W. GERAERDTS & C. R. BALLNER.

FIREPROOF WALL.

APPLICATION FILED JULY 27, 1912.

1,078,273.

Patented Nov. 11, 1913.

2 SHEETS—SHEET 1.

Fig. 1

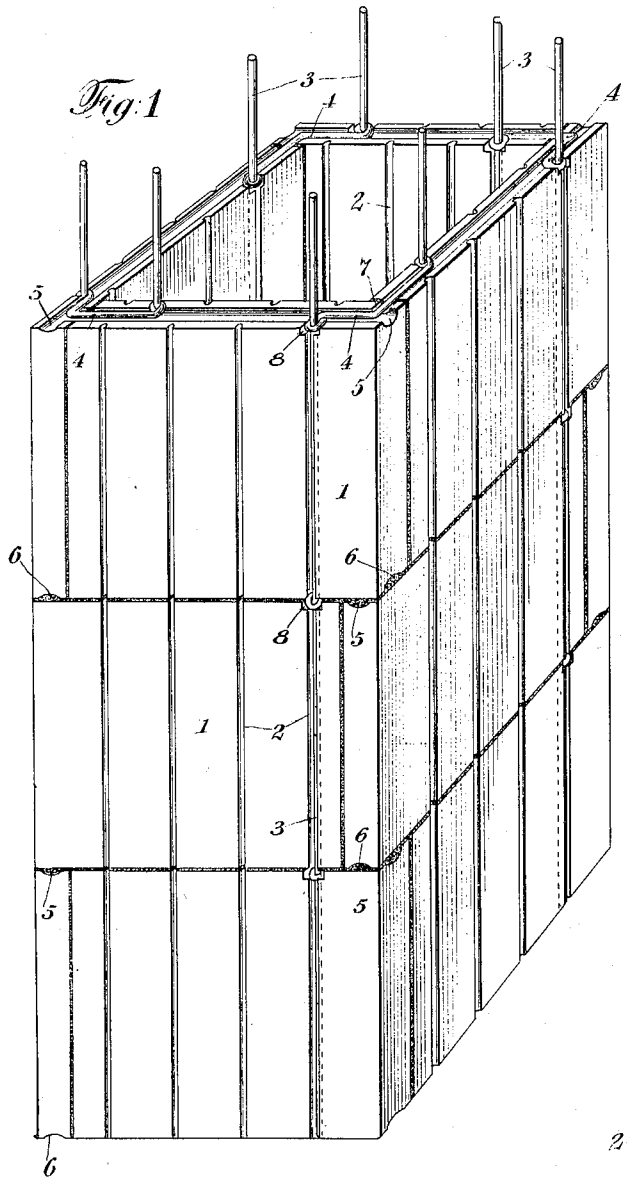


Fig. 2

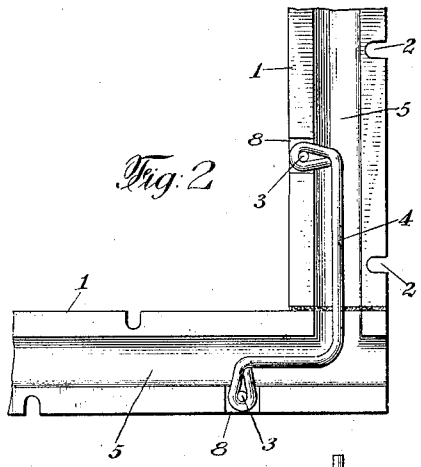


Fig. 3

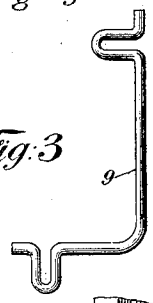


Fig. 4

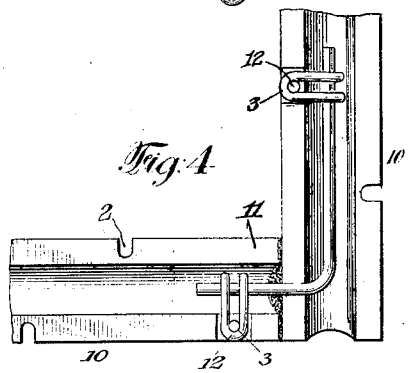


Fig. 5

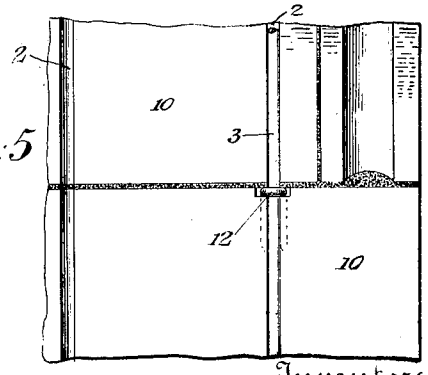
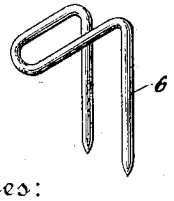


Fig. 6



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2 SHEETS—SHEET 2.

Fig. 7

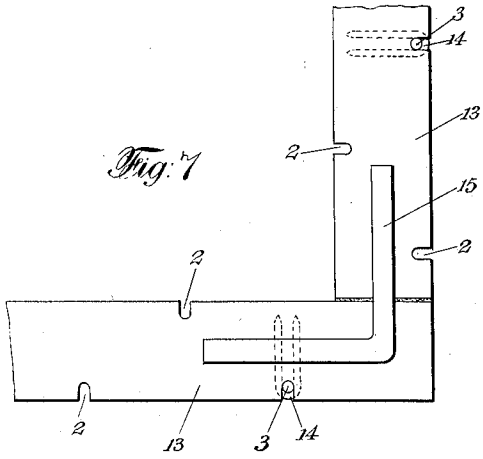


Fig. 8

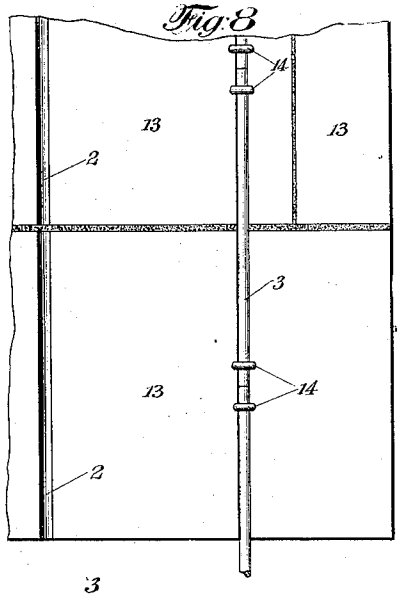


Fig. 9

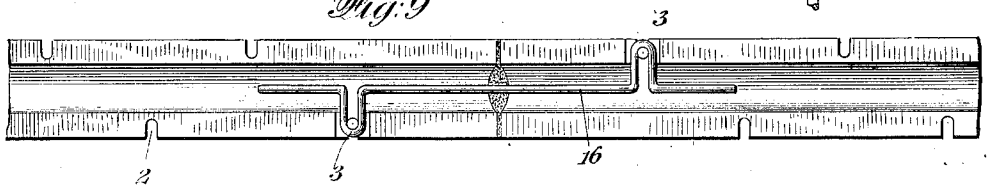


Fig. 10

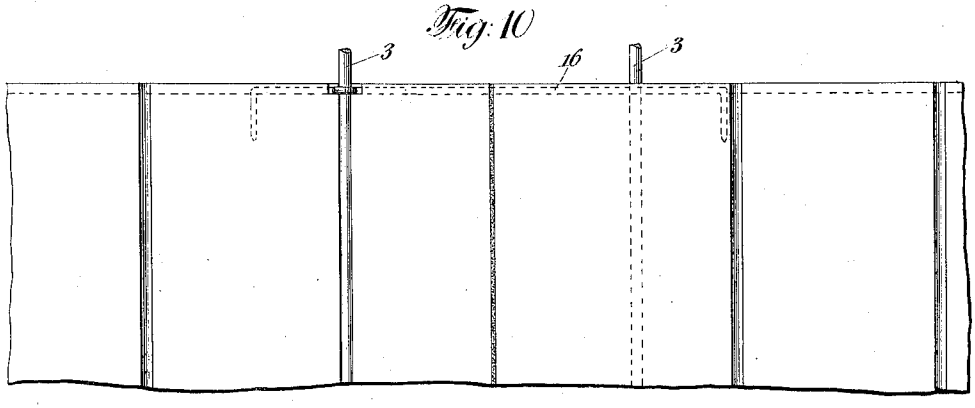
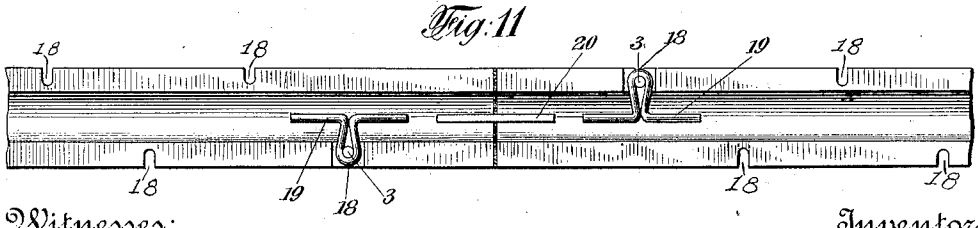


Fig. 11



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FIREPROOF WALL.

1,078,273. Specification of Letters Patent. Patented Nov. 11, 1913.

Application filed July 27, 1912. Serial No. 711,858.

To all whom it may concern:

Be it known that we, WILLIAM GERAERDTS and CHARLES R. BALLNER, citizens of the United States, residing at the borough of Manhattan and the borough of Queens, respectively, city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Fireproof Walls, of which the following is a specification, reference being had therein to the accompanying drawings, forming part thereof.

Our invention relates to fireproof walls such as are usually employed in interior structures and more specifically known as partitions and shafts, and has for its objects to improve the construction thereof in several particulars.

In the variety of walls to which this invention is more particularly adapted, the walls are built up of large and thin blocks of plaster, concrete or similar material, and a metallic reinforcement has been attained by means of interior metallic dowels located in vertical perforations through the blocks, the dowels being of substantially the same length as the height of the blocks and abutting each other at intermediate portions of the blocks, the lower dowels being either of half length or set in the foundation so that they terminate intermediate of or at the middle of the lower course blocks. Such a construction is shown in the patent to Hubertus and William Geraerdts, No. 555,693, of March 3, 1896. An objection to this construction has been the difficulty of putting in place the dowels bridging the joints of the upper course of blocks. Another and very serious objection in this art has been the difficulty of effective inspection of the work. The dowels being entirely concealed within the blocks, an inspector called upon to pass the wall as properly constructed with the necessary metallic reinforcement has been unable to determine that the dowels were in fact employed. Still another objection has been the difficulty of placing the horizontal dowels and, while this has been overcome in practice by laying the horizontal dowels in the horizontal grooves at the joints, instead of in horizontal perforations through the blocks as shown in the above mentioned patent, this construction has not been altogether satisfactory. Here also the dowels have been concealed so that their presence in the wall was not indicated when the wall was built. Another objection to this construction is the lack of metallic connection between the dowels of the vertical reinforcing system and the dowels of the horizontal reinforcing system. As these walls of plaster blocks are built of thin material and in case of dumb waiter shafts and air shafts, are frequently of considerable height, it is highly desirable that the metallic structure should be composed of parts connected together.

Our invention has for its further objects to overcome these objections to prior devices.

We shall now describe the constructions embodying our invention which are illustrated in the accompanying drawings, and we shall thereafter point out our invention in claims.

Figure 1 is a perspective view of a dumb waiter shaft. Fig. 2 is an enlarged plan view of a portion of the same including one corner thereof. Fig. 3 is a plan view of a modified form of corner anchor. Fig. 4 is a plan view of a corner of a shaft with another modified form of corner anchor made up of three pieces. Fig. 5 is an elevation of the same. Fig. 6 is a detached perspective of one of the bent staples shown in Figs. 4 and 5. Fig. 7 is a plan view of a corner of a shaft showing a further modification of shaft structure. Fig. 8 is an elevation of the same. Fig. 9 is a plan of a portion of a partition or straight wall structure in proximity to a vertical joint. Fig. 10 is an elevation of the same. Fig. 11 is a plan of a portion of a partition of modified structure.

The dumb waiter shaft as shown in Fig. 1 is in process of erection. The component building blocks 1 are all of the same size, and are laid bonded in courses, each course being composed of one block on each face of the shaft. The blocks are provided at their outer surfaces, both those facing the interior of the shaft and those facing the exterior of the shaft, with a plurality of vertical grooves 2, preferably in staggered or alternate relation at opposite surfaces of the blocks as shown, so as not to thin the blocks at any one place more than the depth of one groove. All of these vertical grooves are useful in assisting to hold the plaster, which may be directly applied to the blocks, but certain of the vertical grooves are also

used to receive vertical dowels 3, which form the vertical metallic reinforcement of the structure and which may be laid in any of the grooves for that purpose as is found desirable. These vertical dowels are such as have heretofore been employed, preferably of round iron, each of about the length of the height of one of the blocks, except that the lower dowels are either of half length or seated in the foundation so as to have a protruding portion of half length. They abut intermediate of the blocks and, as shown, at the middle portions of the blocks and bridge the joints between the courses of the blocks. They are inserted as the work progresses and remain visible so long as the work of the masons is not covered up by the work of the plasterers. In the usual final finishing of the shaft by covering it with plaster, they are completely covered and embedded within the structure, but this is a final and separate step of the building operation. The shaft is built by masons and the masonry work is inspected and approved before the plasterers are permitted to cover it. These visible vertical dowels 3 are combined with horizontal metallic reinforcing pieces 4, which act as anchors for the visible vertical dowels and which also, by reason of the fact that they have projecting parts or loops which engage the vertical dowels, are visible at these projecting loops, so that an inspector may readily determine whether or not any of these anchors 4 has been carelessly or intentionally omitted. These anchors are preferably bent dowels of round iron. With a wall of angular construction these anchors 4 are of angular form and they are provided with engaging loops, which, as shown in Figs. 1 and 2, are formed at their ends, the loop at one end of the anchor extending toward the interior face of the shaft and the loop at the other end of the anchor extending toward the exterior face of the shaft, so that the anchor at one end engages a vertical dowel 3 which is in a groove at the interior face of the shaft and at the other end engages a vertical dowel 3 which is in a groove at the exterior face of the shaft. The anchor 4 is laid in a horizontal joint or joint between the courses of the blocks forming the shaft and in the usual groove 5 at the top edges of the blocks. The top grooves 5 and the bottom grooves 6 provide a thick mortar bed within which the anchors may be firmly held. The mason may chip out a notch, such as 7, where the anchor crosses the side of the groove at the corner of the shaft and may also chip out notches 8 for the projecting loops of the anchors, or these notches may be formed in the blocks as molded.

In the shaft as shown in Fig. 1, an anchor 4 is provided at each corner in each course and each anchor engages two vertical dowels 3 and thus each block is traversed and reinforced by two vertical dowels, and each corner is reinforced exteriorly and interiorly of the shaft by a connected metallic framework.

In the modified corner anchor 9 shown in Fig. 3, the loops for engaging the vertical dowels are open loops and are not at the ends of the anchors.

The blocks are preferably grooved at both their top and bottom edges, as shown in Figs. 1 and 2, so that the mortar forms a mortar dowel between the adjacent horizontal edges of the blocks. Where the blocks are joined end to end, as in partitions, they may also be grooved at their vertical edges, and in the modified shaft construction shown in Figs. 4 and 5, I have shown blocks so grooved. The anchor is composed of three pieces, a bent dowel 11, and two bent staples 12 (see also Fig. 6), the staples being driven into the material of the blocks and extending outward over the bent dowels and engaging the vertical dowels 3 as heretofore described. In other respects the construction is as heretofore described.

In the modified construction shown in Figs. 7 and 8, the blocks 13 are not grooved at their edges. The vertical dowels 3 are held by anchors in the form of staples 14 driven into the material of the blocks in proximity to the abutting ends of the dowels. Flat sheet metal angle pieces 15 are laid in the horizontal joints at the corners of the shaft and have no projecting parts.

The remaining figures of the drawings show straight wall or partition constructions.

In Figs. 9 and 10, ordinary grooved blocks are employed. The anchor 16 bridges the vertical joint and is laid within the connecting top grooves, and has downwardly projecting prongs at its ends which are driven down into the material of the blocks. It has open loops which engage the vertical dowels 3 as in constructions formerly described, and these vertical dowels are arranged at opposite faces of the blocks as heretofore described.

In the modified construction shown in Fig. 11, anchors 19 laid in the top grooves of the blocks have projecting loops engaging the vertical dowels 3 in the grooves 18 but not bridging the vertical joints of the blocks. An additional horizontal dowel 20 is laid in the grooves and bridges these joints.

As the dowel horizontally bridging the blocks is independent of the anchors for the vertical dowels, the vertical dowels may be located wherever it is most convenient to locate them, as, for example, at the middle of a long block, and the grooves may be arranged accordingly, if desired.

It is obvious that various other modifications may be made in the construction shown

in the drawings and above particularly described within the principle and scope of our invention.

We claim:—

1. A wall structure composed of a single thickness of thin building blocks combined with visible dowels on the outer portions of the wall and arranged exteriorly of the joints between the blocks of the respective courses and bridging the joints between the courses of the blocks, and with visible anchoring means engaging between the blocks of the respective courses and holding the dowels to the blocks.

2. A wall structure composed of a single thickness of superposed thin building blocks, combined with visible dowels on the outer portions of the wall and at both faces thereof and bridging the joints between the courses of the blocks, and with anchors in the joints between the courses of the blocks and having projecting parts engaging the visible dowels, each anchor engaging dowels at both faces of the wall.

3. A wall structure comprising building blocks having grooved outer surfaces, combined with dowels in the grooves and bridging the joints between the courses of the blocks, and with anchors in the joints between the courses of the blocks and having visible projecting parts engaging the dowels.

4. A wall structure comprising building blocks, combined with visible dowels on the outer portions of the wall and at both faces thereof and bridging the joints between the courses of the blocks, and with anchors in the joints between the courses of the blocks and bridging the joints between adjacent blocks in the respective courses and having projecting parts engaging the visible dowels, each anchor engaging dowels at both faces of the wall.

5. A wall structure comprising building blocks having grooves within their edges along the joints between the courses of the blocks, combined with visible dowels on the outer portions of the blocks and bridging the joints between the courses of the blocks, and with anchors in the grooves in the joints between the courses of the blocks and having visible projecting parts engaging the visible dowels.

6. A shaft structure comprising building blocks combined with visible dowels on the outer portions of the blocks and at both faces thereof and bridging the joints between the courses of the blocks, and with angular anchors in the joints between the courses of the blocks at the corners of the structure and bridging the joints between adjacent blocks in the respective courses and having projecting parts engaging the visible dowels, each anchor engaging visible dowels at both faces of the wall.

7. A shaft structure comprising building blocks having grooved outer surfaces, combined with dowels in such grooves and bridging the joints between the courses of the blocks, and with angular anchors in the joints between the courses of the blocks at the corners of the structure and bridging the joints between adjacent blocks in the respective courses and having projecting parts engaging the dowels.

8. A shaft structure composed of a single thickness of superposed thin building blocks having grooves within their edges along the joints between the courses of the blocks and also having grooved outer surfaces, combined with visible dowels in the outer grooves and bridging the joints between the courses of the blocks and abutting at intermediate portions of the blocks, and with angular anchors in the grooves at the joints between the courses of the blocks at the corners of the structure and bridging the joints between the adjacent blocks in the respective courses and having visible projecting loops engaging the visible dowels.

9. A shaft structure composed of a single thickness of superposed thin building blocks having grooves within their edges along the joints between the courses of the blocks and also having grooved outer surfaces at both faces thereof, combined with dowels in the outer grooves and bridging the joints between the courses of the blocks and abutting at intermediate portions of the blocks, and with angular anchors in the grooves at the joints between the courses of the blocks at the corners of the structure and bridging the joints between the adjacent blocks in the respective courses and having projecting loops engaging the dowels, each anchor engaging dowels at both faces of the wall.

In testimony whereof we have affixed our signatures in presence of two witnesses.

WILLIAM GERAERDTS.
CHARLES R. BALLNER.

Witnesses:
VICTOR D. BORST,
BERNARD COWEN.