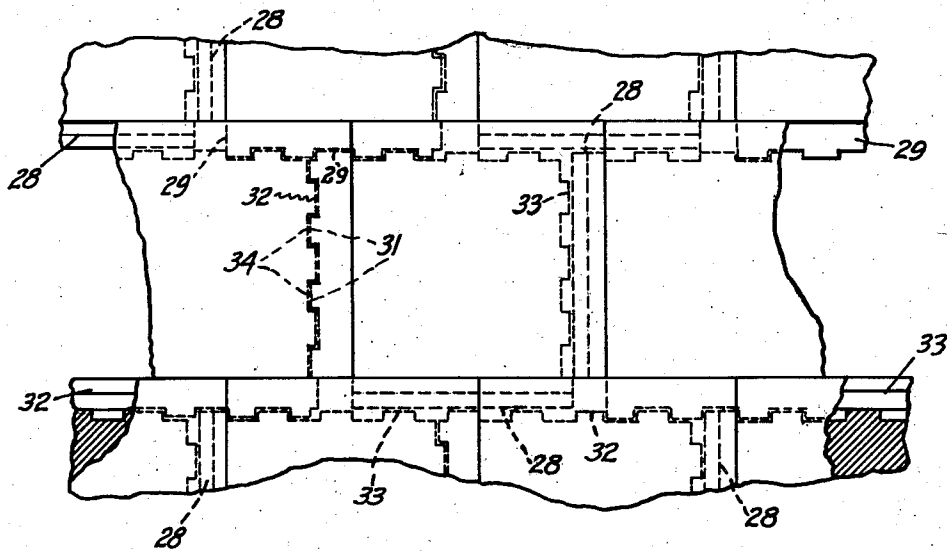


Fig. 8

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UNITED STATES PATENT OFFICE

2,460,330

BUILDING BLOCK

Frank P. Baccaro, San Francisco, Calif.

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3 Claims. (Cl. 72-38)

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My invention relates to building construction, and particularly to a building block of essentially hexahedral shape provided with complementary tongues and grooves upon opposite faces for effecting interlocking engagement with similar blocks placed adjacent thereto.

It is among the objects of my invention to provide a building construction in which each of a plurality of blocks is placed in interlocking engagement with other similar blocks adjacent any or all of its sides.

Another object of my invention is to provide a building block having complementary tongue and groove means positioned to interlockingly engage complementary parts of similar blocks placed in any of a plurality of positions relative to the blocks for keying the blocks together.

A further object is to provide a building block construction provided with means for effecting interlocking engagement of adjacent blocks such as to lock the blocks against relative movement in any direction.

My invention possesses other objects and features of value, some of which with the foregoing will be set forth in the following description of the invention. It is to be understood that I do not limit myself to the showing made by the said description and the drawings as I may adopt variant forms of the invention within the scope of the appended claims.

In the drawings:

Figure 1 is an isometric projection of a building block embodying my invention.

Figure 2 is a similar view of a block similar to the block shown in Figure 1, except that the relative positions of some of the parts are transposed.

Figure 3 is a side elevation of the block shown in Figure 1.

Figure 4 is an end elevation of the block, viewed from the right-hand side of Figure 3.

Figure 5 is an isometric projection illustrating the assembly of a plurality of blocks, parts being broken away.

Figure 6 is a diagrammatic view illustrating the order in which blocks are assembled in the construction illustrated in Figure 5.

Figure 7 is an isometric projection of a modified form of building block.

Figure 8 is a fragmental elevational view showing one manner in which blocks of the form shown in Figure 7 may be assembled.

In terms of broad inclusion, the building construction of my invention comprises a plurality of blocks, each having complementary tongues and grooves on opposite faces for effecting interlocking engagement with complementary parts of other similar blocks placed adjacent thereto, in any of a plurality of relations, for keying the blocks together and locking them

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against relative displacement. My invention also contemplates a block structure having opposite face portions diagonally offset with respect to each other, and having openings for receiving securing means by which the blocks may be secured to each other or to an adjacent anchorage.

In terms of greater detail, the building block of my invention comprises a body of essentially hexahedral shape designated in general by the numeral 21. The blocks may be of any size, and of a variety of shapes. Preferably the dimensions of the block are proportioned to produce a right parallelepiped, which may be a cube, or a rectangular parallelepiped having the long dimensions of its opposing faces disposed in either a horizontal or vertical direction. The blocks may be made of any material suitable for the service for which they are intended, as for example wood, cement, plastic or metal.

In the preferred embodiment, while essentially of hexahedral form, each block is in effect divided into front and back face portions 22 and 23, offset with respect to each other and to an intermediate body portion 24. The portions 22 and 23 are offset both in the direction from end to end and from top to bottom. The degree of offset is substantially equal in both directions; or, in effect, is a diagonal offset of said portions relative to each other. Terms such as front, back, top and bottom as herein used are immaterial, except as applied in a descriptive sense to the arrangement shown in the drawings; since the blocks may be placed in various positions for assembling them into a building construction.

The face portion 22 is provided with an outwardly projecting undercut tongue 25, extending from end to end of the block, preferably substantially midway between and parallel to the upper and lower edges of the face. A groove 27 of a shape complementary to the tongue 25 is formed upon the face portion 23. The groove 27 preferably extends across the face portion 23 in a direction at right angles to the direction in which the tongue 25 crosses the face portion 22; and is offset from the center of the face portion 23 to a position opposite the center of the face portion 22. The tongue 26 and groove 27 are preferably of T-shape cross-section, but a dovetail or other interlockable form of tongue and groove may be substituted.

A second undercut tongue 28 extends outwardly at the bottom of the block along the full length of the intermediate body portion 24. The face portions 22 and 23 extend in opposite directions beyond the ends of the tongue 28 because of the offset relation of said face portions. The tongue 28, as illustrated conforms in size and shape to the tongue 26 and groove 27, so as to permit

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either tongue of one block to interlockingly engage the groove 27 of another block; but such conformity is not essential.

A third tongue 29 projects outwardly from an end of the intermediate portion 24. The tongue 29 has parallel sides, and is not undercut. The thickness of the tongue 29 is approximately the same as the narrow neck portion of the tongues 26 and 28. A plurality of lugs 31 are spaced along the outer face of the tongue 29.

The side opposite the tongue 28 has a groove 32 complementary to the tongue 28, and arranged to effect interlocking engagement with either the tongue 28 or the tongue 26 of an adjacent block. The side opposite the tongue 29 has a groove 33 similar to the groove 32, and also arranged to interlockingly engage a tongue 26 or 28 of an adjacent block. Both grooves 32 and 33 have recesses 34 in the backs thereof complementary to the lugs 31 of the tongue 29, and permitting either groove 32 and 33 to interlock with the tongue 29 of an adjacent block.

Openings 36 are preferably formed through the face portions 22 and 23 adjacent the corners thereof, as shown in Figures 3 and 4. The openings 36 are symmetrically positioned so that the holes of one block will register with those of other blocks placed in normal interlocking engagement therewith. The openings provide means for applying nails or other securing means for securing the blocks together or to an adjacent anchorage, such as a building frame.

The block shown in Figure 2 of the drawings is designated in general by the numeral 21a, and is the same as the block 21 shown in Figure 1, except that the tongues and grooves upon the face portions 22 and 23 are transposed. That is, the tongue 26 of Figure 1 is transferred from the face portion 22 to a corresponding position upon the face portion 23, where it is designated by the numeral 26a. In like manner, the groove 27 of Figure 1 is placed in corresponding position upon face portion 22 of Figure 2, where it is designated by the numeral 27a. This transposing of the tongues and grooves 26 and 27 obtains in effect right and left-hand forms of the block which are preferably placed alternately in a building construction.

The blocks may be assembled in interlocking engagement in various relationships by inserting the tongues of each block into engagement with selected grooves of adjacent blocks. In Figure 5 of the drawings I have illustrated a preferred manner of assembling the blocks to produce a wall construction having a thickness of three blocks. In this construction, blocks 21 and 21a are placed alternately in rows and tiers in the order indicated numerically in the diagram, Figure 6.

In the preferred arrangement, a block 21 is first placed in the position shown at the lower left-hand corner of Figure 5. A block 21a is then placed in position No. 2, with its tongue 26a interlocking with the groove 27 of the No. 1 block. Another block 21 is then placed with its tongue 26 interlocking with the groove 27a of the No. 2 block, to complete the first row of the bottom tier of the wall structure. The number of blocks in each row may be increased or decreased to produce a wall of desired thickness.

A second row of blocks is laid in the bottom tier adjacent the first row, with the blocks in interlocking engagement. In the second row, a block 21a is placed in position No. 4, immediately in back of block No. 1, with its tongue 28 engag-

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ing the groove 33 of the No. 1 block. A block 21 is then placed in position No. 5 in back of block No. 2. The No. 5 block is moved into position by advancing the tongue 26 horizontally along the groove 27a of the No. 4 block until the ends of the face portions 22 and 23 abut against the adjacent ends of the corresponding face portions of the No. 2 block. During this movement the tongue 29 of the No. 5 block enters the groove 32 of the No. 2 block; and the complementary lugs 31 and recesses 34 of said tongue and recess interengage to lock the two blocks against relative movement in a vertical direction. The interengagement of the tongue 26 and groove 27a of course prevents relative movement of the No. 4 and No. 5 blocks in a vertical direction. A block 21a is next placed in position No. 6 to complete the row, the tongue 28 being moved downwardly in the groove 33 of the No. 3 block coincidentally with a downward movement of the tongue 26a into the groove 27 of the No. 5 block.

A row of blocks is next laid in the second tier to fill the positions Nos. 7, 8 and 9. The No. 7 block is of the form 21a, and is placed with its tongue 29 seating in the top groove 32 of the No. 1 block, and with the lugs 31 received within the complementary recesses 34. The No. 8 block is moved horizontally into position with its tongue 26 entering the groove 27a of the No. 7 block and its tongue 28 entering the groove 33 of the No. 2 block. The No. 9 block is placed in position by moving the tongue 26a downwardly along the groove 27 of the No. 8 block until the tongue 29 and lugs 31 thereof seat within the groove 32 and recesses 34 respectively of the No. 3 block.

Blocks are next placed in positions Nos. 10, 11 and 12 to form a third row in the bottom tier of blocks, the blocks being laid in order in interlocking engagement with adjacent blocks in a manner corresponding to that above described. A second row is then similarly placed in the positions Nos. 13, 14 and 15 of the second tier; followed by a row placed in corresponding manner in the positions Nos. 16, 17 and 18 of a third tier.

Further rows are placed in corresponding manner, the blocks of the successive rows being placed in the same order, and the rows being placed in successive tiers in corresponding order. The interengagement of each tongue upon each block with a complementary groove upon an adjacent block keys each block to the adjacent blocks and obtains an effective interlock for preventing relative movement of each individual block in any direction.

The exposed surfaces may be filled, or surfaced in any way; or, if desired, the faces which are exposed in a completed structure may be formed without the tongue or groove which would normally be carried thereby, so as to produce a smooth surface in the finished construction. For some purposes, the tongues and grooves on one pair of opposing faces may be omitted where an interlock in the third direction is not required.

For most purposes, the progressive interlock obtained between each block and adjacent blocks in the adjacent rows and tiers of blocks is sufficient to hold the blocks in assembled relation. If desired, a suitable binder, such as cement, may be applied between adjacent blocks to bond the same together. A watertight seal between adjacent surfaces may be obtained in this way if desired, thereby making the blocks effective in structures designed to retain or to exclude water. Securing elements of any suitable character, such as wires, nails, screws or rivets, may be applied

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through the registering openings 36 of adjacent blocks for fastening the blocks together, or for securing them to a frame or other anchorage.

Various other methods may be used for assembling the blocks into an interengaging relationship. For example, blocks of a single type, for example either 21 or 21a, may be interengaged end to end and top to bottom in a structure having the thickness of one block, with the blocks of successive tiers staggered to lock the blocks against relative vertical displacement. If greater thickness is desired, one or more additional blocks may be placed adjacent the first tiers with the tongues and grooves of adjacent faces in interlocking engagement. In such a structure blocks of the form having the tongues and grooves transposed with respect to the blocks of the first thickness are used for the blocks of the second thickness.

Figures 7 and 8 illustrate a modified form of block construction in which the face portions 22 and 23 are not offset with respect to each other, as they are in the structures illustrated in Figures 1 and 2; and the tongues and grooves carried by those face portions of the blocks of Figures 1 and 2 are omitted. If desired the blocks may be made hollow, as shown in Figure 7. The tongues 28 and 29, and the grooves 32 and 33 are the same as the correspondingly numbered parts of the block shown in Figure 1.

The blocks of Figure 7 are preferably assembled to form a wall of single thickness as shown in Figure 8. The interengagement of the tongues and grooves of adjacent blocks is indicated in dotted lines. In the illustrated arrangement, the blocks in successive tiers are staggered with respect to the blocks of the adjacent tiers. Alternate blocks of each row are positioned with their tongues 29 and lugs 31 engaging the grooves 32 and recesses 34 of the block at one side thereof; and with their tongues 28 spanning the juncture of the two underlying blocks in the next lower tier, in interlocking engagement with the groove 32 of one of the underlying blocks and groove 33 of the other. The intervening blocks of each row are positioned with their tongues 28 in interlocking engagement with the grooves 33 of adjacent blocks in the row.

For example, considering the block at the center of Figure 8, the tongue 29 is positioned within the groove 32 of the block upon its left side; and its groove 33 is engaged by the tongue 28 of the block upon its right side. The tongue 28 of said center block is engaged partly within the groove 33 of the block at its lower left hand corner, and partly within the groove 32 of the block at its lower right hand corner. The interengagement of the lugs 31 and recesses 34, and of the tongues 28 with the grooves 32 and/or 33 effectually interlocks the blocks in assembled relation.

In the arrangements illustrated in Figure 8, as in the arrangement shown in Figure 5, the blocks are progressively interlocked so that they can be disassembled only by removing them one at a time in reverse order. A filler or cement may be applied to fill the clearance between the interlocking tongues and grooves and bond the blocks together.

I claim:

1. A building block comprising an essentially hexahedral body having tongues upon one of each pair of opposite sides and grooves upon the sides opposite said tongues, two of the tongues being T-shaped and the third having lugs spaced along

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the outer edge thereof, the grooves being complementary to the T-shaped tongues and two of the grooves having recesses in the backs thereof complementary to the lugs of the third tongue whereby the tongues of one block are interchangeably engageable with grooves of another block for locking the blocks against relative movement in at least two of the directions defined by their respective lengths, widths and heights, including the directions which are normal to the surfaces on which the T-shaped tongues are positioned.

2. A building block comprising an essentially hexahedral body having front and back face portions diagonally offset with respect to each other and to a center portion of the body intermediate the face portions, a T-shaped tongue extending in one direction across one of the faces, a groove complementary to the tongue extending across the other face at right angles to the tongue, a second T-shaped tongue upon a side of the body, a third tongue having parallel sides upon another side of the body adjacent the second T-shaped tongue, and grooves upon the sides opposite the second and third tongues having portions complementary to corresponding portions of each of said tongues whereby the grooves of one block may interchangeably engage the tongues of the adjacent blocks.

3. A building block comprising an essentially hexahedral body having front and back face portions diagonally offset with respect to each other and to a center portion of the body intermediate the face portions, a T-shaped tongue extending in one direction across one of the faces, a groove complementary to the tongue extending across the other face at right angles to the tongue, a second T-shaped tongue upon a side of the body, a third tongue having parallel sides and provided with lugs spaced along its outer face upon another side of the body adjacent the second T-shaped tongue, and grooves upon the sides opposite the second and third tongues shaped as the complement of the T-shaped tongues and having recesses in the back thereof complementary to the lugs upon the third tongue, the second and third tongues being interchangeably engageable with the corresponding opposing grooves of another block for locking adjacent blocks against relative movement in a direction normal to the surface on which the second T-shaped tongue is positioned.

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