

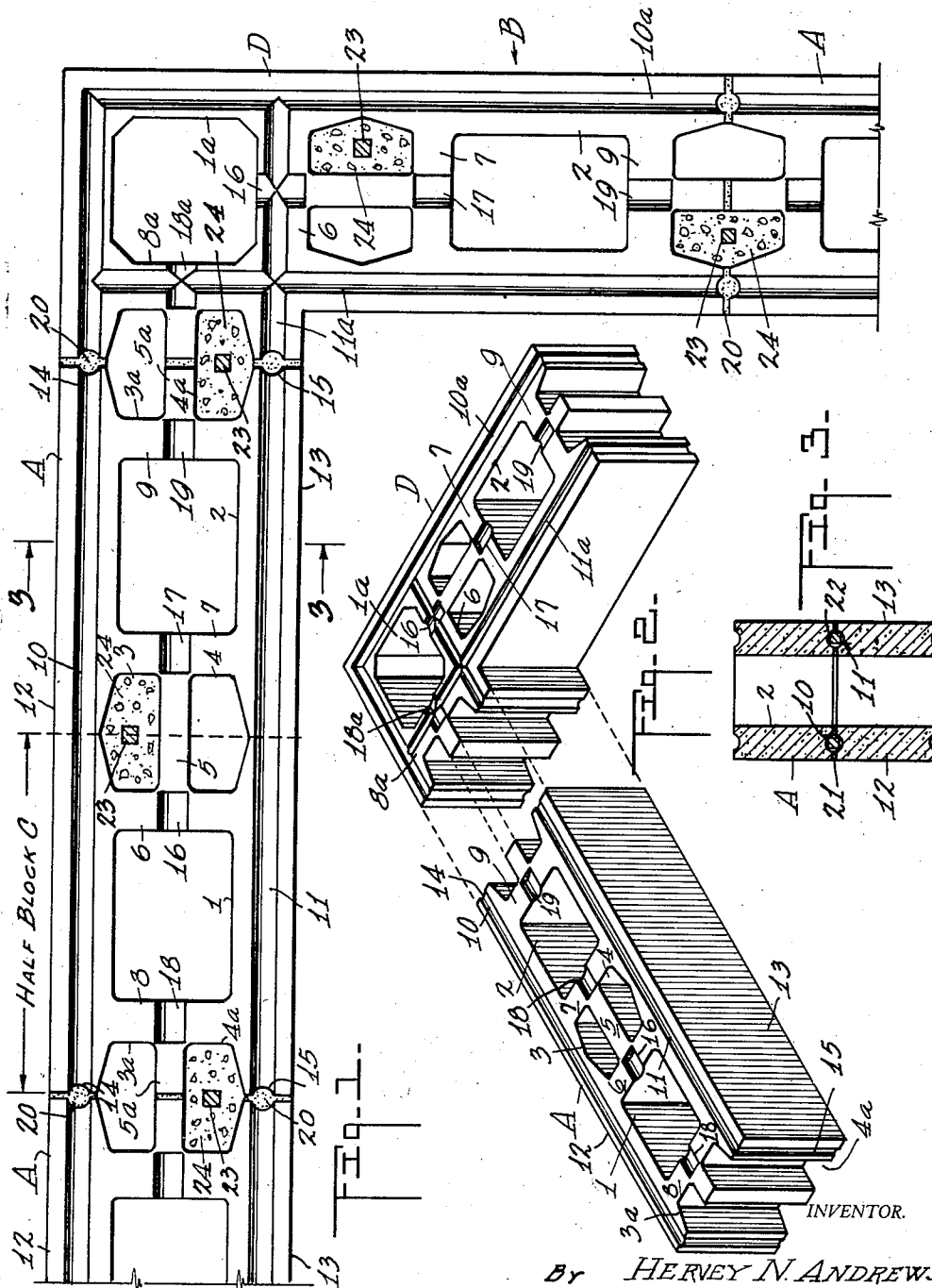
Feb. 23, 1943.

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2,311,628

HOLLOW CONCRETE BUILDING BLOCK

Filed April 13, 1940



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UNITED STATES PATENT OFFICE

2,311,628

HOLLOW CONCRETE BUILDING BLOCK

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Application April 13, 1940, Serial No. 329,455

6 Claims. (Cl. 72-30)

The present invention relates to improvements in a hollow concrete building block, and it consists of the combinations, constructions and arrangement of parts hereinafter described and claimed.

An object of my invention is to provide a hollow concrete building block that has a large cell structure with a double cell in the middle of the block, the two cells thereof being separated from each other by a centrally disposed and longitudinally extending partition. The block also has a half double cell at each end with longitudinally extending partitions separating adjacent half cells. This construction permits the breaking of joints when building a wall with the blocks, and the maintenance of vertical cell structure throughout the height of the wall.

When the blocks are placed end to end, the half double cells at the ends of the blocks will cause the opposed cells of adjacent blocks to face each other and form a complete double cell, similar in construction to the double cell in the center of the block. These double cells will extend throughout the height of the wall and only one cell in each group will be filled with reinforced concrete to provide studs that are coextensive with the height of the wall. The double cells are so arranged that one cell is disposed near the outer surface of the wall, while the other is arranged near the inner wall surface. Alternate groups of cells have their reinforced concrete studs disposed near the outer wall surface and the remaining group have their reinforced concrete studs presented near the inner surface of the wall. This results in the studs being arranged in staggered relation.

A further object of the invention is the breaking of the mortar joint between the blocks so that the moisture cannot pass from the outer surface of the wall to the inner surface. Novel means are provided for this purpose, and include the cell structure of the block for providing a gap between the inner and outer surfaces of the block, the gap being coextensive with the length of the block. This gap will either completely break the mortar joint between the sides of the blocks, or will allow sufficient space to prevent the compacting of the mortar at least at one point between the block sides. The portion of the mortar that is not compacted will permit any moisture reaching it by capillary attraction, to evaporate and thus prevent the moisture from passing entirely through the block width.

The smaller double cells permit reinforced concrete studs to be formed at a saving of material

and the adjacent small cell is left open for providing the necessary insulating space to prevent condensation of moisture on the inner face of the wall. Even the half double cells at the ends of the blocks provide for a broken mortar joint, thus eliminating the possibility of moisture passing through the wall along the joint.

Other objects and advantages will appear as the specification continues and the novel features of the invention will be particularly set forth in the appended claims.

My invention is illustrated in the accompanying drawing, forming part of this application, in which:

Figure 1 is a plan view of a plurality of the blocks, which are shown as forming a wall with a corner therein;

Figure 2 an isometric view of a regular block and a corner block; and

Figure 3 a sectional view taken along the line 3-3 of Figure 1.

While I have shown only the preferred form of my invention, it should be understood that various changes or modifications may be made within the scope of the annexed claims without departing from the spirit of the invention.

In carrying out my invention, I will first describe the regular block A in detail, and will then show the manner in which a wall B is constructed therefrom. The block A is preferably cast from concrete or the like, and has two large vertically-extending cells or air spaces 1 and 2 disposed near the ends of the block. The block A has a double cell disposed between the large cells 1 and 2. The two vertically-extending cells 3 and 4 comprise the double cell. A longitudinally-extending web 5 separates the two small cells 3 and 4 from each other, and transversely-extending webs 6 and 7 separate the double cells from the large cells 1 and 2, respectively.

The ends of the block have half double cells 3a and 4a formed therein. Transverse webs 8 and 9 separate the half cells 3a and 4a from the large cells 1 and 2. These half cells are separated from each other by the half web 5a extending in a longitudinal direction and are only one-half the length of the web 5.

The top and bottom faces of the block have longitudinally-extending grooves 10 and 11 that extend between the outer ends of the block along that portion of the block defined by the outer and inner sides 12 and 13, respectively of the block and the cells 1, 2, 3, 3a, 4 and 4a (see Figure 1). These grooves may be of any desired shape, and I have shown them as being semi-circular in

cross-section (see Figure 3). The ends of the blocks have vertically-extending grooves 14 and 15, which interconnect the top and bottom grooves 10 and 11, respectively.

The webs 6 and 7 have recesses 16 and 17 that are aligned with the web 5. The recesses 16 and 17 are provided in both the top and bottom surfaces of the block. In a like manner, the webs 8 and 9 have recesses 18 and 19 disposed in alignment with the half webs 5a and are provided in the top of the block. It will be noted that the recesses 16 and 17 open into the cells 1 and 2 and terminate just short of the cells 3 and 4, while the recesses 18 and 19 open into the other ends of the same cells 1 and 2 and terminate just short of the half cells 3a and 4a.

In building the wall B from the blocks A, a course is laid and the adjacent ends of the blocks in the course have mortar applied thereto. The blocks are placed a slight distance apart so as to accommodate the mortar 20 therebetween. The top surface of the course of blocks is now bedded with mortar 21 (see Figure 3) and the next course is applied, the blocks in the upper course breaking joint with the blocks in the lower course in the same manner as in laying bricks.

It will be observed that the two ends of adjacent blocks in the second course will form small cells by the combining of the two adjacent groups of half cells, and the completed small cells thus formed will be in vertical alignment with the small cells 3 and 4 of the block disposed therebeneath. In this way the completed wall will have large cells 1 and 2 extending vertically throughout the height of the wall, and these large cells will be separated from each other by small double cells 3 and 4, which cooperate with end cells 3a and 4a aligned therewith.

The mortar bedding 21 between the two courses of blocks will be compressed by the blocks and this bedding will have openings therein equal in area to the cross-sectional area of the cells 1, 2, 3 and 4, and also of the half cells 3a and 4a. In addition, the recesses 16, 17, 18 and 19 form breaks in the bedding 21 of areas equal to that of the recesses. Therefore, it will be seen that at no place throughout the length of the block A will there be a direct transverse layer of mortar bedding 21 extending from side to side of the block. The transverse webs 6, 7, 8 and 9 have recesses 16, 17, 18 and 19, which break the mortar bed extending entirely across these webs, while the large cells 1 and 2 and the small double cells 3 and 4 or half double cells 3a and 4a, prevent the mortar bed from extending across the width of the block in an unbroken line where these cells are disposed.

In Figure 3 I show the grooves 10 and 11 as receiving horizontal reinforcing bars 22, if desired. These bars will provide horizontal reinforcing as required. The aligned grooves of superimposed blocks, when filled with mortar, form mechanical keys to prevent transverse movement of the units, one upon the other.

After two or more courses of blocks A are laid to form the wall B, reinforced concrete studs can be provided for the wall. The vertical reinforced studs can be disposed at regular intervals along the wall by inserting steel bars 23 in one of the smaller double cells and grouting it with concrete. It is further possible to stagger the studs by filling the cells 3 in one aligned group and in the next small cell group filling the aligned cells 4 with reinforced concrete. The studs 24 thus provided by this arrangement of cells are

staggered and afford a balanced reinforcement for the wall and a saving in material.

The reinforced studs 24 do not detract from the insulating quality of the wall, since when one row of aligned small cells 3 or 4 is filled with reinforced concrete to form a reinforced stud, the adjacent row of aligned small cells remain open, thus providing the necessary insulating space to prevent the condensation of moisture on the inner face 13 of the wall. The hollow space formed by one of the small open cells provided by the registering of the half cells prevents a continuous mortar or concrete bond from side to side of the wall at the point of joining.

The block A can be made in half blocks, corner blocks, etc. A half block is indicated by the arrows and the reference letter C in Figure 1. The half block is the same as a regular block A cut in two at its midpoint; that is, through the center of the double cells 3 and 4. The half block would consist of a large central cell or air space and half double cells at its ends.

A corner block D is shown in Figure 1 and is similar to the regular block, excepting that the double half cells at one end of the block are turned to extend at right angles to the length of the block. Similar parts in the corner block D and the regular block A will be given the same numerals and the description need not be repeated. The groove 10a will make a right angle turn and the two grooves 11a will be provided, these grooves crossing each other in the manner shown. The large cell 1a will be substantially square in plan view (see Figure 1) and differs in shape from the cell 2. The web 8a extends at right angles to the web 6 and both webs have grooves 11a extending therealong. Recesses 16 and 18a cut across the grooves 11a in the manner illustrated. These are the principal differences between the corner block D and the regular block A, and the isometric views of these two blocks (Figure 2) clearly show the points of similarity and differences between the blocks A and D.

The insulating value of the block results from its cellular construction. The block has a minimum of heat and cold transmitting qualities through the width of the block on account of the cross webs 6 to 9, inclusive, are of reduced thickness.

I claim:

1. A block having two large cells separated by small double cells placed at the center of the block, said block having half double cells disposed at the ends of the block for cooperating with the half double cells of an adjacent block to form double cells similar in shape to the first mentioned double cells.

2. A hollow and reinforced wall composed of blocks, each having double cells at its center and separated by a longitudinally-extending web between the cells, said block having half double cells at its ends for cooperating with the half double cells of an adjacent block for providing equally spaced double cells of the same shape along a wall formed from the blocks, and concrete filling one of the double cells between adjacent block ends for securing the ends together without creating a continuous mortar joint that extends from side to side of the blocks at their place of joining.

3. A hollow reinforced wall construction comprising blocks built up in courses with the blocks in one course breaking joint with the blocks in adjacent courses, the center of each block hav-

ing double cells with a longitudinally-extending web separating the cells, and the ends of each block having half double cells, the mating of the half double cells in adjacent blocks providing completed double cells similar to and in alignment with the first mentioned double cells in the adjacent courses of the blocks, and reinforced concrete studs formed in only one of the aligned double cells of each group, these studs extending throughout the height of the wall.

4. A hollow reinforced wall construction comprising blocks built up in courses with the blocks in one course breaking joint with the blocks in adjacent courses, the center of each block having double cells with a longitudinally-extending web separating the cells, and the ends of each block having half double cells, the mating of the half double cells in adjacent blocks providing completed double cells similar to and in alignment with the first mentioned double cells in the adjacent courses of the blocks, and reinforced concrete studs formed in only one of the aligned double cells of each group, the reinforced studs in successive double cells being staggered and extending throughout the entire height of the wall.

5. A hollow and reinforced wall construction formed from blocks laid in courses with the blocks in one course breaking joint with the blocks in adjacent courses, a mortar bed between each course of blocks, each block having its center

provided with a double cell with a longitudinally-extending web separating the cells and the ends of each block having half double cells, the mating of the half double cells in adjacent blocks of the same course providing completed double cells similar to and in alignment with the center double cells in blocks of adjacent courses, reinforced concrete studs formed in only one of the aligned double cells in each vertical group, said blocks having transverse webs forming opposed walls for the double cells, said webs having recesses that extend across the widths of the webs for breaking the mortar bed between opposite block sides for preventing moisture from passing across the width of the blocks through the mortar bed.

6. A hollow and reinforced wall construction formed from blocks laid in courses with the blocks in one course breaking joint with the blocks in adjacent courses, a mortar bed between each course of blocks, each block having its center provided with a double cell with a longitudinally-extending web separating the cells and the ends of each block having half double cells, the mating of the half double cells in adjacent blocks of the same course providing completed double cells similar to and in alignment with the center double cells in blocks of adjacent courses, reinforced concrete studs formed in only one of the aligned double cells in each vertical group.

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