July 29, 1941. R. L. HILD 2,250,763

REINFORCED WALL AND FOUNDATION STRUCTURE

Filed Nov. 8, 1939

Fig. 1.

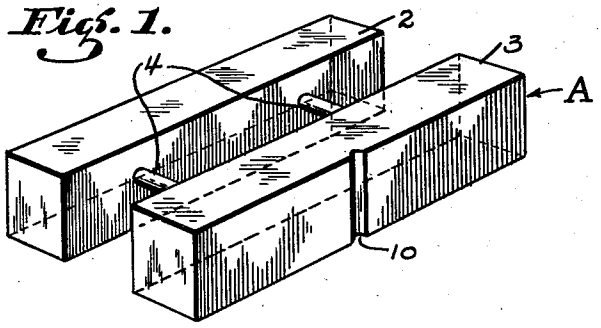


Fig. 2.

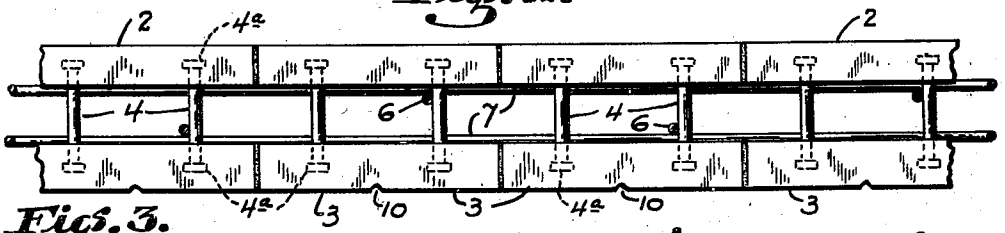


Fig. 3.

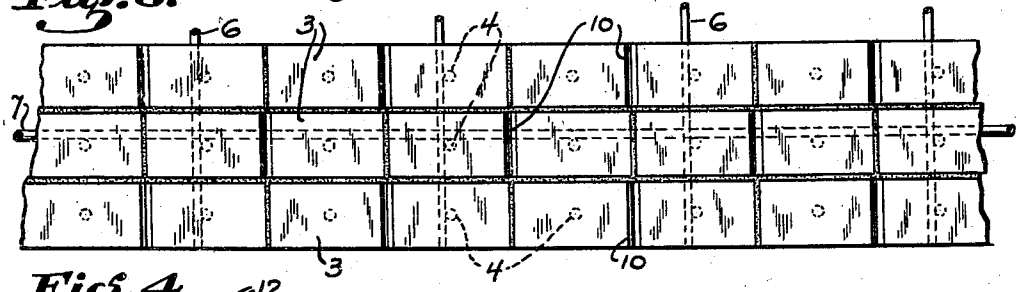


Fig. 4.

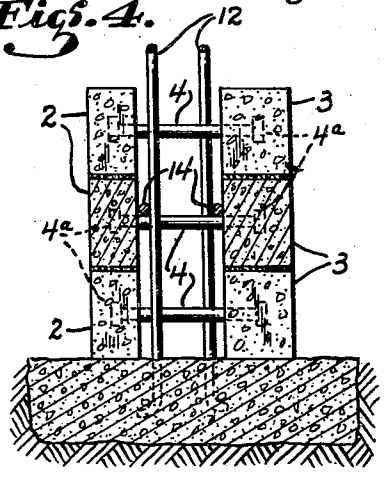
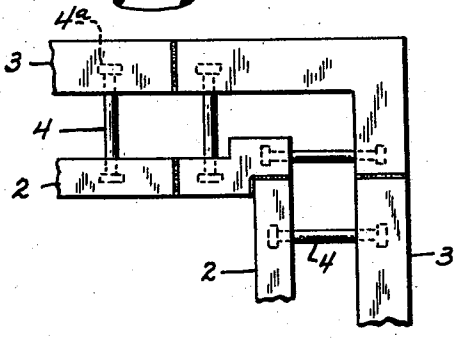


Fig. 5.



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REINFORCED WALL AND FOUNDATION STRUCTURE

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Application November 8, 1939, Serial No. 303,389

4 Claims. (Cl. 72—44)

This invention relates to spaced building blocks for the construction of hollow walls and more particularly to an intermediate reinforcing steel bar frame to which the blocks forming the wall are tied or otherwise secured.

The object of the present invention is to generally improve and simplify the construction and operation of hollow wall structures built from spaced cross tied blocks; to provide a hollow wall structure composed of inner and outer spaced blocks in which the inner and outer blocks are anchored with relation to each other by cross bars, and all or a portion of the blocks are tied to intermediate steel reinforcing bars by welding or the like; to provide a building block which will form a pair of parallel spaced walls with a practically uninterrupted air space between them and co-extensive with the height and length of the walls; to provide a hollow wall structure having within it a reinforcing steel bar frame and in addition thereto sufficient space to receive wiring, conduits, water pipes, etc.; to provide a hollow wall structure composed of spaced inner and outer blocks tied with relation to each other and intermediate steel bars to form a substantially earthquake proof structure; and further to provide a hollow wall structure of the character described which may be thoroughly water and moisture proofed.

The invention is shown by way of illustration in the accompanying drawing, wherein

Fig. 1 is a perspective view of one of the wall blocks;

Fig. 2 is a plan view of a partially constructed wall showing the manner in which the horizontal and vertical reinforcing rods are placed in the hollow wall space;

Fig. 3 is a side elevation of a wall under erection;

Fig. 4 is a cross section of a foundation wall; and

Fig. 5 is a plan view of a corner block and an adjacent wall block.

Referring to the drawing in detail and particularly to Fig. 1, A indicates in general the type of building block employed for wall and foundation structures. The block consists of inner and outer blocks indicated at 2 and 3 respectively, formed from concrete or any other suitable material. In the casting of the blocks they are spaced apart and are permanently tied together by metallic members in the form of cross bars 4, beaded at the ends as indicated at 4a so as to become firmly anchored in the concrete when it sets. The bars 4 may be galvanized or coated with any suitable material to prevent corrosion, and when reinforcing bars are welded thereto as will hereinafter appear, red lead or a similar coating material should be applied.

The blocks when placed in a wall will be set up in mortar in the usual way and should be staggered to break joints between courses. The cross or tie bars 4 connecting the inner and outer blocks must align vertically when the blocks are built into a wall, this being important as vertically positioned reinforcing steel rods 6 are placed in the hollow space formed between the blocks and are welded thereto. The cross bars 4 will also align horizontally and this is important as one or more reinforcing steel bars 7 are placed on the cross bars in a horizontal plane and welded either to the cross bars 4 or to the vertical bars or to both. The number of vertical and horizontal bars 6 and 7 employed will depend entirely upon the final strength desired. For instances, the vertical bars may be placed to engage every second row of vertically aligning cross bars 4, as shown in Fig. 3, thereby forming a connection or tie with each block; again, the vertical rods may engage each fourth row of cross rods. The same is true of the horizontal bars 7, as these may be placed between every other course of blocks or just as far apart as conditions may demand. In other words, every block in a wall may be tied or welded to an intermediate steel bar frame or a certain percentage of them may be so joined and a substantially earthquake proof structure is thus insured.

To insure vertical and horizontal alignment of the cross bars 4 when the blocks are set up in a wall, let it be assumed that the blocks are 16 inches long and 4 inches high. If that is the case, the cross rods connecting the inner and outer blocks will be placed on a center line between the upper and lower faces of the blocks and 4 inches in from each end; by so placing them, vertical and horizontal alignment is insured, particularly when the blocks are staggered between courses to break joints.

For the construction of corners where two walls meet, corner blocks of the type shown in Fig. 5 are employed, and break or staggered joints are also here insured by merely reversing every other corner block. To assist in properly aligning or positioning the blocks in each course, false rake joints 10 may be formed in the outer face of each block. This has an added advantage in breaking up the surface, thereby avoiding the unpleasant effect of long rectangular shaped blocks.

The blocks may be water and moisture proofed

on their inner adjacent faces either before or after placement in a wall. This is also important as it leaves the main inner and outer faces of a completed wall free to receive any finish or treatment desired.

Suffice it to say that a hollow block wall with an intermediately reinforcing steel frame, to which the blocks are tied, is secured; a moisture and water proof structure is insured; the insulating advantages of an intermediate air space together with space for wiring, piping, etc., are obtained; and above all, a structure is provided which can be erected at a minimum cost.

The blocks are intended not only for wall structures but also for solid foundation walls. When so employed, a footing 11 of concrete is first poured, on top of which the blocks are placed just as in a wall structure, two to three or more courses being employed depending upon the height of the foundation. Vertical and horizontal reinforcing rods 12 and 14 are placed between the blocks and into the footing, and the hollow space is then filled with concrete to make a solid foundation. A foundation of this character may be employed for ordinary wooden frame buildings or as a foundation for a reinforced hollow wall structure such as here described. It is cheaper than an ordinary foundation as the lumber and carpenter labor required in connection with the building of forms to receive the concrete is entirely eliminated.

While this and other features of the invention have been more or less specifically described and illustrated, I wish it understood that various changes may be resorted to within the scope of the appended claims, and that the materials and finish may be such as the experience of the manufacturer may dictate and other conditions demand.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. A hollow wall structure of the character described comprising inner and outer blocks spaced apart to form an intermediate space, said blocks being tied together in pairs by cross rods embedded therein, and a rigid reinforcing steel frame disposed within the space between the blocks and welded to the cross bars.

2. In a hollow wall structure of the character described, pairs of opposed wall forming blocks, cross bars embedded in and connecting each pair of blocks, said pairs of blocks being spaced apart to form a hollow wall space, and reinforcing steel bars in the wall space and welded to a plurality of block connecting cross bars to form a rigid framework.

3. In a hollow wall structure of the character described, pairs of opposed wall forming blocks, cross bars embedded in and connecting each pair of blocks, said pairs of blocks being spaced apart to form a hollow wall space, said cross rods aligning vertically and horizontally in the wall, and a plurality of vertically and horizontally disposed steel bars disposed within the wall space and welded to the cross bars to form a rigid framework.

4. In an earthquake-resistant hollow wall structure, the combination of a plurality of spaced outer and inner blocks joined by cross rods embedded therein, a corner block comprising an outer block formed with a long section and a short section normal thereto, an inner block extending parallel to said long section, an offset portion substantially uniform in thickness with said inner block formed integrally therewith and disposed parallel to said outer block long section and closer thereto than the remainder of said inner block, an anchor bar normally joining said inner block to said outer block long section, and an anchor bar extending normally from said outer block short section into said inner block offset portion, a plurality of vertically and horizontally disposed steel bars, and welds joining said bars, cross rods, and blocks together rigidly as a unit.

RAYMOND L. HILD.