Feb. 20, 1923. 1,445,901.

C. W. McKEE.

WALL STRUCTURE.

FILED JAN. 11, 1921. 2 SHEETS—SHEET 1.

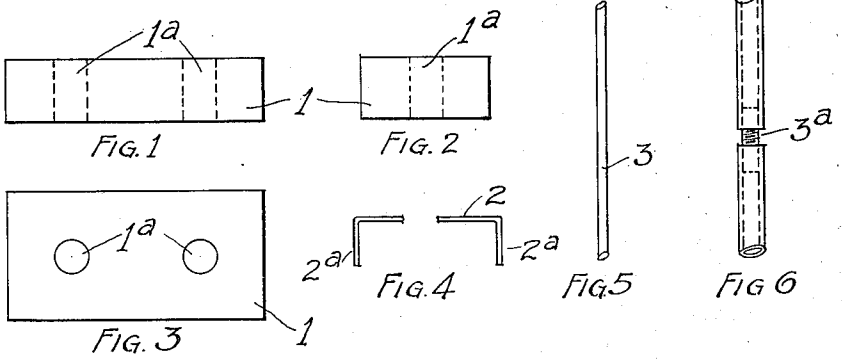


FIG. 1 FIG. 2 FIG. 4 FIG. 5 FIG 6

FIG. 3

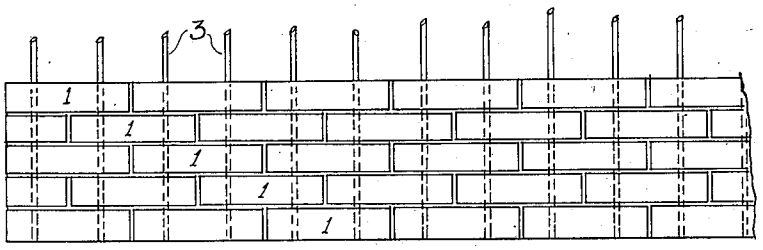


FIG. 7

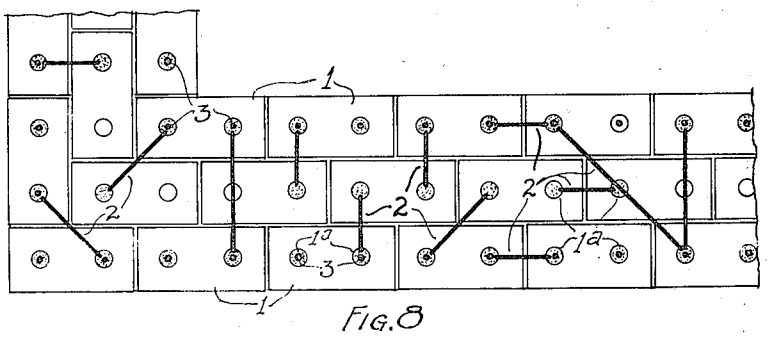


FIG. 8

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WALL STRUCTURE.

FILED JAN. 11, 1921. 2 SHEETS—SHEET 2.

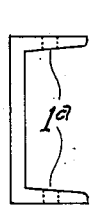


FIG. 11

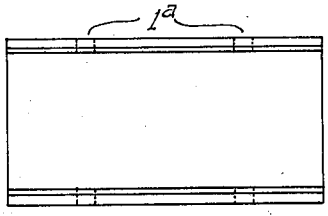


FIG 12

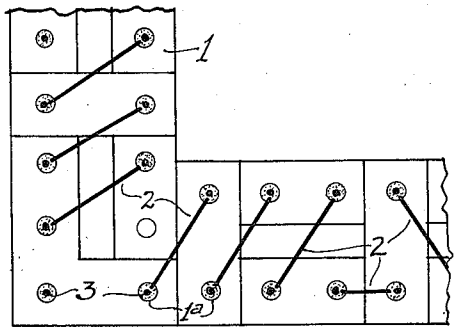


FIG. 9

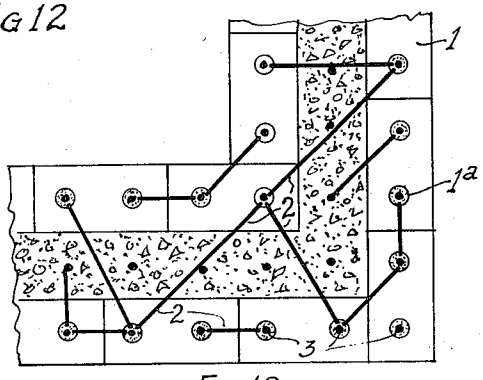


FIG 10

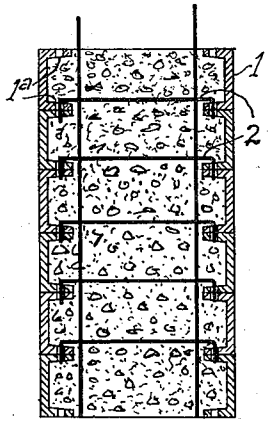


FIG 13

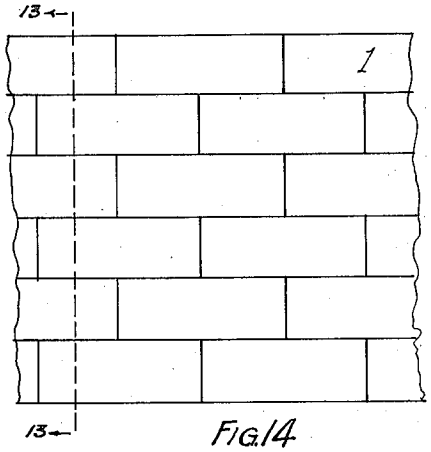


FIG. 14

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Patented Feb. 20, 1923. 1,445,901

UNITED STATES PATENT OFFICE.

CLARKE W. McKEE, OF SAN DIEGO, CALIFORNIA.

WALL STRUCTURE.

Application filed January 11, 1921. Serial No. 436,474.

To all whom it may concern:

Be it known that I, CLARKE W. McKEE, a citizen of the United States, residing at San Diego, in the county of San Diego and State of California, have invented a certain new and useful Wall Structure, of which the following is a specification.

My invention relates to a wall structure and the means for constructing the same and the objects of my invention are: first, to provide a novel building block or brick for building wall structures; second to provide novel means for supporting said blocks or bricks in their relative position in the wall; third to provide a means for bonding the building blocks so that they will not move relatively to each other; fourth to provide a wall structure which will withstand a great deal of lateral movement such as that produced by earthquakes, so that the wall will not be easily ruptured or affected; fifth to provide a wall structure composed of building blocks or brick with both vertical and horizontal supports for tying the different members together in the wall; sixth, to provide a novel wall construction of this class which is very simple and economical of construction, durable easy to construct and which will not readily deteriorate or get out of order.

With these and other objects in view as will appear hereinafter my invention consists of certain novel features of construction, combination and arrangement of parts and portions as will be hereinafter described in detail and particularly set forth in the appended claims reference being had to the accompanying drawings and to the characters of reference thereon which form a part of this application in which:

Figure 1 is a side elevational view of a building block or brick in the preferred form; Fig. 2 is an end view thereof; Fig. 3 is a top view thereof; Fig. 4 a fragmentary side elevational view of one of the horizontal reinforcing tie members; Fig. 5 is a fragmentary side elevational view of one of the vertical reinforcing members; Fig. 6 is a fragmentary side elevational view of one of the vertical or horizontal reinforcing members shown in a slightly modified form from that of Figs. 1–5 of the drawings; Fig. 7 is a side elevational view of a fragmentary wall structure showing the vertical support in position therein; Fig. 8 is a top view of a wall showing the vertical and horizontal reinforcing and supporting members in position; Fig. 9 is a similar view showing the application of the same in which some of the blocks are set in the wall crosswise for bonding the wall and showing my means for tying the ordinary with the bonding block; Fig. 10 is a similar view showing inner and outer walls of blocks in spaced relation with concrete filling the space; Fig. 11 is an end view of a building block or brick in a slightly modified form from that of Figs. 1, 2 and 3 of the drawings; Fig. 12 is a side elevational view thereof; Fig. 13 is a sectional view of a wall constructed of this modified form of blocks showing the application of my reinforcing in connection therewith, and showing the blocks in spaced relation with the concrete filling and Fig. 14 is a side elevational view of a fragmentary wall structure of the same type as that of Fig. 13.

Similar characters of reference refer to similar parts and portions throughout the several views of the drawings.

The building block 1, horizontal tie member 2, and vertical reinforcing member 3 constitute the principal parts and portions of my wall structure in the preferred form.

The building block 1, is preferably plastic in form, composed of clay or concrete and is in the preferred form rectangular in shape and provided with two spaced apart holes 1^a therein, preferably in the middle thereof. It is prefered to position these holes so that when the wall is laid up with the blocks end to end that the holes will be approximately equal distance apart as shown best in Fig. 7 of the drawings and the bricks are positioned so that the joints are broken as shown best in Fig. 7 of the drawings and mounted in the holes 1^a is a vertical reinforcing member 3 which may be the ordinary reinforcing steel in twisted form and these steel members are grouted in the holes and the separate blocks are also supported longitudinally by means of the tie members 2 which are composed of ordinary reinforcing steel of varying lengths with the ends turned in the same direction at right angles to the main portion as shown best in Fig. 4 of the drawings. These end portions 2^a are inserted in one of the holes 1^a in the separate blocks and where the walls are double or treble thickness these bars 2 connect the different blocks of the wall and the ends are grouted in the holes 1^a said bars 2 be-

ing positioned longitudinally, transversely and diagonally or either as desired for connecting the separate blocks in the wall as shown best in Fig. 8 of the drawings.

When the wall structure is constructed with transversely positioned block bonds as shown in Fig. 9, the bond blocks are connected diagonally with the longitudinally positioned blocks and in case the blocks are used on the inner and outer sides to provide a form and concrete in the space between the blocks as shown best in Fig. 10. The inner and outer blocks are supported by the members 2 either transversely, horizontally, or diagonally and the ends of some of them may be positioned in the concrete between the inner and outer layers tying the blocks to the monolith concrete.

In the modified form of block the construction shown in Figs. 11 to 14 inclusive the blocks are channel shaped in cross section instead of rectangular and the members provided with holes positioned in the middle and serve the same purpose and are tied in their certain relation to each other by means of members 2 and 3 transversely, longitudinally, and diagonally and when spaced apart as shown in Fig. 13, the concrete fills the space between the outer walls of the blocks.

In the modified form of reinforcement shown in Fig. 6 of the drawings there is provided means whereby the reinforcing members 2 and 3 are made in sections and connected by threads 3^a, thus providing a means for building up the vertical reinforcement as the wall is being built up and varying the length of the horizontal reinforcements as desired.

Though I have shown and described a particular construction, combination and arrangement of parts and portions and certain modifications thereof I do not wish to be limited to this particular construction, combination and arrangement, nor to the modifications whereof but desire to include in the purview of my invention the construction, combination and arrangement, substantially as set forth in the appended claims.

It is obvious that with this construction there is provided a building block which may be molded or cast which when used in connection with the vertical and horizontal reinforcement bars 2 and 3 will support and bond the different blocks in their relative positions in the wall thus providing a very rigid and substantial wall structure.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A building wall structure, including building blocks, each provided with holes in spaced relation therein, and positioned in broken joint relation to each other, so that the holes in one layer communicate with the holes in another layer, forming continuous vertical holes in the wall, reinforcing bars grouted in said continuous vertical holes, and single inverted U-shaped bars with a right angle turn at each end extending downwardly and terminating in said holes and the main portion positioned in the mortar spaces between said blocks.

2. A building wall structure, including building blocks, each provided with vertical holes therein, and single inverted U-shaped bars with a right angle turn at each end extending downwardly and terminating in said holes and the main portion positioned in the mortar spaces between said blocks.

3. A building wall structure, including building blocks in rows in spaced relation to each other, each provided with vertical holes therein, monolithic concrete filling the space between said building blocks and single inverted U-shaped bars with a right angle turn at each end extending downwardly and terminating in said holes, and the main portion positioned in said monolith and the mortar space between said blocks.

In testimony whereof, I have hereunto set my hand at Calexico, California, this 29th day of December, 1920.

CLARKE W. McKEE.