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(54) **DRYWALL CONSTRUCTION METHOD AND APPARATUS**

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(57) **ABSTRACT**

Means for and a method of erecting block drywall wherein the blocks, or bricks, are, for the most part, rectangular in appearance and each provided, on their undersides, with a longitudinal and centrally oriented cavity extending the full length of each block and leaving longitudinal, horizontal,

contact areas on each side of the cavity for seating on an underlying block in a wall construction, the upper sides of each block being provided with a horizontal and centrally located protuberance extending the full length of the block, there being longitudinal seating areas along the top side of each block situated to cooperate with the underside seating areas on each side of a similar block seated thereon, the cavities and protuberances of the blocks constituting symmetrically opposed mating surfaces facilitating the staking of blocks, one upon another and slideable longitudinally with respect to each other in a vertical drywall construction, the blocks of each row may be provided with centrally located and horizontally and longitudinally spaced holes extending vertically and completely through each block, the longitudinal spacing of the holes being such that when blocks are stacked in standard staggered offset layer relationship in an erected wall the holes are coincident from row to row accommodating the insertion of locating pins fixing the longitudinal displacement of blocks of one row to each of vertically adjacent rows in a completed wall construction, in order to provide greater wall stability space may be provided between the protuberances and the undersides of cavities of blocks seated thereon to accommodate a belt, running lengthwise of a row of blocks, the belt being provided with holes coinciding with the coincident holes of stacked horizontal rows to allow the insertion of locating pins extending vertically from centrally of one block to a position centrally of a vertically adjacent block mated therewith, the pins each being of a length approximating the height of a block.

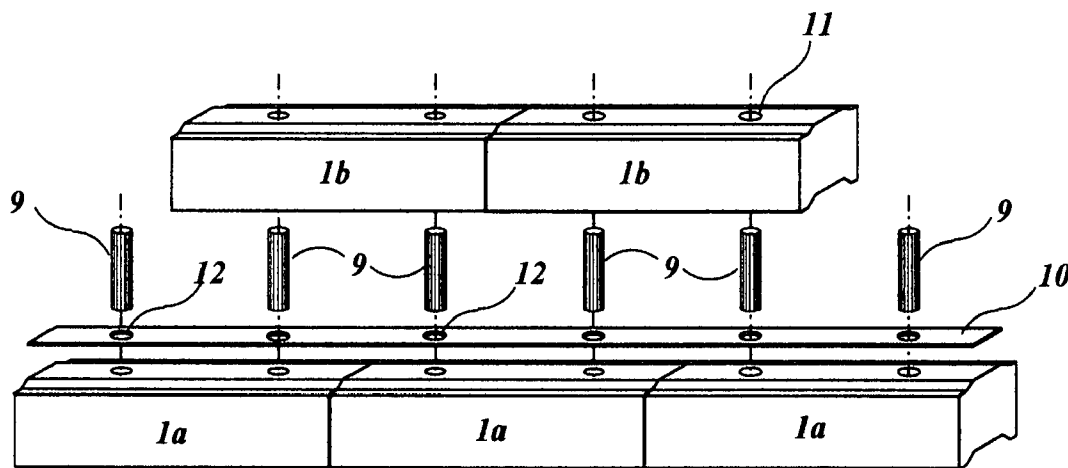


Fig 1

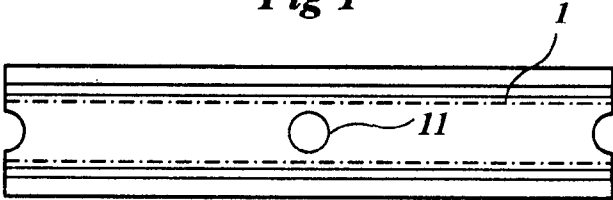


Fig 2

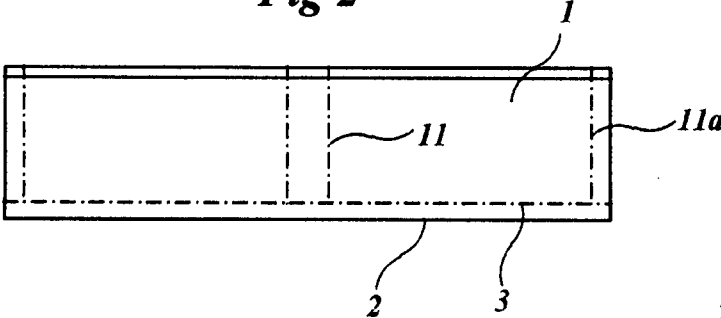


Fig 3

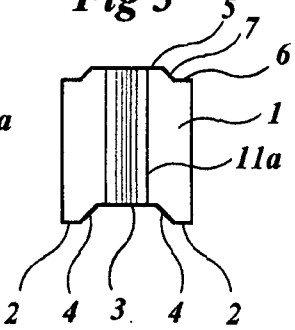


Fig 4

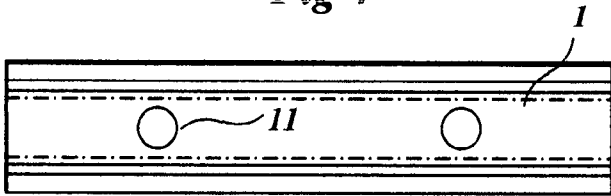


Fig 5

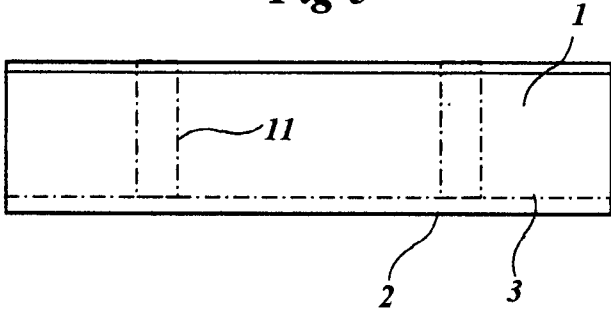


Fig 6

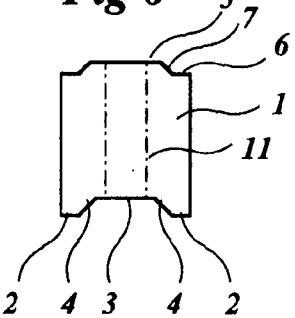


Fig 7

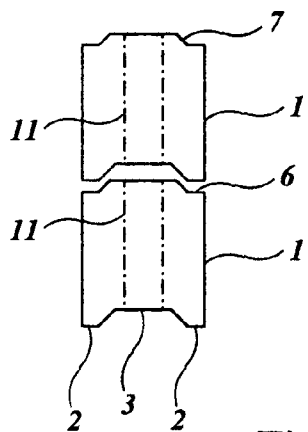


Fig 8

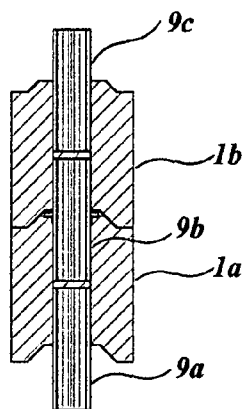


Fig 9

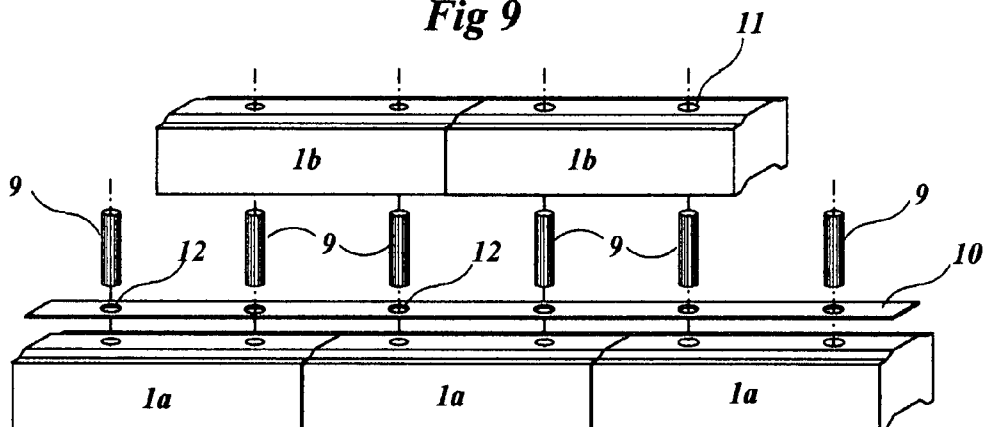
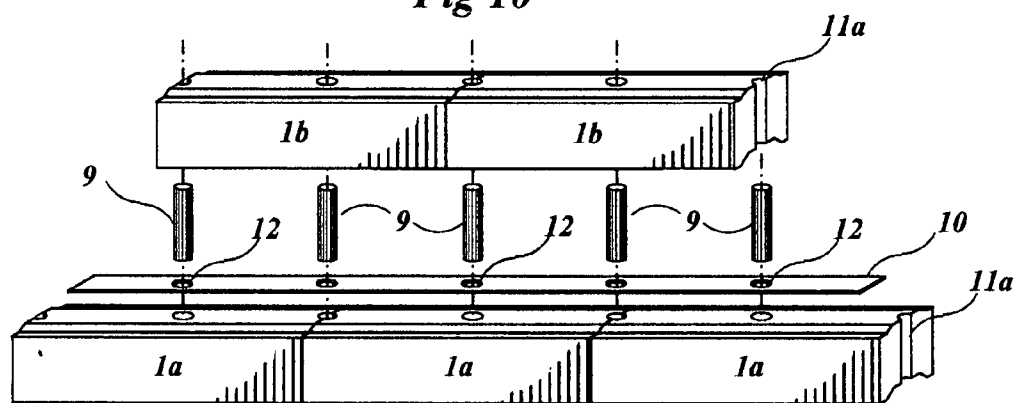


Fig 10



DRYWALL CONSTRUCTION METHOD AND APPARATUS

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] This invention relates to block-type drywall construction and, to a drywall construction and the method for carrying it out. The constructed wall is comprised by vertically stacked horizontal rows of blocks designed to be, essentially, self supporting, easily constructed and economical insofar as material and labour costs are concerned.

[0003] 2. Brief Discussion of the Related

[0004] Drywall construction is used generally for low height walls and takes the form of a wall constructed of longitudinal rows, the rows of unitary building units or blocks which are stacked vertically to provide a self supporting wall structure, a securing cement, or mortar, being dispensed with.

[0005] U.S. Pat. No. 5,048,250—Ellias, issued Sep. 17, 1991, is directed to a building block per se which is designed for stacking in a drywall structure. The blocks are provided with vertically oriented holes, which in stacking are vertically aligned through row layers, through which rods may be passed, after the wall is constructed, to provide reinforcement of the structure.

[0006] U.S. Pat. No. 4,426,815—Brown, issued Jan. 26, 1984, is directed to a mortarless concrete building block provided with key means locking one layer of blocks to the underlying or overlying next layer. Here again reinforcing rods may be used for added strength.

[0007] U.S. Pat. No. 2,199,112—O'Leary, issued Apr. 30, 1940, is directed to an insulated building block having, in one instance, a simulated brick construction surface being applied to the face of the block.

[0008] U.S. Pat. No. 2,006,462—Kupper, issued Jul. 2, 1935, is directed to a miniature building system wherein individual building blocks are mounted on and secured by vertical rods passing consecutively through layers of the blocks.

SUMMARY OF THE INVENTION

[0009] The present invention is directed to a drywall construction method and means facilitating ease of construction while, at the same time, providing a sturdy structure. The construction block, according to the invention, is similar to a standard size brick modified somewhat to accommodate the features and aims of the present invention.

[0010] The construction block, upon which the present description is primarily based, is in the form of an elongated box provided with a top surface exhibiting a dome-like longitudinal and central configuration holes and a symmetrically opposed, longitudinally disposed under surface. In addition a series of longitudinally displaced vertically oriented holes may be provided passing vertically through the block with the holes symmetrically situated so that the holes of vertically stacked and offset block rows will align or coincide with the holes of similar and vertically and offset stacked rows. In the case of a block provided with three such holes, the centre hole of one block will coincide vertically

with the butting ends of the blocks in the vertically stacked and horizontally offset rows immediately above and below that particular center hole.

[0011] An additional feature of the invention may be the use of short pin members, for instance in the form of tubes, which are dimensioned to fit snugly into the holes in the blocks. The length of the pin member is preferably substantially equal to the vertical height of a block and is inserted into the hole of a block to the approximate extent of half its length, the other half of the pin member acting as a locating pin upon which the block of a subsequent horizontal row of blocks is laid. The pin members act as means for securing the block against lateral and horizontal displacement with respect to each other in one row and with respect the blocks of adjacent vertically stacked rows of blocks. In addition, the pins, in view of their snug fits in the holes of the blocks, provide an additional degree of vertical stability. When the pins are tubular in form, vertical reinforcing rods may be readily inserted through a number of laid rows of blocks to increase the vertical rigidity of the wall.

[0012] The ends, or the abutting surfaces, of the blocks in a horizontal layer can be provided with vertically oriented cutouts corresponding to half a hole which, in conjunction with an abutting brick, form a composite vertical hole which is utilized by inserted pin means to align and maintain the alignment of abutting block ends in a horizontal layer. In addition, the inserted pin acts as a means of securing the block rows against lateral and longitudinal movement between the blocks and a vertically adjacent layer of blocks. Alternately, the vertical holes supplied in the block may be displaced symmetrically with respect to the ends of the blocks so that the holes in one row of blocks are coincident with holes in a vertically adjacent row of blocks, the coincidence being maintained throughout the, vertically stacked, horizontal rows of blocks in a completed wall.

[0013] This type of construction reduces labour costs in the building of walls, is economical and, in view of the fact there are no rigid joints the wall may be subjected to considerable vibrational stress without consequent cracking and deterioration thus rendering the construction useful for earthquake prone areas.

[0014] According to the invention, the blocks are each provided, on their upper surfaces, with a raised, longitudinally oriented, laterally central, portion preferably extending for the full length of the block and having, preferably, a flat, longitudinally oriented, upper surface area. The lower surfaces of each block is provided with symmetrically opposed and contoured, longitudinally oriented, cutout which mates with the upper surface of a similar block positioned therebeneath in a vertically adjacent row of blocks to form an interlock resisting relative lateral movement between adjacent rows of blocks in a constructed wall. The blocks of a row are longitudinally moveable with respect to the blocks of a vertically adjacent and mating row of blocks. In order to prevent longitudinal movement of blocks in one horizontal row with respect to the blocks in vertically adjacent row of blocks, pins, mating with the holes in the blocks or the composite holes between the ends of abutting blocks, may be inserted in the holes of blocks in a row leaving extended ends which insert into coincident holes of a vertically adjacent row of blocks to limit the longitudinal movement of one layer of blocks with respect to an vertically adjacent, mating, row of blocks.

[0015] In order to facilitate construction, the pins are preferable, in overall length, to be slightly less than the distance between vertical centers of adjacent rows of blocks. Although it is possible to use longer pins difficulties may arise in assembling multiple row walls when the pins are a greater length than the preferred length. Furthermore, the repair of a wall can be greatly impeded when the pins employed in construction are greater in length than the preferred length.

[0016] In order to provide greater wall integrity, a longitudinally oriented belt may be inserted between the vertically stacked rows of blocks and enclosed between the mating upper and lower surfaces of blocks to assist in assuring longitudinal alignment of blocks in each row and the row vertically adjacent thereto. In order to accommodate such a belt the upper raised surface of a block can be designed to be proud of the lower surface of the cutout of a mated block so that an internal space is provided between the mating surfaces to accommodate the belt.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] FIGS. 1, 2 and 3 show a top view, a side view and a cross-sectional view respectively of a building block according to the present invention,

[0018] FIGS. 4, 5 and 6. show a top view, a side view and a cross-sectional view respectively of a modified version of a building block according to the present invention,

[0019] FIG. 7 shows in end view, two building blocks, in exploded view, vertically stacked and oriented as, they would be situated in a vertical wall construction of two vertically stacked rows of blocks,

[0020] FIG. 8 shows two blocks, as illustrated in FIG. 7, in cross-sectional and unexploded view with locating pins inserted in coincident vertical holes of the blocks rows. FIG. 8 also shows a belt 9b, better shown in FIGS. 9 and 10, inserted between the blocks, the belt running longitudinally of the blocks as shown in FIGS. 9 and 10,

[0021] FIG. 9 shows an exploded view of a wall construction based on the use of blocks according to FIGS. 1, 2 and 3 and

[0022] FIG. 10 shows an exploded view of a wall construction based on the use of blocks according to FIGS. 4, 5 and 6.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0023] FIGS. 1, 2 and 3 show a building block 1, for instance a baked clay or concrete block, according to the invention and adapted for use in the construction of a vertical, mortarless, wall (drywall). The block 1, as shown in FIGS. 1 and 2, is, for the most part, an elongated rectangular box form which, as is illustrated best by FIG. 3, provided with a longitudinal, transversally central, lower cavity 3 which extends linearly for the full length of the block, the cavity 3, preferably, being terminated, on each lateral side, with extreme lower flat, portions 2 corresponding to the lower surface of the block and an inner and upper flat surface 3 connected to the lower flat portions 2 by linearly sloping sides 4.

[0024] On the upper surface of the block 1 a symmetrically opposed, raised and linearly elongated surface protuberance 5 is provided and proportioned to mate with the underside cavity 3 of a further correspondingly formed block, stacked vertically thereon, so that the flat portions 2 of the corresponding block rest on the outer, top, flat portions 6 corresponding to the top surface of the block thus providing firm seating and mating surfaces. It is preferable that the flat surface 3 of the cavity of each block is raised sufficiently, with respect to the surfaces 2, to ensure secure stable seating of the flat surfaces 2 and 6. The top surface 5 of the protuberance is joined to the flat portions 6 by sloping surfaces 7. The sloping surfaces 7 may be, alternately, be substantially vertical but such an orientation may add difficulty in the stacking of layers of blocks.

[0025] It should be noted here that the contours of the mating cavities, protrusions and surfaces can be varied with respect to what has been described herein. It is essential however, in vertical drywall construction, designed to be essentially self supporting, that the mating surfaces, when assembled, automatically provide for substantially true vertical alignment between vertically stacked, horizontal, rows of blocks.

[0026] It should be noted here that the surface 3 of the lower cavity of a block can be raised sufficiently, with respect to flat portions 2 to make room for a longitudinal belt to be inserted between two layers of blocks as will be referred to in greater detail with respect to FIGS. 9 and 10.

[0027] The blocks 1 can each be provided with vertical holes 11, laterally central of the block and extending fully from the lower surface 3 to the upper surface 5 of each block. The holes 11 may be located longitudinally central of each block and at each end thereof, the end holes 11a being in the form of a vertical cutout forming one limiting surface of a composite vertical hole, the vertical hole being completed by a similar block end abutted thereagainst in a horizontal row of blocks. As shown in FIG. 4 the vertical holes can be located midway between the ends and centers of each block. Other holes arrangements can be used so long as the holes of vertically and horizontal conventionally staggered layers of blocks are coincident. Such coincident arrangements being shown in FIGS. 9 and 10.

[0028] FIG. 7 illustrates an exploded stacked arrangement of two blocks 1, 1 wherein the opposed mating surfaces 2 and 6 are spaced to show the contour of the mating surfaces more clearly. FIG. 8 shows sectional end views of two fully seated blocks 1a, 1b with three stabilizing pins 9a, 9b, 9c inserted into the coincident holes 11 of the two blocks, one pin 9a having a half-pin length part projecting below block 1a, a pin 9b extending from midway of block 1a to midway of block 1b and the third pin 9c extending from midway of block 1b to project there above for half its length. The pins 9 stabilize the vertically stacked rows of blocks against lateral toppling and against relative longitudinal movement with respect to each other.

[0029] FIG. 9 shows an exploded view two longitudinal rows of blocks 1a and 1b in stacked vertical arrangement and longitudinally staggered relationship wherein the blocks are each provided with holes 11 located midway between the longitudinal centers and the ends of each block 1 thus facilitating the respective longitudinal staggering of vertically adjacent horizontal rows of blocks. In this configura-

tion a belt 10, provided with a series of longitudinally spaced holes 12, coinciding with coincident block holes, is placed between the vertically stacked rows of blocks and accommodated in the space allowed therefore between the upper faces 5 of the lower row and the lower cavity faces 3 of the upper layer of blocks. Pins 9, when assembled, will extend from approximately midway of the lower layer to substantially midway of the upper layer of blocks. This arrangement of rows of blocks is, of course, repeated vertically throughout the constructed wall.

[0030] FIG. 10 shows an arrangement similar to that described in regard to FIG. 9, differing only in the location of holes 11 in the blocks and the accommodating and coinciding holes 12 in belt 10. In this arrangement every other horizontally located hole 11a, in each horizontal row of blocks, is a composite hole formed between the abutting ends of blocks in that row.

[0031] Although preferred embodiments of the invention have been described further variations and modifications may be made without departing from the spirit and scope of the invention which is defined in the claims appended hereto.

I claim:

1. Means for use in constructing a mortarless block wall utilizing blocks laid in rows stacked vertically wherein the blocks are each provided with substantially elongated-rectangular configurations, each block being provided with, on its underside, a laterally central cavity extending for the full length of the block and leaving flat longitudinal side areas for accommodating the seating of one block on another, each block being further provided with an upper side protuberance, extending for the full length of the block, symmetrically opposed to the lower cavity of the block to mate with the cavity of a similar block seated thereon, there being flat seating areas provided on each longitudinal side of the protuberance of each block to cooperate with the flat longitudinal underside areas of a similar block seated thereon.

2. Means for use in constructing a mortarless block wall, as claimed in claim 1, wherein each block is provided with holes, passing vertically therethrough, located centrally of the block and spaced to coincide with holes in a block seated thereon and offset longitudinally in staggered block wall construction and pins, adapted to be insertable into the holes and of a length approximating the height of one block.

3. Means for constructing a mortarless block wall, as claimed in claim 2 wherein an elongated belt is provided with holes spaced longitudinally of the belt and spaced to coincide with the vertical holes provided in the blocks, when the blocks are laid in the staggered layer format, for securing the belt and block layers against horizontal displacement with respect to each other, there being a space provided

between each protuberance and mating cavity to accommodate the insertion of the belt running longitudinally of a row of blocks.

4. Means for use in constructing a mortarless block wall utilizing blocks laid in rows stacked vertically wherein the blocks are each provided with substantially elongated-rectangular configurations, each block being provided with, on its underside, a laterally central cavity extending for the full length of the block and leaving flat longitudinal side areas for accommodating the seating of one block on another, each block being further provided with an upper side protuberance, extending for the full length of the block, symmetrically opposed to the lower cavity of the block to mate with the cavity of a similar block when seated thereon, there being flat seating areas provided on each longitudinal side of the protuberance of each block to cooperate with the flat longitudinal underside areas of a similar block seated thereon.

5. The means claimed in claim 4 wherein a clearance space is provided between the upper side of a protuberance and the lower side of a cavity, seated thereover, to accommodate the insertion of an elongated belt between layers of mated blocks.

6. Means for constructing a mortarless block wall, as claimed in claim 5, wherein the belt is provided with holes longitudinally spaced to coincide with vertical holes provided through each block when the blocks are laid in abutting relationship in an elongated row and pins adapted to be insertable into the coincident holes to limit the longitudinal and lateral movement of the belt with respect to blocks in a row in a constructed wall.

7. Means for constructing a mortarless block wall as claimed in claim 5 wherein the length of the pins is approximately equal to the height of a block.

8. Block for drywall construction wherein the blocks are, for the most part, rectangular boxlike in appearance and each provided, on their underside, with a longitudinal and centrally oriented cavity extending the full length of each block and leaving longitudinal, horizontal, contact areas on each side of the cavity for seating on an underlying block in a wall construction, the upper sides of each block being provided with a horizontal and centrally located protuberance extending the full length of the block there being longitudinal seating areas along the top side of each block situated to cooperate with the underside seating areas on each side of a similar block seated thereon, the cavities and protuberances of the blocks constituting symmetrically opposed mating surfaces facilitating the staking of blocks, one upon another and slideable longitudinally with respect to each other in a vertical drywall construction,

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