March 15, 1927. 1,620,834

E. RHODES

WALL CONSTRUCTION

Filed March 22, 1926

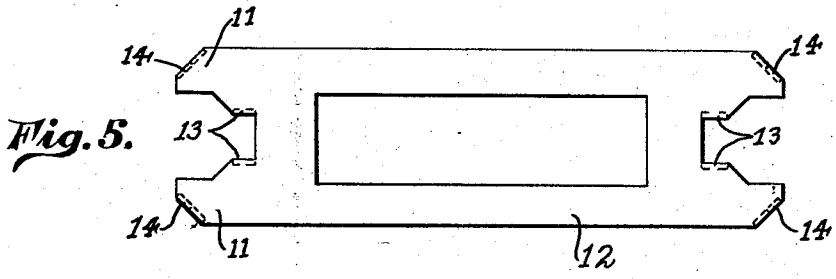


Fig. 5.

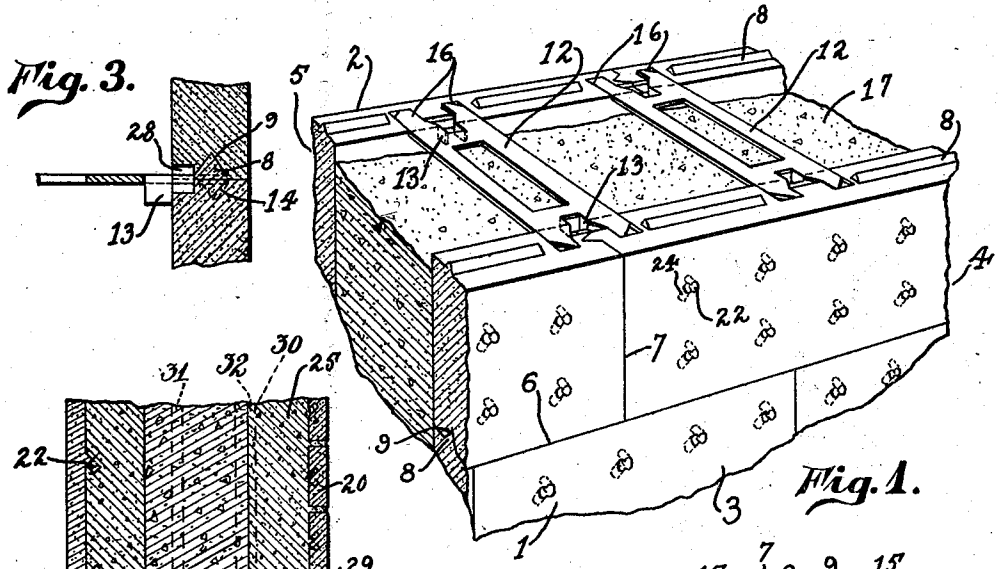


Fig. 1.

Fig. 3.

Fig. 4.

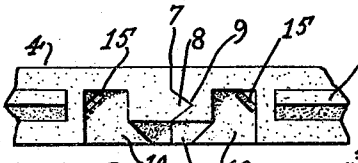


Fig. 2.

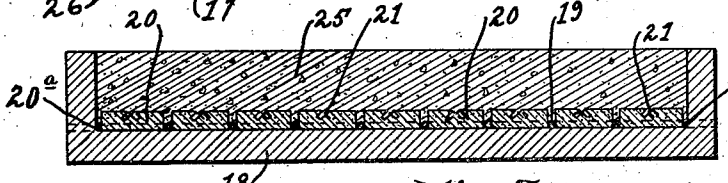


Fig. 7.

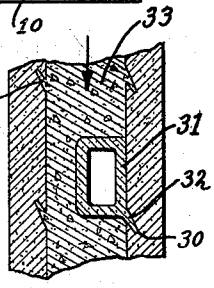


Fig. 6.

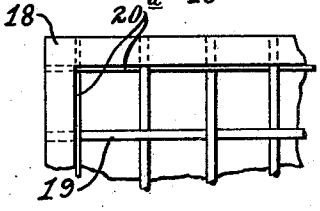


Fig. 8.

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WALL CONSTRUCTION.

Application filed March 22, 1926. Serial No. 96,498.

This invention relates to wall construction, and it is particularly useful in the construction of buildings. In constructing reenforced concrete buildings, it is customary to build molds of wood. The expense of constructing these wooden molds and removing them is considerable, and although they may be used repeatedly, the wood cannot be used usually more than three or four times. On account of the high cost of wood, the cost of the molds, therefore, constitutes a considerable item in the expense of such building. It has been attempted to avoid the necessity for using wooden molds by constructing a hollow wall with retaining walls which are left in place and which receive the concrete between them so that the retaining walls become a permanent part of the finished wall after operating as molds for the poured concrete. One of the difficulties arising in this type of construction is the provision of a simple bond between the retaining walls.

The general object of this invention is to overcome these difficulties and to provide a construction which will avoid the necessity for employing wooden forms and which will operate to provide a substantial reenforcement for the completed wall, not only providing a reenforcement for the concrete but effectively anchoring the retaining walls to each other and to the concrete filler between them.

A further object of the invention is to provide a simple construction for such a wall which will enable the face of the wall to be constructed with tiles or covered with plaster, and to provide for conduits in the wall for wires or pipes.

Further objects of the invention will appear hereinafter.

The invention consists in the novel parts and combinations of parts to be described hereinafter, all of which contribute to produce an efficient wall construction.

A preferred embodiment of the invention is described in the following specification, while the broad scope of the invention is pointed out in the appended claims.

In the drawing:

Figure 1 is a perspective showing a short portion of a wall embodying my invention and illustrating the manner in which the bonding members which I employ may be built into the wall as it is being constructed.

Figure 2 is a plan of one of the retaining walls at one of the vertical joints and showing the adjacent edges of two abutting blocks as laid into the wall.

Figure 3 is a vertical section taken through the end of one of my bonding members and showing the adjacent portion of one of the retaining walls in which the end of the bonding member is secured.

Figure 4 is a vertical section taken through a reenforced concrete wall embodying my invention and illustrating the construction which I employ to enable the face of the wall to carry tiles or plaster.

Figure 5 is a plan of one of the bonding devices upon an enlarged scale.

Figure 6 is a horizontal section through a wall embodying my invention and illustrating means which I may employ where it is desired to form a wall including hollow tile, to produce a duct.

Figure 7 is a vertical section through a mold and illustrating the manner in which I form a building block with tiles attached to its face.

Figure 8 is a plan of a corner of the mold illustrated in Figure 7.

In practicing the invention, I construct a wall of two retaining walls which are disposed apart. These walls are composed of blocks laid in corresponding courses, and the courses are connected together by bonding members on ties which are preferably laid into the wall with the blocks. At opposite points in the two corresponding courses, recesses are formed in which are secured the ends of the bonding members. In addition to this, the inner faces of the blocks preferably at the vertical joints, are provided with bonding sockets into which the concrete filler flows when the space between the retaining walls is filled with concrete. In this way, the concrete itself flows into the sockets and a dove-tail or interlocking connection is formed which anchors the blocks together and to the concrete filler.

Referring to Figure 1, 1 and 2 represent two retaining walls composed of blocks 3, said blocks being disposed in corresponding courses 4 and 5. These blocks are formed of cement in a well known manner, and on their meeting faces or edges which form the horizontal joints 6 and the vertical joints 7, tongues 8 are provided which fit into corresponding grooves 9 in the opposite block.

In laying the courses 4 and 5 which are opposite to each other, the blocks are laid so that the joints of one course are intermediate or staggered with respect to the joints of the other course. In applying my bonds or bonding members, they are preferably applied so that one end of the bond is secured at the joint in one course and the other end at an intermediate point in the opposite course, as illustrated in Figure 1. In order to accomplish this, I provide the abutting ends of two blocks with a bifurcated recess 10 which receives the forks 11 of the bonding member 12 which may be in the form of an elongated steel plate. Near its ends, the bonding member has integral ears or projections 13 which are struck down from the body of the plate and the edges of these projections engage the inner faces of the blocks (see Figure 3). They enable the bonding member to brace the retaining walls at the desired distance apart. In addition to this, the extreme ends of the bonding plate are provided with downwardly bent ears 14 which are received in corresponding sockets 15 formed in the bottom faces of the bifurcated recesses 10. The end of the bonding member which is opposite the joint is received in a similar bifurcated recess 16, formed in the upper edge of the opposite course 5 (see Figure 1). After the retaining walls have been set up and connected by the bonding members as described, the space between them is supplied with a filler 17 of concrete.

In some situations, it is desirable to provide the face of the wall with tiles and in other situations it may be desired to plaster the wall after it has been set up. According to my invention, I provide for securing such tiles to the face of the block when it is molded. Figures 7 and 8 illustrate the manner in which I accomplish this. In these figures, 18 represents an open mold, the bottom of which is provided with a plurality of crossed wires or guide members 19, between which tiles 20 are laid on the bottom of the mold. At the ends and side walls of the mold, special wires 20^a are provided which are of about half the diameter of the wires 19. These wires operate as guides in setting the tile 20 in place. The tiles are specially formed when molded so that each tile has one or more interlocking recesses 21. A recess or socket of this same character is illustrated at 22 in Figure 1, where it is utilized to facilitate the attachment of plaster 23 (see Figure 4). Each of these sockets or recesses is of bifurcated form and consists of two bores or half bores 24, one of which extends in a downward direction and the other of which extends in an upward direction. With this arrangement, it will be evident that when the mold 18 is filled with concrete 25 to form a block, the concrete will flow into the recesses 21 in the tiles and lock them to the face of the block. Likewise, when the plaster 23 is applied to the face of the inner wall 26, the plaster will have extensions 27 which project into the interlocking recesses so as to lock the plaster to the face of the wall.

By making the end and side wires 20^a of approximately half the diameter of the main wires 19, the space between the tiles which are located at the ends of the blocks will be substantially the same as the space between the other tiles. In this way, the joints of the blocks which compose the outside wall may be entirely concealed.

In forming the recesses 10 and 16 in the edges of the blocks, they may be formed entirely in the courses which are below the bonding member or they may be formed partly in the upper course and partly in the lower course.

In order to form additional interlock or bond between the filler 17 and the retaining walls, I prefer to provide a socket 28 at each vertical joint 7. This socket is preferably of dove-tail form and is formed in a downward direction into the lower course at a horizontal joint and also in an upward direction into the upper course at the same joint. By reason of the presence of these sockets 28, the concrete filler 17 will flow into the blocks at the joints and form a dove-tail tongue 29 which bonds the filler to the blocks.

In some instances, it may be desired to form a wall with hollow spaces. This may be desired in order to form conduits for carrying pipes, electric light wires, etc. In order to accomplish this, I provide a construction such as that illustrated in Figure 6. This construction consists in forming the inside faces of the blocks with under-cut vertical grooves 30. These grooves are so spaced that when the blocks are laid in the retaining walls, they will form continuous vertical grooves on the inner faces of the retaining walls. These grooves afford opportunity for securing hollow tile in place, so as to form continuous vertical conduits 31. Each tile has a tapered tongue on one of its corners, which is received in one of the grooves. When the concrete filler 33 for such a wall is poured, it should be poured so that it will flow in the direction indicated by the arrow in Figure 6. In this way, the pressure of the concrete assists in holding the tiles in place until the concrete sets.

It is understood that the embodiment of the invention described herein is only one of the many embodiments this invention may take, and I do not wish to be limited in the practice of the invention, nor in the claims, to the particular embodiment set forth.

What I claim is:

1. In a wall construction, the combination of two retaining walls disposed apart and composed of blocks laid in corresponding courses with the vertical joints of one course disposed at an intermediate point with respect to the vertical joints of the corresponding course in the other wall, and transverse bonding members connecting the retaining walls, each bonding member having one end secured in one of the retaining walls at the junction of a vertical joint with a horizontal joint and with its other end secured at a point in the opposite wall at an intermediate point between the vertical joints.

2. In a wall construction, the combination of two retaining walls disposed apart and composed of blocks laid in corresponding courses with the vertical joints of one course disposed at an intermediate point with respect to the vertical joints of the corresponding course in the other wall, the adjacent ends of the blocks in the horizontal courses of either wall having recesses formed therein, and transverse bonding members connecting the retaining walls, each bonding member having one end secured in one of the said recesses and having its other end secured at an opposite point, with a recess to receive the same in the opposite wall at an intermediate point between the vertical joints of the corresponding courses.

3. In a wall construction, the combination of two retaining walls disposed apart and composed of blocks laid in corresponding courses with the vertical joints of one course disposed at an intermediate point with respect to the vertical joints of the corresponding course in the other wall, the blocks of a course in one retaining wall having recesses in their upper edges at a vertical joint, and the blocks of the corresponding course of the opposite retaining wall having recesses formed in their upper edges at intermediate points between the vertical joints of the course, and transverse bonding members laid into the walls between the courses and secured in said recesses.

4. In a wall construction, the combination of two retaining walls disposed apart and composed of blocks laid in corresponding courses with the vertical joints of one course disposed at an intermediate point with respect to the vertical joints of the corresponding course in the other wall, the upper edges of the blocks of the courses having sockets formed in their inner faces at the vertical joints between the blocks, and a filler between the retaining walls extending into said sockets and locking the blocks to the filler at said joints.

5. In a wall construction, the combination of two retaining walls disposed apart and composed of blocks laid in corresponding courses with the vertical joints of one course disposed at an intermediate point with respect to the vertical joints of the corresponding course in the other wall, the upper edges of the blocks of the courses having sockets formed in their inner faces at the vertical joints between the blocks, a filler between the retaining walls extending into said sockets and locking the blocks to the filler at said joints, the said edges of the blocks at the vertical joints also having recesses and the corresponding course of the opposite wall having a recess in the edge of the opposite block at an intermediate point between its vertical joints, and bonding members secured in the said recesses and embedded in the filler.

6. In a wall construction, the combination of two retaining walls disposed apart and composed of blocks laid in corresponding courses with the vertical joints of one course disposed at an intermediate point with respect to the vertical joints of the corresponding course in the other wall, the upper edges of the blocks of the courses having sockets formed in their inner faces at the vertical joints between the blocks, and a filler between the retaining walls extending into said sockets and locking the blocks to the filler at said joints, said bonding members having projections engaging the inner faces of the retaining walls for holding the same apart.

7. In a wall construction, the combination of two retaining walls composed of blocks laid in corresponding courses, the blocks of said courses having opposite recesses in their edges, and transverse bonding members in the form of plates laid in said recesses, interlocking with the same and tying the retaining walls together, and a filler between the retaining walls.

8. In a wall construction, the combination of two retaining walls disposed apart and composed of blocks laid in courses, a conduit consisting of hollow tiles laid end to end against the inner face of one of the retaining walls, said tiles and the last-named retaining wall having interlocking means, a filler between the retaining walls and embedding the conduit, and bonds connecting the retaining walls embedded in the filler.

Signed at Los Angeles, Calif., this 12 day of March 1926.

ELMER RHODES.