Dec. 12, 1961 H. SUNUKJIAN 3,012,377

INTERENGAGING WALL UNITS

Filed Feb. 18, 1958 3 Sheets-Sheet 1

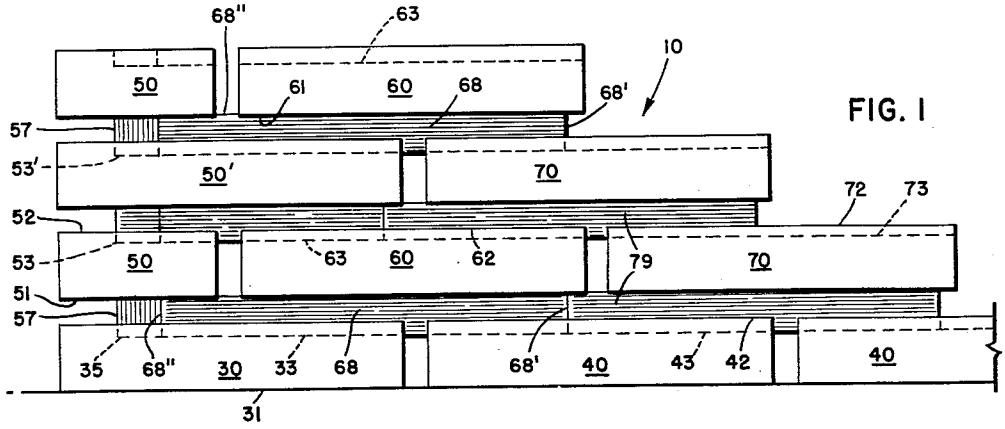


FIG. 1

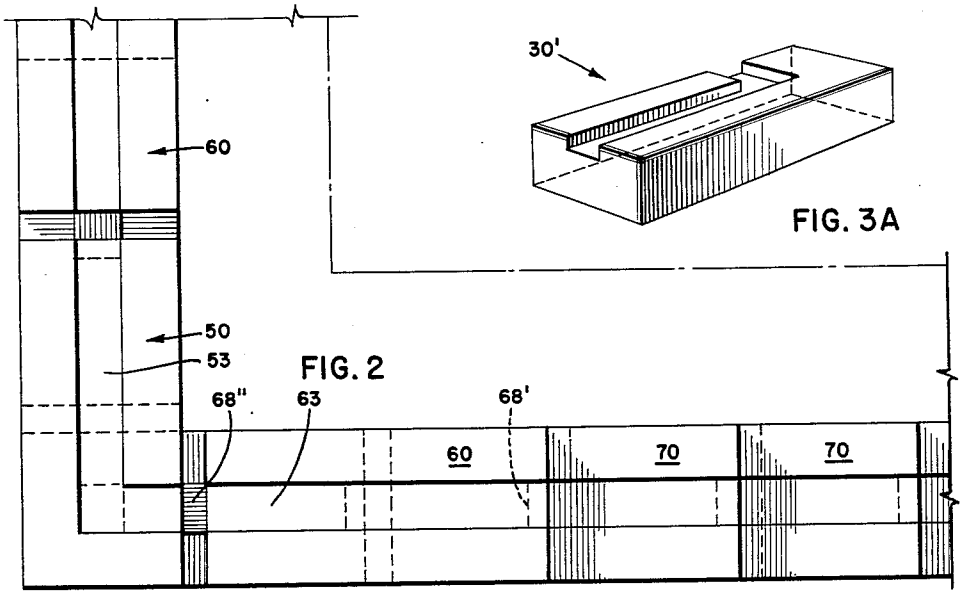


FIG. 2

FIG. 3A

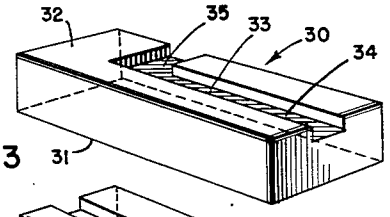


FIG. 3

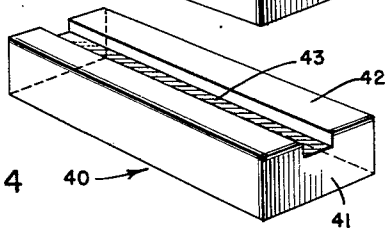


FIG. 4

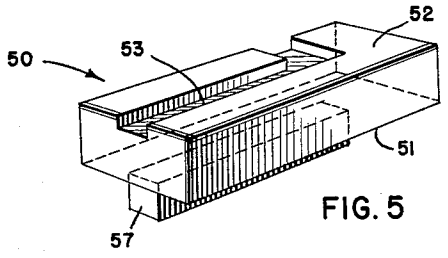


FIG. 5

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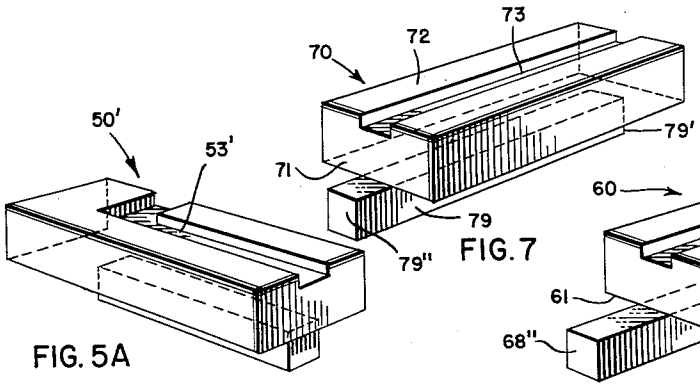


FIG. 5A

FIG. 7

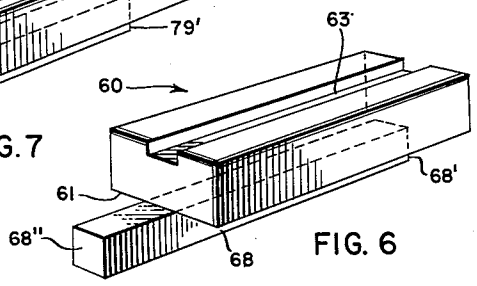


FIG. 6

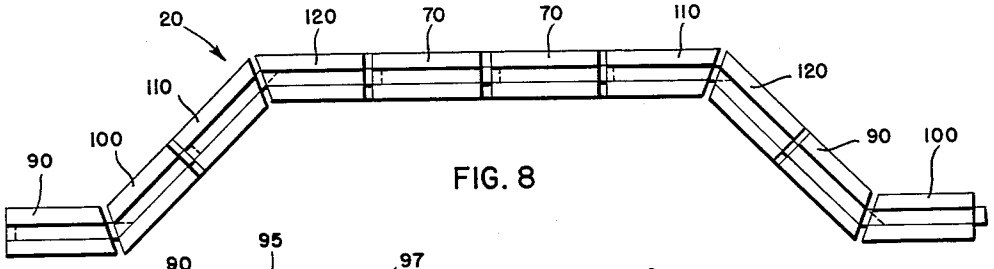


FIG. 8

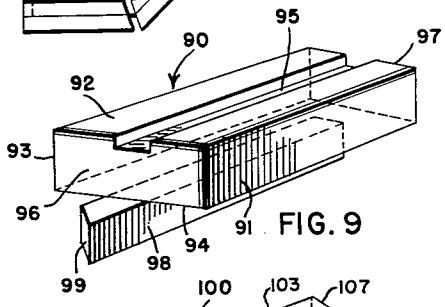


FIG. 9

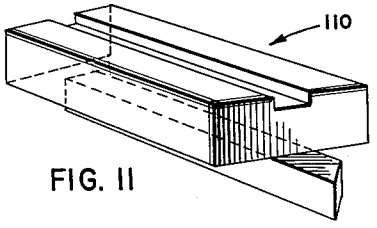


FIG. 11

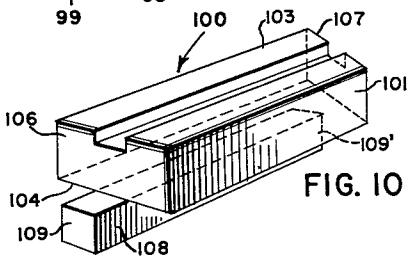


FIG. 10

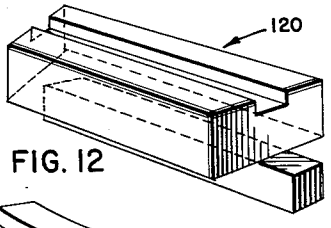


FIG. 12

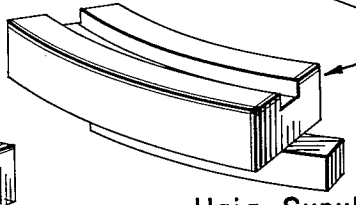


FIG. 14

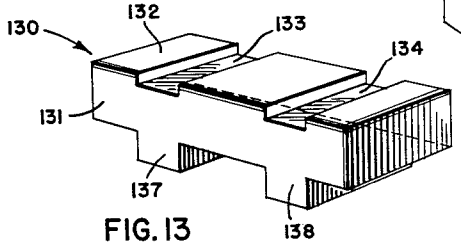


FIG. 13

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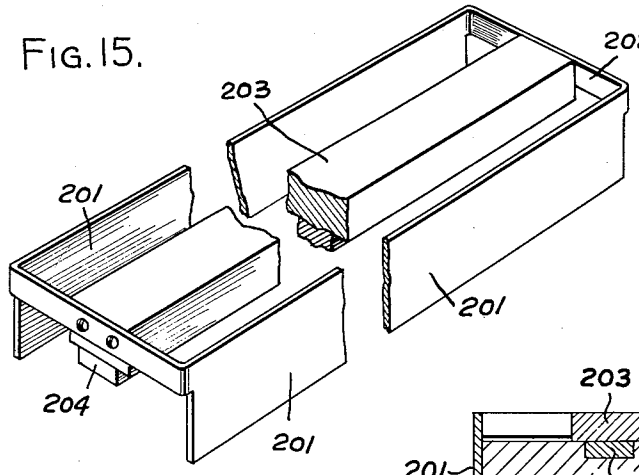
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FIG. 15.



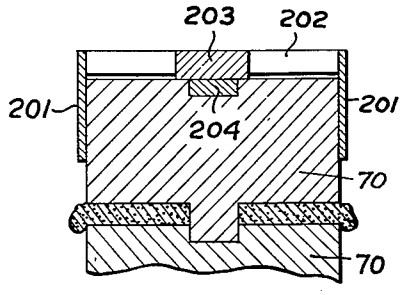


FIG. 16.

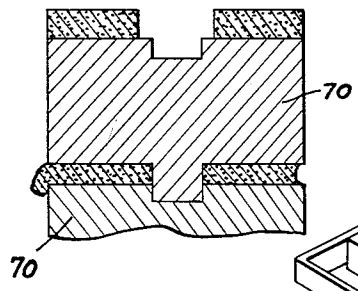


FIG. 17.

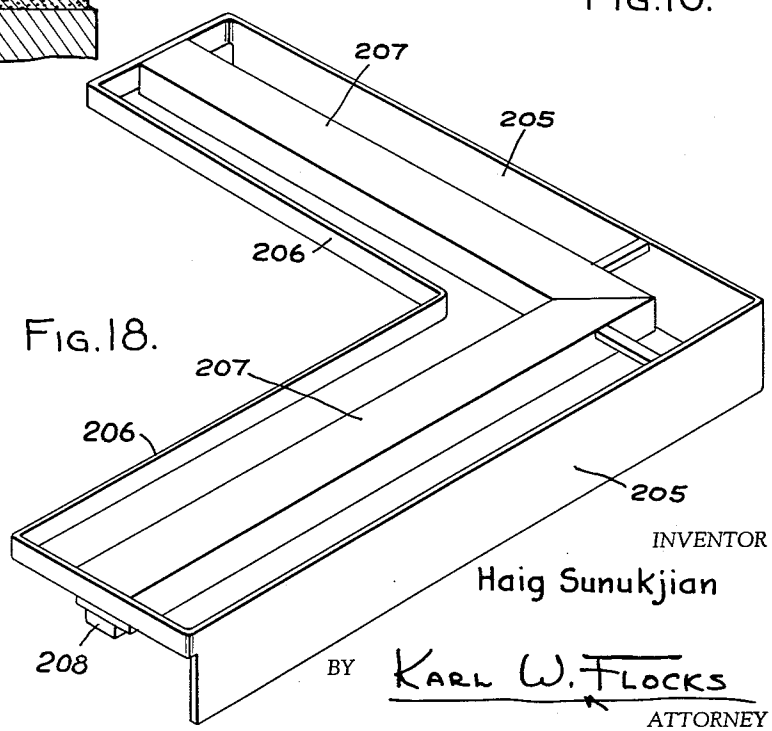


FIG. 18.

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United States Patent Office 3,012,377 Patented Dec. 12, 1961

3,012,377

INTERENGAGING WALL UNITS

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Filed Feb. 18, 1958, Ser. No. 715,959
9 Claims. (Cl. 50—184)

The present invention relates to interengaging wall units and more particularly to interengaging wall units having simple grooves and projections to afford locking engagement between courses and between adjacent units.

Generally speaking, there are in widespread use today two types of building blocks or units: one type is the ordinary clay brick which has a parallelopipedal body, each surface of which is a rectangle and all surfaces are either parallel or at right angles to each other. The other type of building block or unit commonly used is the so-called cement block or cinder block, this block having only two planular, uninterrupted faces, two of the other faces of this block have grooves therein, and the remaining two faces are penetrated by openings which extend entirely through the block.

While these bricks and blocks have been widely used, they are not readily usable by unskilled persons, it being most difficult to one not familiar with the art of bricklaying to place the proper amount of mortar on the surfaces of the bricks or cinder blocks to result in a wall which is true, i.e., a wall which is planular and in which each course of brick or cinder block is level. Thus, those not skilled with the art of laying bricks often find that they have constructed a wall which is undulating, or in which there is a rise or fall in a course of bricks or blocks.

There are known in the prior art building block configurations which attempt to overcome the above-noted difficulties by providing for interengagement between the bricks. However, the prior art attempts to solve the problem have resulted in building blocks which either interfitted with each other so closely that no mortar was deemed necessary, or else they resulted in blocks of unique shape modified on many surfaces of the generally parallelepipedal configuration and thus necessitating much new equipment in the manufacture and handling of this type of building unit. Those bricks which fitted together so that no mortar was deemed necessary were objectionable on the basis that many building codes require the use of mortar between bricks, so that such building units were completely incompatible with existing building codes. In addition, prior art attempts failed to provide a simply shaped building unit which provided for interengagement between an upper and a lower course, and also between adjacent blocks in the same course.

An object of the present invention is to provide a building block having interengagement between an upper and a lower course and also interengagement between adjacent blocks in the same course.

Another object of the present invention is the provision of a building block from which a wall may be constructed having interengagement between an upper and a lower course as well as between adjacent blocks in a particular course, and in addition provide space between adjoining courses and block for mortar.

Still another object of the present invention is to provide a building block with which a wall can be constructed having interengagement between adjacent courses and adjacent blocks in a course, and in which the building blocks themselves will be of extremely simple construction.

Yet another object of the present invention is the provision of a system of building blocks enabling the construction of a wall by unskilled persons.

A further object of the present invention is to provide a system of building blocks permitting the construction of a wall by unskilled persons which will generally comply with local building codes.

A further object of the present invention is the provision of a system of building blocks which will permit the construction of a wall by unskilled persons the wall having interengagement between courses and blocks in the same course and a predetermined mortar joint spacing.

Yet another object of the present invention is to provide a system of building blocks with which a person unskilled in the art of laying bricks may construct relatively complicated walls, such as those useful in connection with bay windows.

Other objects and the nature and advantages of the instant invention will be apparent from the following description taken in conjunction with the accompanying drawings wherein:

FIG. 1 is an elevational view of a wall constructed of the building blocks in accordance with the present invention.

FIG. 2 is a plan view of the wall of FIG. 1.

FIGS. 3 and 3A are perspective views of base course corner blocks.

FIG. 4 is a perspective view of a base course intermediate block.

FIGS. 5 and 5A are perspective views of intermediate course corner blocks.

FIG. 6 is a perspective view of an intermediate block adjacent a corner block.

FIG. 7 is a perspective view of an intermediate block.

FIG. 8 is a plan view of a wall for a bay window using another embodiment of the blocks of the invention.

FIGS. 9 to 12 are perspective views of the blocks used in the wall of FIG. 8.

FIG. 13 is a perspective view of a block used for a belt course.

FIG. 14 is a perspective view of a block having a curved longitudinal axis.

FIG. 15 is a view in perspective of my new mortar bed form with built-in mask for masking the interlocking grooves in the bricks or blocks.

FIG. 16 is a vertical sectional view through a fragment of a vertical wall with mortar bed form shown in FIG. 15 in position ready to receive mortar.

FIG. 17 is a view similar to FIG. 16 with the mortar bed form removed after the mortar has been applied with the use thereof.

FIG. 18 is a view in perspective of another mortar bed form specifically adapted for use at corners.

Referring now to the drawings, wherein like reference characters are used to designate like or corresponding parts throughout the several views, there is shown in FIGS. 1 and 2 an L-shaped wall **10** made up of a number of different building blocks in accordance with the present invention. In the base or bottom course of building blocks, there may be seen a corner block **30** and intermediate blocks **40**. In the second course there is a corner block **50**, an intermediate block **60** and another intermediate block **70**, the intermediate blocks differing in a manner to be described in detail hereinafter. In the third course there may be seen a corner block **50'** and an intermediate block **70** and in the top course a corner block **50** and an intermediate block **60**. It will be noted that mortar joints or spaces are provided between adjoining blocks in the same course as well as blocks in adjoining courses.

In FIG. 3 there may be seen the base course corner block **30** which is, like all of the other blocks, generally parallelepipedal. Block **30** has a body with a planular bottom surface **31** and a top surface **32** having an L-

shaped groove 33 therein, one arm 34 of the groove 33 extending from one end of block 30 and the arm 35 of the groove 33 extending from a side of the block 30. In FIG. 3A, there is shown a block 30' which is a mirror image of the block 30 shown in FIG. 3. In FIGS. 1 and 2, block 30' has not been shown, as no such block is necessary for the corner construction described. However, it will be understood that a block 30' will be used at the opposite corner on the same wall to that shown in FIGS. 1 and 2.

FIG. 4 shows the block 40 that is used as an intermediate block in the base course, and the block 40 may be seen to have on the upper surface 42 a groove 43 extending longitudinally from end to end of block 40, the bottom surface 41 being planular.

In FIG. 5 there is shown an intermediate course corner block 50 having a projection 57 depending from the bottom surface 51 of the body and extending longitudinally thereof. Projection 57 is shorter than the body of block 50, and the ends of projection 57 are spaced inwardly of the ends of the body of block 50. In the upper surface 52 of block 50 there is an L-shaped groove 53 which is identical with the groove in block 30' shown in FIG. 3A, and is the mirror image of the L-shaped groove 33 of the block 30.

The depth of the projection 57 is greater than the depth of the groove 53 by a sufficient amount to permit an adequate charge of mortar to be placed between adjoining upper and lower blocks. In addition, it will be noted that the projection 57 and groove 53 are complementary in size and shape (preferably square as shown), so that when one block is placed on another block the projection 57 of the upper block will extend into and snugly fit the groove 53 of the lower block.

Although reference has herein been made to the size, shape and relative depth of the groove and projection of block 50, the same relationship obtains for all of the blocks herein described and shown.

In FIG. 5A there is shown an intermediate course corner block 50' which is the same as the block 50 shown in FIG. 5, except that the groove 53' thereof is the mirror image of the groove 53 of block 50.

In FIG. 6 there is shown an intermediate course intermediate block 60 which is used adjacent the corner block 50. Block 60 has depending from the bottom surface 61 of the body thereof a projection 68 which extends longitudinally of the body of block 60. One end 68' of the projection 68 is spaced inwardly from the adjacent end of the body of block 60 and the other 68'' of the projection 68 extends beyond the adjacent end of the block 60. As may be clearly seen in FIG. 1, the end 68'' of projection 68 butts against the side of projection 57 of block 50. Thus, it may be seen from FIG. 1 that projection 68 extends sufficiently far to make contact with the side of projection 57 and also to provide sufficient space between blocks 50 and 60 to provide for a charge of mortar to be placed therebetween. Block 60 may also be seen to have a longitudinally extending groove 63 in the upper surface 62 thereof and extending from end to end of the block 60.

In FIG. 7 there is shown an intermediate course intermediate block 70, and this block is the one which would most often be used in the construction of a wall. Block 70 has a projection 79 depending from the lower surface 71 of the body thereof. Projection 79 extends longitudinally of the body of block 70 and has the end 79' thereof spaced inwardly of the adjacent end of the block 70 and has the end 79'' thereof extending beyond the other end of block 70 a distance just sufficient to establish a mortar joint between the block 70 and another adjacent thereto. Thus, it may be seen that in this most-used block 70, the projection 79 extends beyond the adjacent end of block 70 to a distance greater than the space between the end 79' of projection 79 and the adjacent end of the block 70, and this greater distance is that normally used as the space of a mortar joint. Block 70 has in the upper surface 72 of the body thereof the usual groove 73 extending from one end to the other longitudinally of the block.

To erect a wall such as the wall 10 with the blocks above described, it is first necessary to prepare an L-shaped level surface for the wall to rest upon. The block 30 is then placed at the corner position of the wall with the groove 33 so positioned that the arm 34 thereof extends laterally along the desired arm of the L-shaped wall. It will be noted that block 30 will rest solidly upon the prepared surface as there is no projection depending from the bottom surface 31 thereof. A block 40 is then placed to the right of block 30 (as shown in FIGS. 1 and 2), and spaced therefrom by a suitable gauge, after which mortar may be placed in the space between the blocks, alternatively block 40 may be "buttered" in the usual manner. In like manner, the second block 40 may be placed upon the prepared surface, and other blocks 40 placed at right angles to the block 30 to form the other arm of the corner of the wall. For the second course, a block 50 is placed with the longitudinal axis thereof at right angles to the longitudinal axis of block 30. When this is done, the projection 57 of block 50 will enter into the shorter arm of the groove 33 in block 30 and will also enter the groove 43 of a block 40. A block 60 is next placed in position as shown, with the end 68'' of its projection 68 butting against the side of projection 57 of block 50 and entering into the grooves 33 and 43 of the blocks 30 and 40 respectively. Because of the length of projection 68, block 60 will be spaced from the side of block 50 to provide a place for mortar. Thereafter, block 70 is placed in position on the blocks 40 with the projection 79 having its end 79'' butting against the end 68' of the projection 68 of block 60. For the third course, an intermediate course corner block 50' is used as the first block, and construction proceeds in the usual manner. Of course, construction may also proceed from right to left, in FIG. 1, instead of left to right as above described.

It will be understood in particular that the inwardly spacing of one end of the projections from the adjacent end of the block are so related to the spacing of the other end of the projection from the other end of the block that the blocks will all fit together to give the construction shown, which provides adequate mortar space between adjacent blocks in the same course. Also, as above noted, the depth of the projections and grooves are so related that mortar space is provided between the courses.

It will also be understood that although the above discussion has been premised upon the construction of a wall using mortar, in certain instances the use of mortar may be undesirable and in such cases the blocks above described and shown may be used to give a completely strong and sturdy wall without mortar.

In FIG. 8 there is shown a part of a wall which is placed, generally speaking, in an arch and such a wall is particularly useful in the construction of a wall underlying a bay window. In the wall 20 shown in FIG. 8, there are five kinds of blocks used, blocks 70, 90, 100, 110 and 120. As shown in FIG. 9, the body of block 90 has four surfaces which are parallel to the longitudinal axis of the block, these surfaces being designated 91, 92, 93 and 94.

Surface 92 has a longitudinally extending groove 95 therein. The end 96 of block 90 is at a non-perpendicular angle to the longitudinal axis of block 90, and the end 97 is perpendicular thereto, whereby it may be seen that surface 93 is longer than surface 91. A projection 98 depends from the bottom surface 94 of block 90 and said projection 98 is longer than block 90 and has one end thereof inwardly of the end 97, this end being generally parallel to the end 97. Projection 98 extends beyond end 96 and has the end 99 thereof at a non-perpendicular angle to the longitudinal axis of block 90 and forms a convergent angle with end 96 of block 90.

In FIG. 10, the block **100** is shown, and has a body with an end **106** perpendicular to the longitudinal axis and a projection **108** depending from surface **104**, projection **108** having an end **109** parallel to end **106**; this end of block **100** is similar to the corresponding end of block **70**. End **107** is at a non-perpendicular angle to the longitudinal axis and the surface **103** is longer than surface **101**. The end **109'** of projection **108** lies inwardly of end **107** and is at a non-perpendicular angle to the longitudinal axis of block **100** and forms a convergent angle with end **107** of block **100**.

The block **110** of FIG. 11 and block **120** of FIG. 12 are similar to the blocks **90** and **100**, respectively, except that in each case the non-perpendicular block and projection ends are canted respectively in the opposite directions; thus, as viewed in FIG. 6, the blocks **90** and **100** are used to form a concave face in the bay window wall **20** and the blocks **110** and **120** are used to form a convex face therein.

The construction of a bay window wall as shown in FIG. 8 will be readily understood, and therefore will not be described in detail. Suffice it to say that the projection extends into the pocket formed at the opposite end of the adjacent block **100** and provides for the usual mortar space between these blocks; in addition, the above-noted angled ends of projections and blocks insure proper angles to the blocks, and thus of the wall **20** itself.

In FIG. 13 there is shown a block **130** which is used for a belt course where two parallel walls in accordance with FIGS. 1 and 2 are constructed. Block **130** has grooves **133** and **134** transversely thereof in the upper surface **132**, and has projections **137** and **138** depending from the lower surface **131** thereof.

In FIG. 14 there is shown a block **140** having a curved longitudinal axis, and this block may be used where it is desired to construct a round wall or building, as for example a silo.

Referring to FIGS. 15, 16 and 17, the mortar bed form **200** omprises a rectangular frame having parallel tall side plates **201** which fit over the sides of the bricks or blocks **70**, short end plates **202** which are adapted to rest on top of the bricks or blocks **70**, and a centrally located masking member **203** which overlies and fully covers the grooves in the tops of the bricks or blocks **70**, and a narrower depending element **204** for registration with the interior of said grooves.

Referring to FIG. 18, the mortar bed form adapted to be used for the corner of a wall comprises an angular frame including tall side plates **205** and **206** arranged at right angles to each other and a generally **W**-shaped short plate connected to the outer ends of said tall plates **205**, the interior legs of the **W** being parallel to the corresponding plates **205** and the outer legs of the **W** being perpendicular thereto. A centrally located **L**-shaped masking member **207** is supported by said frame so as to completely overlay and cover the grooves in upper surfaces of the bricks and blocks forming a corner of the wall. Depending from said masking member **207** is a correspondingly **L**-shaped narrower element **208** which registers with the interior of said grooves.

It will be apparent that applicant has provided a number of simple and economical blocks which go to make up a system by which one having a minimum of skill in the art of bricklaying can construct a true wall using mortar or leaving the spaces provided for mortar blank, as desired.

It will be obvious to those skilled in the art that various changes may be made without departing from the spirit of the invention and therefore the invention is not limited to what is shown in the drawings and described in the specification but only as indicated in the appended claims.

What is claimed is:

1. In a masonry wall, a base course comprising a rectangular corner block having an **L**-shaped groove in its upper surface comprising a longitudinal leg opening into one end of the block and a lateral leg inwardly of the other end of said block and opening into one side of the block and intersecting said longitudinal leg, said base course including a first rectangular, intermediate block longitudinally aligned with said corner block and having a longitudinal groove in the upper surface and through the ends thereof in alignment with the longitudinal leg of said corner block, said base course including a second rectangular, intermediate block at right angles to said corner block and having a longitudinal groove in the upper surface and through the ends thereof in alignment with said lateral leg of said corner block, a second course comprising a second rectangular corner block having an **L**-shaped groove in its upper surface including a longitudinal leg and lateral leg comprising a mirror image of said **L**-shaped groove of said first course corner block, an integral longitudinal projection on the undersurface of said second course corner block having ends spaced inwardly from the ends of said block, said second course corner block overlying said first course corner block with the projection disposed in the lateral leg of said first course corner block with the lateral leg of said second course corner block in parallel relation above the longitudinal leg of said first course corner block, said second course including rectangular, second course intermediate blocks each comprising a longitudinal groove in the upper surface extending through the opposite ends thereof, said second course intermediate blocks including an integral longitudinal projection on the undersurface thereof, said projection including one end portion spaced inwardly of an adjacent end of the block and another end portion of said projection extending beyond the other end of said block, one of said second course intermediate blocks being in longitudinal alignment with the second course corner block with the longitudinal groove in the upper surface of said second course intermediate block being in alignment with the longitudinal leg of said second course corner block and the extending end portion of the projection on said second course intermediate block disposed beneath said second course corner block and abutting the longitudinal projection thereon, another second course intermediate block overlying said first corner block of said first course with the longitudinal groove in the upper surface thereof in alignment with the lateral leg of the second corner block, the depending projection of said another second course intermediate block abuttingly engaging at right angles the depending projection of said second course corner block, and a third course comprising a third course rectangular corner block including an **L**-shaped groove in the upper surface thereof similar to that in the first corner block of said first course and a projection depending from the undersurface thereof similar to that in the second corner block of said second course, said third course corner block being disposed parallel to said first course corner block with the **L**-shaped grooves in overlying parallel relation, and intermediate blocks in said third course identical with the intermediate blocks of said second course, said intermediate blocks of said third course each having the longitudinal groove in the upper surfaces in alignment with the longitudinal and lateral grooves of said third course corner block, the depending projection of one of the intermediate blocks in said third course being in alignment with the longitudinal projection of said third course corner block, and the depending projection of another intermediate block of said third course abutting at right angles the depending projection of said third course corner block.

2. The structure of claim 1, said depending projections forming mortar joints between adjacent ends of said blocks.

3. The structure of claim 1, said groove being of a lesser depth than the depending projections to form

mortar joints between adjacent upper and lower surfaces of said blocks.

4. The structure of claim 3, said groove and projections being of substantially the same width whereby the mortar joint is formed only on opposite sides of said projections exposed between said overlying courses.

5. A building block comprising an elongated body including mutually parallel upper and lower surfaces intersected by mutualy parallel side surfaces, said body including two planar end surfaces, one end surface being normal to said upper, lower and side surfaces, the other end surface being normal to said upper and lower surfaces and extending angularly between said side surfaces whereby one side surface is longer than the other, a longitudinal groove in the upper surface of said body extending into and intersecting said end surfaces, a projection depending from said lower surface and extending longitudinally in alignment with said longitudinal groove, said projection including one end extending beyond an adjacent end surface of said body and another end disposed inwardly of an adjacent end surface of said body, one of the ends of said projection being parallel to the end surface of said body normal to said upper, lower and side surfaces, the other end of said projection being normal to the lower surface of said body and being disposed at an angle opposite to that at which the angular end surface of the body is disposed, said angular end surfaces of said body and projection being disposed at opposite angles with respect to a plane normal to the longitudinal axis of said block and parallel to the parallel end surfaces of said projection and said body.

6. The structure of claim 5; said projection having a rectangular cross section and depending a greater distance from the lower surface of said body than the depth of said groove in said upper surface, said groove having a rectangular cross section for receiving the depending projection of another building block therein.

7. The structure of claim 5; the angular end surface of said projection extending beyond the angular end surface of said body.

8. The structure of claim 5; the angular end surface of said projection being disposed inwardly of the angular end surface of said body.

9. A masonry wall joint comprising a first building block including a body having mutually parallel upper and lower surfaces intersected by mutually parallel side surfaces, said body including end surfaces normal to said upper and lower surfaces, one of said end surfaces being disposed in angular relation to a plane normal to said upper, lower and side surfaces, said block including a longitudinal groove in the upper surface thereof opening into said end surfaces, and an integral projection depending from said lower surface of said block in longitudinal alignment with said longitudinal groove, said projection including one end portion extending beyond said one angular end surface of said body and including a terminal end surface normal to said lower body surface and disposed at an angle with respect to said normal plane and opposite that at which the angular end surface of said body is disposed, and a second building block including a body of the same configuration as said first block body, an integral projection depending from the lower surface of said second block body and including an end surface normal to the lower surface thereof and disposed inwardly of the one angular end surface of said second block body and at an opposite angle with respect to the angular end surface of said second block body, the angular end surfaces of said first and second block bodies being in confronting relation and the inwardly disposed angular end surface of the projection on said second block body abutting a side portion of the projection extending beyond the angular end surface of said first block body.

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