March 12, 1940. P. W. GROTH 2,192,970

INTERLOCKING BUILDING BLOCK

Filed July 22, 1938 2 Sheets-Sheet 1

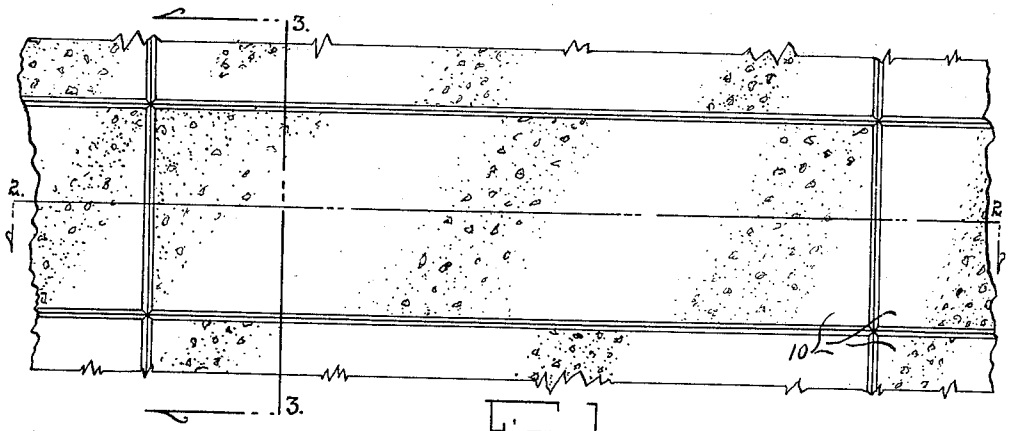


Fig. 1.

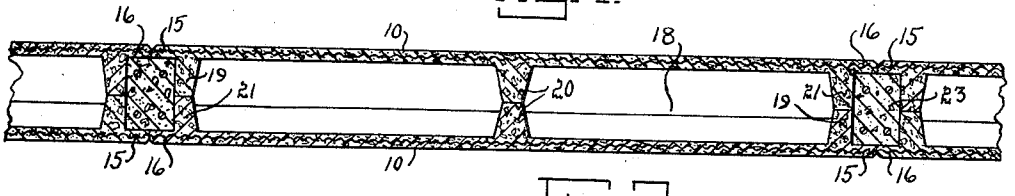


Fig. 2.

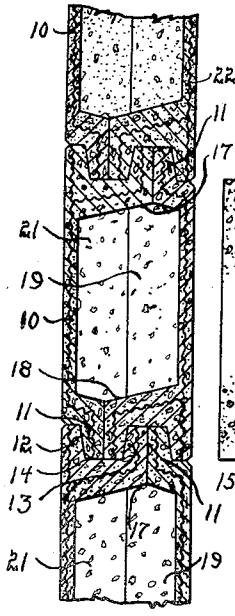


Fig. 3.

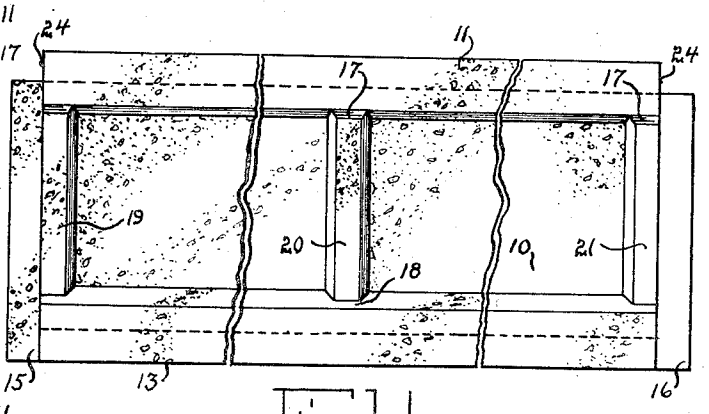


Fig. 4.

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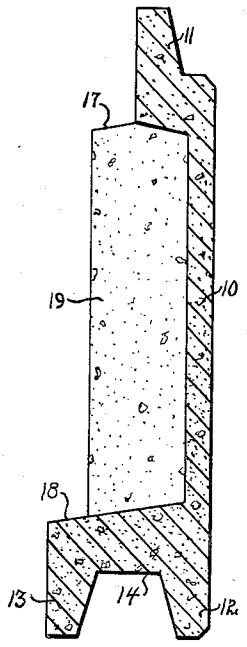


Fig. 5.

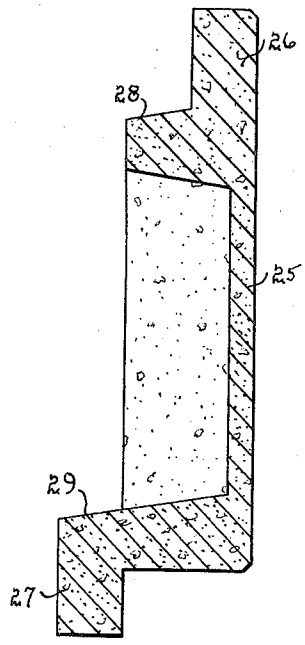


Fig. 6.

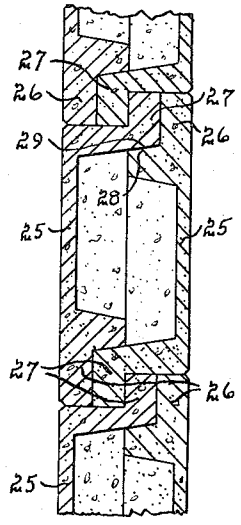


Fig. 7.

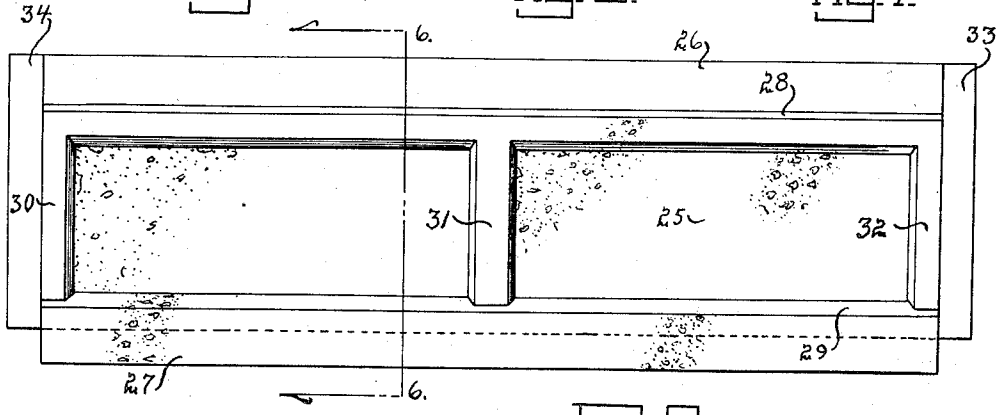


Fig. 8.

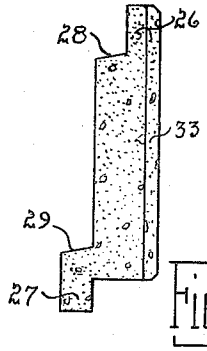


Fig. 9.

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INTERLOCKING BUILDING BLOCK

Paul W. Groth, Des Moines, Iowa

Application July 22, 1938, Serial No. 220,691

2 Claims. (Cl. 72—30)

The principal object of this invention is to provide an interlocking building block in which each succeeding row of block firmly locks the last laid blocks and which automatically aligns or trues the side wall being constructed.

A further object of this invention is to provide an interlocking building block which inherently provides a double wall construction to a structure.

A still further object of my invention is to provide an interlocking building block which when incorporated into a wall provides a firmly locked wall vertically and horizontally having the advantages of multiple layer structure, lightness in weight and great inherent strength.

A still further object of this invention is to provide an interlocking building block that is extremely economical in manufacture, durable, efficient and versatile.

These and other objects will be apparent to those skilled in the art.

My invention consists in the construction, arrangement, and combination of the various parts of the device, whereby the objects contemplated are attained as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, in which:

Fig. 1 is a front elevational view of a portion of a wall structure incorporating my interlocking building block.

Fig. 2 is a top cross sectional view of a wall of my building block taken on the line 2—2 of Fig. 1.

Fig. 3 is an end sectional view of the wall taken on the line 3—3 of Fig. 1.

Fig. 4 is a rear elevational view of one of my interlocking building blocks.

Fig. 5 is an enlarged end sectional view of one of my block elements more fully illustrating its construction.

Fig. 6 is an enlarged end sectional view of a type of block showing a modified form of structure taken on line 6—6 of Fig. 8.

Fig. 7 is an end cross sectional view of a portion of a wall constructed with the blocks shown in Fig. 6.

Fig. 8 is a rear elevational view of the block shown in Fig. 6.

Fig. 9 is an end elevational view of one of the blocks shown in Fig. 6.

In building construction, it is desirable that the structure be fire-proof, weather-proof, and have great inherent strength. This has been hitherto attempted through the use of poured reinforced concrete, brick veneer, cement block, cinder block and various other ceramic or synthetic stone materials. Several disadvantages are apparent in these structures. The mortar between the various blocks is comparatively weak thereby detracting from the inherent strength of the completed structure. Furthermore, it is necessary that a skilled workman lay the blocks as they must be perfectly aligned by hand. This, in addition to being poor structure, is also very expensive which is also a disadvantage of poured concrete. Furthermore, weather cracks appear in time, detracting from the exterior beatuy of the structure. Also, it is necessary to build a double wall or a superficial structure in order to provide a backing or form for these materials heretofore used. I have overcome such disadvantages as will be hereinafter more fully set forth.

Referring to the drawings, I have used the numeral 10 to designate a block precast of concrete or like material. This block 10 has formed along one of its longer marginal edges, a flange 11 tapered away from the body of the block in order to facilitate molding and construction. The numerals 12 and 13 designate two flanges formed on the longer edge of the block 10 leaving a channel or like 14 between them as shown in Fig. 5 of the drawings. This channel 14 is substantially equal in cross sectional area to two of the flanges 11. I have used the numerals 15 and 16 to designate flanges extending from the ends of the block 10 as shown in Figs. 2 and 4 of the drawings. To permit air cells in the constructed wall and to make the material light without sacrificing constructional strength, I have recessed the rearward face of the block in several places and have sloped the marginal confines of these recesses to facilitate the molding of the block and to provide the necessary sloping shoulders 17 and 18 as shown in Fig. 5. The numerals 19, 20 and 21 indicate raised shoulders protruding at the rear of the block in a manner shown in Fig. 5 of the drawings. These shoulders 19, 20 and 21 extend beyond the rearward face of the block at the end adjacent the flange 11 for a short distance and then parallel with the face of the block. This leaves a shoulder on the inner face of the block so that when two of the blocks are placed back to back with their longer marginal edges reversed, or the flange 13 adjacent the flange 11, the blocks will nest together and be locked against any movement vertically. In this manner every alternate pair of blocks will lock their last succeeding block in the manner shown in Fig. 3 of the drawings. It

will here be noted that these blocks may be reinforced by placing therein metal lath or other reinforcing means. I have illustrated a reinforcement in Figs. 2 and 3 and this reinforcing material I have designated by the numeral 22. When the blocks are placed together horizontally, the flanges 15 will touch the flanges 16 of the next succeeding block leaving a rectangular opening adjacent the ends of the blocks. Into this opening is poured wet concrete to form a vertical pillar between the blocks. This vertical pillar, I have designated by the numeral 23. This pillar 23 may be reinforced in the usual manner and adds materially to the structural strength of the completed wall and, in addition, forms the locking joint between two horizontally adjacent blocks. I have used the numeral 24 to designate cut away portions in the ends of the flange 11 to facilitate the entrance of one flange into its respective channel in the next succeeding block. In Figs. 6, 7, 8 and 9 of the drawings, I have illustrated an alternate type of structure for my block which I will now describe. The numeral 25 designates the molded block of concrete or like. This block has a flange 26 along one of its longer marginal edges. This flange has one of its surfaces flush with the face surface of the block 25. I have used the numeral 27 to designate a flange formed along the other marginal edge of the block 25 adjacent the rear surface of the block. The numeral 28 designates a sloping shoulder formed adjacent the flange 26 and extending rearwardly. The numeral 29 designates a similar sloping shoulder formed adjacent the flange 27 as shown in Fig 6 of the drawings. It will here be noted that the shoulder 28 is approximately equal in length to the shoulder 29. I have used the numerals 30, 31 and 32 to designate webs extending substantially parallel with the face surface of the block 25 and in a parallel plane with the rearward end of the shoulder 28. Thus, when two blocks are reversed the shoulder 29 rides on the shoulder 28 and the flanges 26 and 27 are adjacent each other in a manner shown in Fig. 7 of the drawings. I have used the numerals 33 and 34 to indicate flanges formed along the end marginal edges of the block 25 adjacent the face side in a manner similar to the flanges 15 and 16 of the block 10. Each pair of blocks are fitted together as described and these pairs are then built into a wall in the manner shown in Fig. 7 of the drawings.

The practical use of my interlocking building block is as follows: Referring to Fig. 3 of the drawings, it will be noted that when the blocks 10 are used, two of the blocks form a pair and these two blocks are reversed and placed back to back with the flat side of the flange 13 resting against the flat side of the flange 11, then when the next succeeding layer or pair of blocks is laid upon a foundation block, the flanges 12 and 13 will firmly hold together the flanges 13 and 11 of the next succeeding pair of blocks which rest within the channel 14 thus locking each successive layer of the block together when the next pair is applied. The flanges 15 and 16 form vertical channel between the blocks horizontally and this is poured with concrete and reinforced, thereby locking the blocks together horizontally as well as providing additional strength to the completed wall or structure. With the structure shown in Fig. 7, the blocks do not interlock but are prevented from horizontal movement by the overlapping of the flanges and are held in vertical alignment by having poured concrete pillars within the flanges 33 and 34. Thus it will be seen that I have provided an inter-locking building block having many advantages. It will be noted that all of the irregularities on the cast block are formed on the rearward side of the block. This makes it unnecessary when casting the block to have a mold over the outer surface of the block. This is especially advantageous in that the outside face of the block may be finished in any desirable method at the time that the blocks are molded. They may be trowled smooth or may be given any type of finish. This is highly desirable in precast construction, inasmuch as it lowers the cost of labor at the time of erecting the structure and increases the speed with which a structure may be erected. Obviously, my block may be made of any size and any type of material capable of being formed. It may be the case that half of the blocks may be molded of an insulative material and be used as an inner wall, adding, in addition to actual strength, and rigidity, insulative qualities making it unnecessary to use anything in the construction of the side walls of the dwelling except my interlocking building block. The block may be given any finish internally or externally due to its shape and the fact that the face surface can be exposed in a mold making it accessible, so that it may be worked in the factory making it unnecessary to add any finishing touchs to the exterior or interior of the wall when erected. Thus my building block fulfills all my objects and presents many other obvious advantages. I have in my claims referred to the two blocks in a pair as an outer section and an inner section.

Some changes may be made in the construction and arrangement of my improved interlocking building block without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim:

1. In a building block, an inner side section having a flat outer side and a depression in its rearward side, a channel formed along the lower marginal edge of said section, a flange along the upper opposite marginal edge of said section; said lower marginal edge having said channel being of a thickness greater than the thickness of said upper marginal edge of said section, an outer side section having a flat outer side and a depression in its rearward side, a channel in the upper marginal end of said outer side section, a flange formed on the opposite marginal edge; said upper edge having a thickness much greater than the thickness of the lower edge of said outer section, raised surfaces on the rear of both said inner and said outer sections; said two sections designed to be placed adjacent each other to provide a sectional hollow building block having a notch and a flange along each of their marginal edges and oppositely disposed from each other for locking with and engaging duplicate outer and inner sections below and above it, and flanges extending outwardly from the other opposite marginal edges of each of said sections for facilitating the locking of said sections to duplicate sections placed adjacent and on either side of said two sections.

2. In a building block, a hollow block member composed of two identical sections placed ad-

jacent each other to form an inter-locking block each section, comprising, a rectangular hollow body member, a flange formed along one of the marginal edges of said body member adjacent one of the face surfaces of said block, a flange formed on the other end of said sectional block member and positioned a substantial distance inwardly from the face surface, a third flange formed on the first mentioned marginal edge of said sectional block member spaced apart from said first mentioned flange on the first mentioned marginal edge of said sectional block member, a fourth flange formed on said first mentioned marginal edge of said sectional block member spaced apart from said second mentioned flange; said first and said third mentioned flange being so designed that they will be received by the space between said second and said third mentioned flanges when a duplicate section of block is placed on top of said block section and flanges extending from the ends of said block sections to form a channel oppositely disposed to said first and said second mentioned marginal edges.

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