Sept. 5, 1939. C. B. ROBBINS 2,172,053

BUILDING BLOCK

Filed Nov. 8, 1938

Fig. 1.

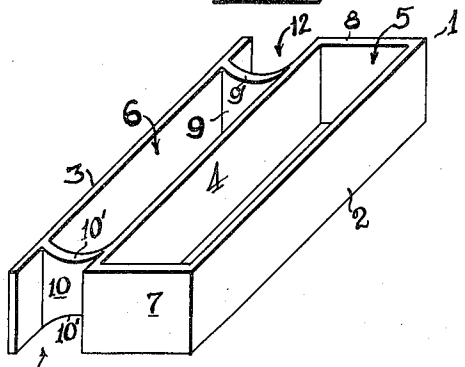


Fig. 3.

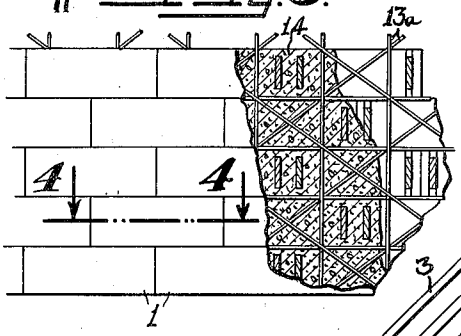


Fig. 4.

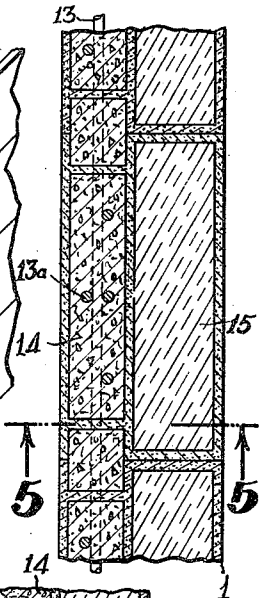


Fig. 2.

Fig. 5.

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BUILDING BLOCK

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5 Claims. (Cl. 72—30)

This invention relates to improvements in concrete building blocks.

The conventional concrete building blocks now commonly used in the fabrication of wall structures are designed primarily to provide left-in-place forms adapted to hold vertical columns of thermal insulating material. Wall structures made with concrete building blocks of this particular type have several disadvantages, the most objectionable of which is that their construction or design does not provide for adequate internal reenforcing. It is well known that a mass of concrete cast as a unitary structure is considerably stronger than an equal mass made up of a number of pre-cast units, and since it is not possible with the concrete building blocks now commonly used to construct a wall having a unitary and integrally formed concrete structure throughout, the load-bearing properties of such a wall are not adequate to meet certain building requirements.

Overcoming these disadvantages, I have provided an improved building block of novel shape and construction having internal spaces for holding thermal insulating material as well as concrete and steel reenforcements.

Another object of my invention is to provide an improved rectangular-shaped building block having an open top and an open bottom and provided internally with cells or spaces for holding a section of thermal insulating material.

Another object of my invention is to provide an improved building block having a construction, which in association with other similar blocks forming a wall structure, provides reenforcing means adapted to both reenforce the wall and at the same time seal the horizontal and vertical joints ordinarily located between the blocks.

Other and further objects of my invention will be pointed out hereinafter, indicated in the appended claims, or will be obvious to one skilled in the art upon an understanding of the present disclosure. For the purpose of this application I have elected to show herein certain forms and details of building blocks and wall structures representative of my invention; it is to be understood, however, that the embodiments of my invention herein shown and described are for purposes of illustration only, and that therefore they are not to be regarded as exhaustive of the variations of the invention, nor are they to be given interpretations such as might have the effect of limiting the claims, short of the true and most comprehensive scope of the invention in the art.

In the accompanying drawing:

Fig. 1 is a perspective view of a building block embodying my invention;

Fig. 2 is a perspective view of a partly fabricated wall made from a number of blocks illustrated in Fig. 1;

Fig. 3 is a side elevation of a wall constructed in accordance with my invention, showing a portion thereof broken away and in vertical section;

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 3;

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 4.

Referring particularly to Figs. 1 to 5 inclusive, the numeral 1 designates a concrete building block of general rectangular shape, open at its top and bottom, and having its two longest sides 2 and 3 separated one from another by a longitudinally disposed parallel partition 4. The partition divides the interior of the block into two cells or spaces 5 and 6 which are approximately of the same width, but not necessarily so. The opposite ends of the cell 5 are enclosed by end members 7 and 8 while the opposite ends of the cell 6 are enclosed by end members 9 and 10. The end members 7, 8, 9 and 10 are preferably disposed in parallel relation to one another. The combined lengths of the end spaces 11 and 12 and the cell 6 are substantially the same as that of the cell 5. When two of the blocks are positioned end to end there is provided behind the contiguous portions of the ends 7 and 8 an enclosed space (made up of the end space 11 of one block and the end space 12 of the other), which is adapted to contain a body of concrete that seals the vertical joint between the two blocks. So as to provide for the integral horizontal connection of the bodies of cement normally located in the end spaces 11 and 12 with the body of cement filling the cell 6, the end members 9 and 10 are each, at their top and bottom edges, curved inwardly toward each other as at 9′ and 10′ respectively.

In fabricating a wall structure in accordance with my invention, the blocks are arranged in overlapping formation one above the other with the extreme ends of one block positioned midway between the ends of a block located directly beneath it, as illustrated in Figs. 2 and 3. The dimensions of the cells 6 of the blocks being such that their widths are considerably less than their lengths, enables certain of the steel rods 13a to assume diagonal or slanting positions, thereby

providing a reenforcing structure which possesses improved load-carrying properties. To further provide a thoroughly reenforced structure, steel rods 13 are positioned in horizontal positions resting upon the curved end members 9 and 10, as shown in Fig. 2. After the rods 13 and 13a are placed as aforesaid, the interconnected cells and spaces 6, 11, and 12 throughout the height, length and breadth of the wall are filled with concrete or other suitable reenforcing material. When the concrete has hardened in the usual manner, a unitary and integrally connected concrete structure 14 reenforced by horizontal steel rods 13 and by vertical and diagonal steel rods 13a is provided throughout the length, breadth and height of the wall. The interconnected spaces or cells 5 of the blocks are next filled with a suitable thermal insulating material 15.

Since the concrete structure 14 is connected in every direction throughout the length, breadth and height of the wall, thereby adequately reenforcing the latter, the sides, ends and partition of the blocks may be of considerably less thickness than is the case with concrete building blocks of the kind now commonly used. After the wall has been completed the vertical as well as the horizontal joints between the blocks are effectively sealed by the body of concrete material 14 which fills the connected spaces 11 and 12 and the cells 6.

The building blocks constituting the present invention may be made from either concrete or other suitable material.

Having described my invention, what I claim is:

1. A substantially rectangular building block, open at its top and bottom and having a longitudinal partition disposed in parallel relation to the longest sides of the block, the said partition dividing the interior of the block into two longitudinal cells, each of said cells being enclosed by end members, and the end members of one of the cells each being disposed inwardly at its upper and lower edges to permit a quantity of plastic material located in the said last mentioned cell to extend over its said end members and become integrally connected to a part of said plastic material located in areas adjacent the ends of said last mentioned cell.

2. A substantially rectangular building block, open at its top and bottom and having a longitudinal partition disposed in parallel relation to the longest sides of the block, the said partition dividing the interior of the block into two longitudinal cells, the said cells each being enclosed by end members, and the end members of one cell each being cut away at at least one of its free edges, whereby a space is provided at points where the said end members are cut away for the positioning of a connecting portion of a body of plastic material located in the last mentioned cell and in areas adjoining the ends of the latter.

3. A substantially rectangular building block, open at its top and bottom and having a longitudinal partition disposed in parallel relation to the longest sides of the block, the said partition dividing the interior of the block into two longitudinal cells, the said block having its opposite ends so deformed as to make one cell shorter than the other cell, the end walls of the shorter of the two cells being disposed inwardly from the end walls of the other cell, and the end walls of the shorter cell being cut away at at least one of its free edges to provide a space for the positioning of a connecting portion of a body of plastic material normally located in the shorter of the two cells and in areas adjoining the ends of the latter.

4. A substantially rectangular building block open at its top and bottom and having a longitudinal partition disposed in parallel relation to the longest sides of the block, the said partition dividing the interior of the block into two longitudinal cells, the said block having its opposite ends disposed so that the ends of one cell are positioned inwardly from the ends of the other cell, whereby cells of different lengths are provided, and whereby end spaces are provided adjacent the opposite ends of the shorter of the two cells, the opposite ends of the shorter cell being each cut away at its top and bottom edges to provide spaces for the positioning of a connecting portion of a body of plastic material normally located in the said shorter cell and in the spaces adjoining the latter's ends.

5. In a masonry wall structure, a plurality of substantially rectangular buliding blocks, each open at its top and bottom and each being divided interiorly into two longitudinally disposed cells by a longitudinal partition disposed in substantially parallel relation to the long sides of the block, the said blocks being arranged in horizontal rows with one adjacent row superimposed upon another row and the blocks of adjacent rows arranged in overlapping positions so that the opposite ends of one block are centrally positioned with respect to the two adjacent blocks supporting it, the said blocks of each row being arranged with a portion of their ends contiguous to one another, and each of the blocks having their contiguous ends of such an inwardly disposed irregular shape that the ends of one cell are poistioned inwardly from the ends of the other cell, whereby cells of different lengths are provided, and whereby end spaces are provided adjacent the opposite ends of the shorter of the two cells, the opposite ends of the shorter cell being each cut away at at least its top or bottom edge to provide a space for the positioning of a connecting portion of a body of concrete material normally located in the said shorter cell and in the end spaces adjacent the latter's ends, the said end spaces of adjacent blocks being so disposed that when filled with said body of concrete material the vertical joints of the contiguous blocks are sealed, the said blocks when so arranged in horizontal superimposed rows providing two vertical material-holding forms each comprising a series of interconnected cells, the said body of concrete material being located in the particular form having the said end spaces and the shorter cells, and a body of insulating material located in the other form.

CARL B. ROBBINS.