Aug. 5, 1924. 1,503,931

S. H. WIGHTMAN

WALL AND BRICK THEREFOR

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FIG.1.

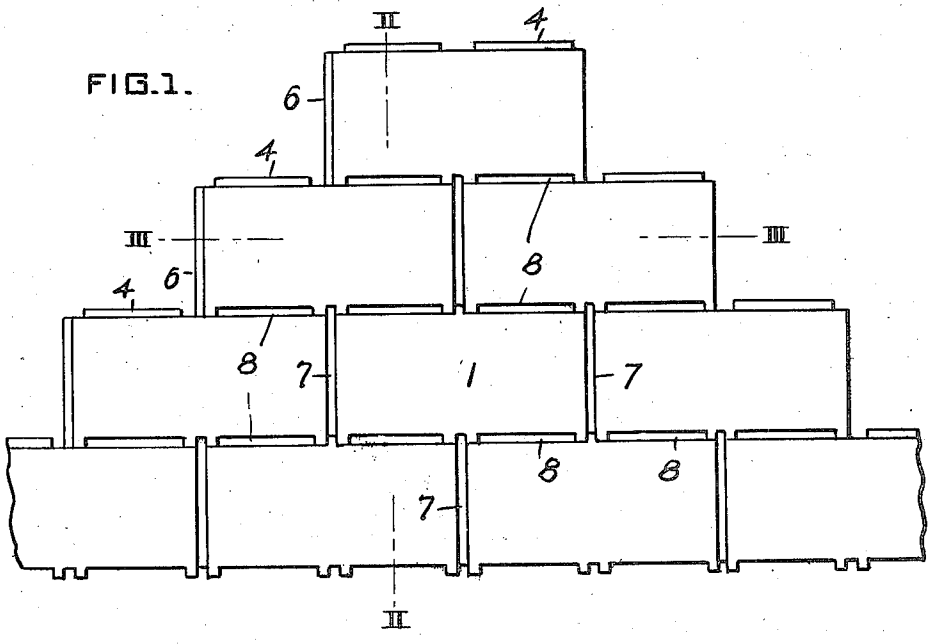


FIG.2.

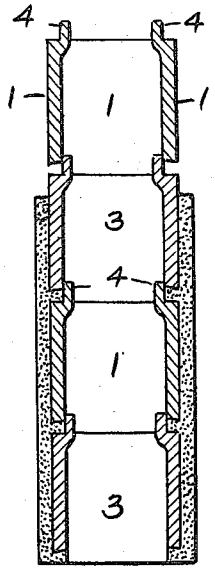


FIG.3.

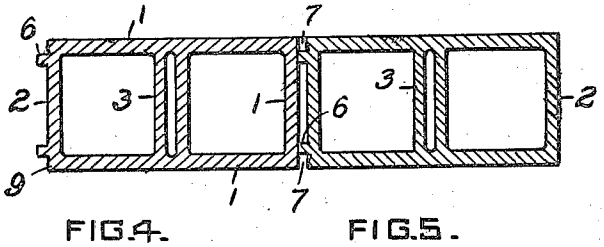


FIG.4.

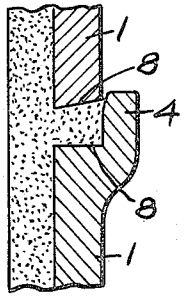
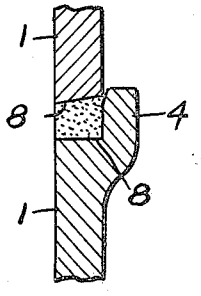


FIG.5.



WITNESSES

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WALL AND BRICK THEREFOR

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FIG.6.

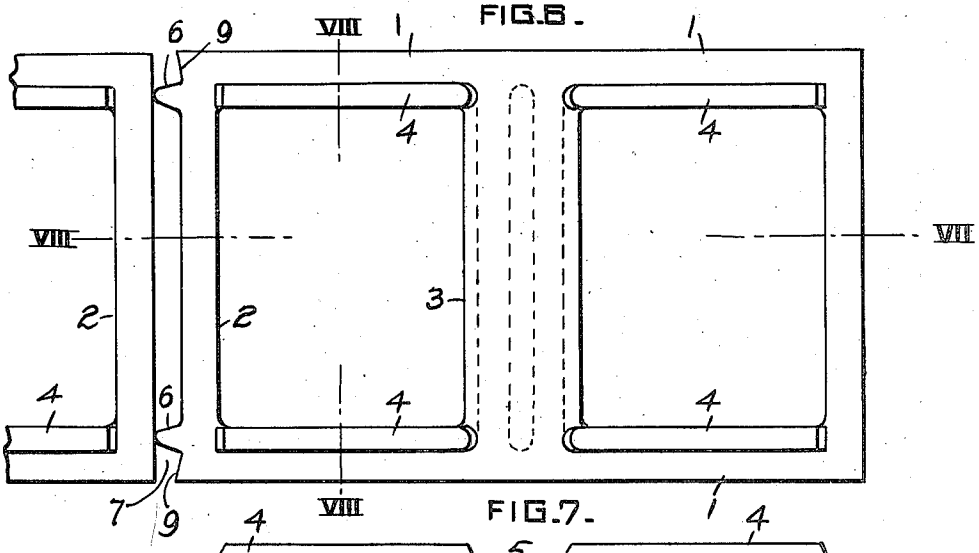

FIG.7.

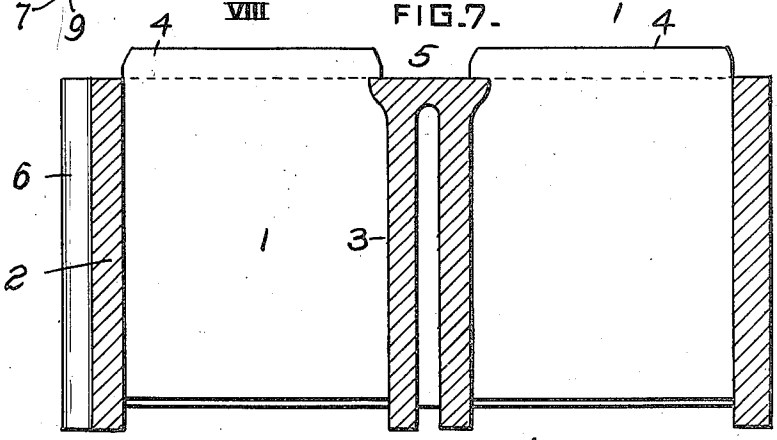

FIG.9.

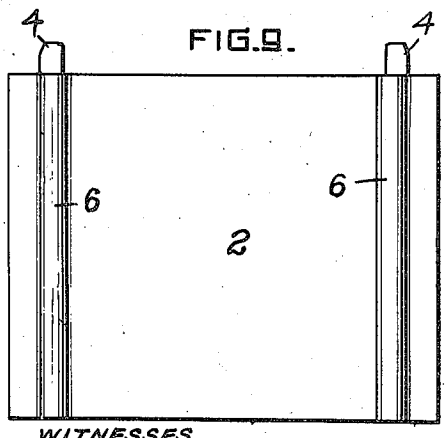

FIG.8.

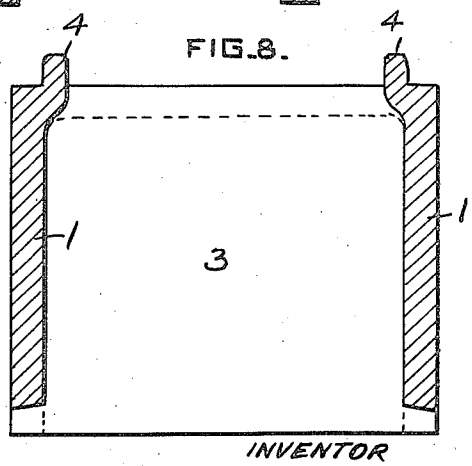

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FIG.10.

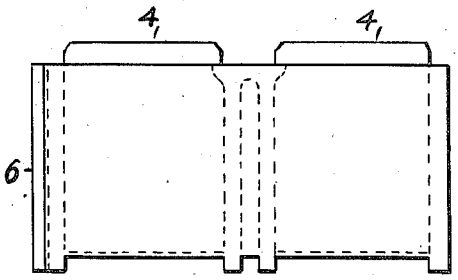


FIG.11.

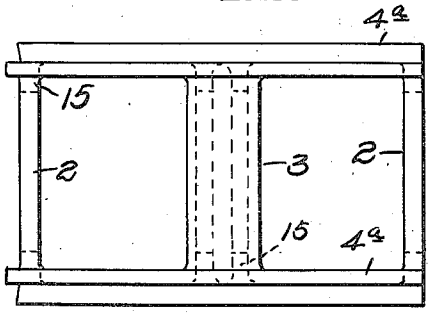


FIG.12.

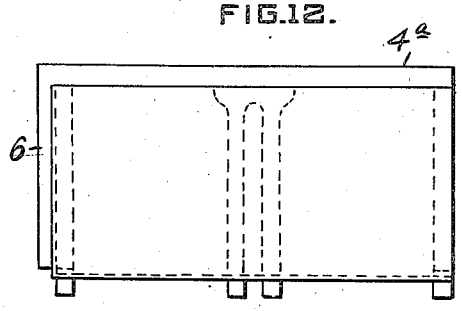
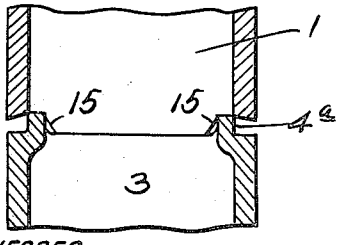


FIG.13.



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J. Herbert Bradley.

FIG.14.

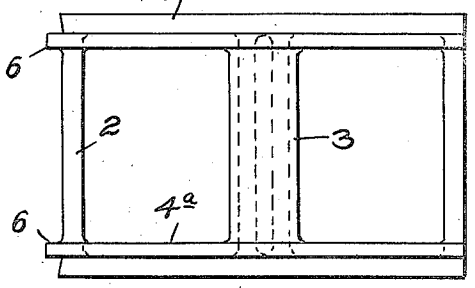

FIG.15.

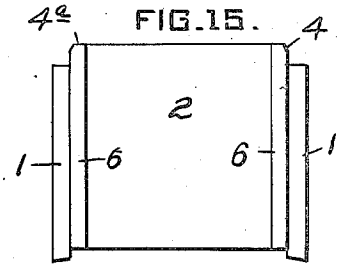

FIG.16.

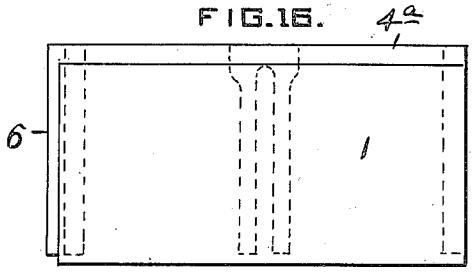

FIG.17.

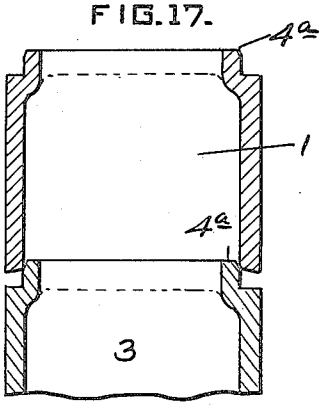

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FIG. 18.

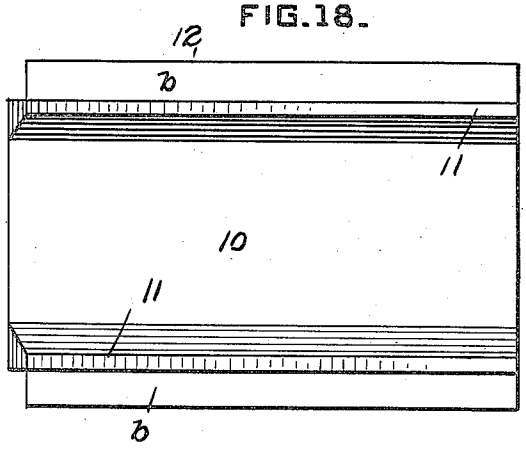


FIG. 20.

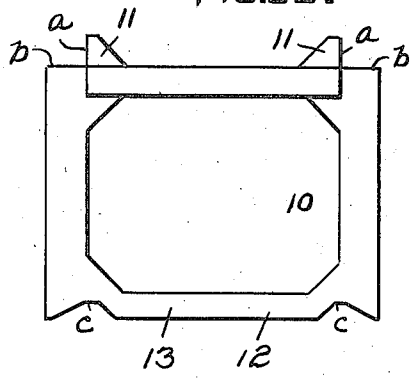


FIG. 19.

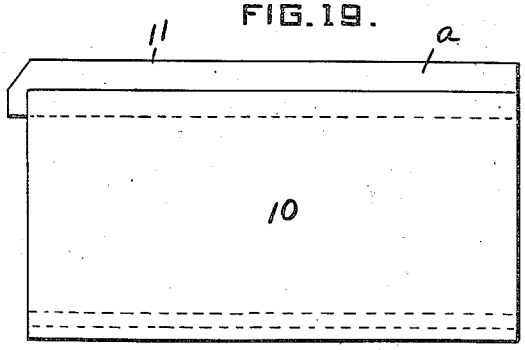
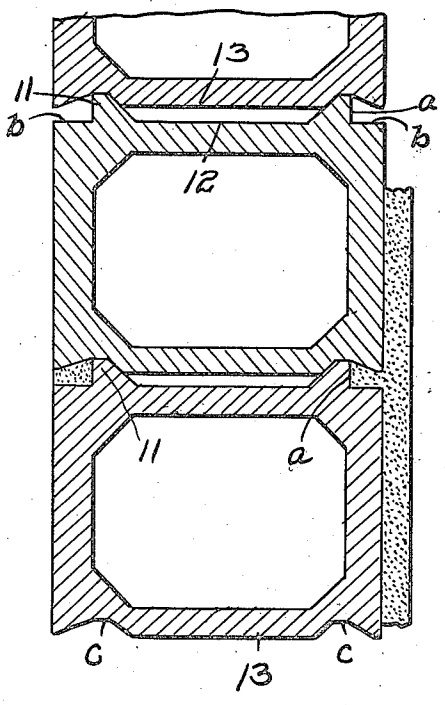


FIG. 21.



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INVENTOR

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by Dennis B. Wolcott

Atty

Patented Aug. 5, 1924. 1,503,931

UNITED STATES PATENT OFFICE.

SHERBURNE H. WIGHTMAN, OF BIRMINGHAM, MICHIGAN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO INTERNATIONAL CONCRETE CORPORATION, OF WILMINGTON, DELAWARE, A CORPORATION OF DELAWARE.

WALL AND BRICK THEREFOR.

Application filed June 9, 1920. Serial No. 387,698.

To all whom it may concern:

Be it known that I, SHERBURNE H. WIGHTMAN, residing at Birmingham, in the county of Oakland and State of Michigan, a citizen of the United States, have invented or discovered certain new and useful Improvements in Walls and Bricks Therefor, of which improvements the following is specification.

In order to ensure lateral stability of walls formed of bricks which are comparatively narrow, two or more bricks are laid side by side and wall members thus formed at suitable intervals by transversely arranged bricks. In thus laying up the bricks extreme care must be exercised to make the intermediate mortar beds of uniform thickness. In order to lessen the labor incident to laying a large number of bricks for a given height of wall, large units such as hollow blocks or tiles having a width of two or more bricks have been employed. The labor in setting of these units on account of their weight and shape are serious objections to their use. And further, as the surfaces on which the mortar beds are formed are quite large, greater care and time is required in so applying the mortar in order that the beds in which the next row of blocks is imbedded shall be of uniform thickness to ensure vertical alinement of the blocks one upon the other.

The object of the invention described herein is to provide blocks having openings therethrough, either vertical or horizontal and each of the blocks having an upper or lower side so constructed that when one block is placed upon another there will be spaces or grooves between adjoining edges of the side walls of the blocks for the reception of mortar or other material, and the bearing surfaces of the blocks will be intermediate the side walls. It is a further object of the horizontal separation of the blocks, whereby vertical spaces or grooves may be formed intermediate adhering blocks for the reception of mortar, etc. It is also the object of the invention described herein to provide the blocks with means whereby the blocks may be quickly and accurately placed one on another and locked as against lateral movement. It is a further object of the invention to utilize the mortar enclosed in such grooves as an anchor for a layer of mortar or stucco applied to the exposed surfaces of a wall formed of such blocks. The invention is hereinafter more fully described and claimed.

In the accompanying drawings forming a part of this specification, Fig. 1 is a side elevation of a portion of a wall formed of the improved blocks; Figs 2 and 3 are sectional views, the planes of section being indicated respectively by the lines II—II and III—III, Fig. 1; Figs. 4 and 5 are sectional detail views of completed or sealed joints, the sealing material in Fig. 3 serving as a key to hold the surface coat in position; Fig. 6 is a top plan view of the improved block; Figs. 7 and 8 are sectional views of the same, the planes of section being indicated by the lines VII—VII and VIII—VIII, Fig. 6; Fig. 9 is an end view of the block; Fig. 10 is a view in side elevation showing a modification of the construction shown in Figs. 6 and 9 inclusive; Figs. 11 and 12 are plan and side elevations of a block illustrating certain modifications in my improved building block; Fig. 13 is a sectional detail view showing the joint between adjacent blocks of the construction shown in Figs. 11 and 12; Figs. 14, 15, and 16 are top plan, end and side elevations of a still further modification of the improved block and Fig. 17 is a sectional view illustrating the joint between adjacent blocks embodying the construction shown in Figs. 14, 15, and 16; Figs. 18, 19 and 20 are top plan, side and end views showing the improvements claimed herein embodied in a block having a horizontal opening therethrough; and Fig. 21 is a vertical section of the portion of a wall formed of blocks constructed as shown in Figs. 18 to 20 inclusive.

In the practice of the invention, the improved block which is preferably formed of concrete, is a rectangular body having side walls 1 and end walls 2, and preferably a transverse partition 3 parallel with the end walls and dividing the space enclosed by the walls into two vertical openings. As in laying these blocks, they will be so constructed that the blocks of one row will break joints with those of the vertically adjacent rows, the overlap being equal to one-half of the lengths of the blocks, the upper ends of the

partition walls 3 are made of a width equal to or approximately equal to twice the thickness of the end walls 1, thereby providing a bearing surface for the ends of adjoining blocks.

In order to ensure the proper placing of the blocks when building a wall, each block is provided with flanges 4 projecting a substantial distance beyond the side and end walls and partitions. As these flanges are intended to project into the openings of a vertically adjoining block, they are so formed that their outer faces will be within a plane coincident with the inner surfaces of the walls with which they are integrally connected. These flanges may be formed on any of the walls of the block, but it is preferred for reasons which will hereinafter appear, to form them on the side walls 1 of blocks having vertical openings and hence as the end walls in the constructions shown in Figs. 1 to 10 should extend and bear on the partition for its entire horizontal length and extend across and bear on the side walls at the ends of the partition, the flanges when formed on the side walls will extend from the end walls to the partition, care being taken that gap 5 or the distance between adjacent or inner ends of the flanges is approximately equal to twice the thickness of the end wall plus the distance between the spacing ribs 6 on one of the end walls.

If desired, these locking flanges may extend the entire length of the block as shown at 4^a in Figs. 11, 12, 14 and 16. In such case notches 15 are formed in the lower edges of the end walls and partition immediately within the side walls for the reception of the upper portions of the flanges 4^a as shown in Fig. 13.

Notwithstanding the projection of the guiding and locking flanges 4 or 4^a of one block into the openings of vertically adjacent blocks, a wall formed of blocks merely superposed one on the other, will have little stability and hence provision is made for the formation of a bond or permanent support between the adjacent blocks after the blocks have been arranged to form a wall. To this end the blocks are so constructed that one side will have portions which will project a short distance beyond the side walls of the block, so that when blocks are superposed one on the other, the projecting portions of one block will bear on some portion of an adjoining block, not only preventing the edges of the side walls of adjoining blocks coming into contact with but separating such edges a substantial distance, thereby forming grooves for the reception of mortar, stucco, etc.

In the construction shown in Figs. 1 to 10, the block is so constructed that the end walls 2 and the partition 3 project beyond the side walls 1, so that when the blocks are arranged in a wall the projecting portions of the partition and end walls will bear upon the end walls and partitions of the blocks below, but the edges of the side walls will be separated and there will be formed between such edges grooves 8 for the reception of mortar, stucco, etc.

In order to form rear walls for these gaps or grooves 8, the lock flanges 4 are formed on the side walls rather than on the end walls and partitions, so that when the blocks are placed in position, these guiding and locking flanges will form the inner walls of the grooves except in line with the end walls and partitions, except in the forms shown in Figs. 1 to 10, where the rear walls of these grooves will be formed by the projecting edges of said members. As shown in Figs. 4, 5 and 8, the lower edges of the side walls of the blocks are so inclined that the grooves 8 will be dovetailed in cross-section, thus ensuring the retention of the sealing material.

In order to provide for the formation of mortar joints between the vertical faces of adjoining blocks, spacing ribs 6 are formed on one side of each block a short distance from the surfaces of the side walls and preferably substantially in line with the locking ribs 4 or 4^a as shown in Figs. 6, 9, 11 and 14. When these blocks are placed end to end in a wall, the ribs 6 on the one block will bear against the unribbed end of an adjoining block, and as the ribs 6 are preferably proportioned to project a distance approximately equal to the thickness of the outer walls of the block, vertical grooves 7 are formed for the reception of mortar, stucco, plaster or other suitable binding material, the rear walls of the grooves being formed by the ribs 6. In order to ensure the retention of the binding material in these grooves, they are made dovetail in cross section which can be easily effected by inclining the portions of the end walls of the blocks outside of the ribs as shown at 9 in Figs. 3 and 6.

It is a characteristic of the improvement described herein that when a wall is formed by arranging the blocks in suitable juxtaposition that by reason of the construction of the blocks, suitable spaces or grooves having a depth not substantially greater than the thickness of the side walls are formed between adjacent surfaces of the blocks, said grooves opening outwardly to permit of the forcing of motar, stucco, or other suitable material between adjoining but spaced surfaces of the blocks. The blocks having been properly arranged and being temporarily supported by contact of portions on the upper and lower ends, the contacting or bearing surfaces being within the surfaces to be cemented together, the mortar or other material is forced into the grooves 7 and 8, thereby completing the wall

and providing, when the mortar has hardened, solid beds between adjoining blocks. These beds on account of the adhesive characteristic of the material employed, become integral with the portions of the blocks between which they have been forced. It is preferred that the grooves should have a depth substantially equal to the thickness of the parts of the blocks between which they are formed. As for example, in the construction shown herein, the grooves should have a horizontal depth equal to the thickness of the side walls of the blocks so that when the mortar or other material has hardened, the wall will consist of two vertical but spaced members having substantially equal and uniform thickness and connected by transverse members, i. e., the end walls, or end walls and partitions when partitions blocks are employed.

It may sometimes occur in laying up a wall that small objects, as grains of sand or small pebbles, or an unevenness of surfaces, will prevent a uniform contacting of the interior surfaces of adjoining blocks.

Such uneven or irregular contact of the interior or temporary bearing surfaces would not endanger the final stability of the wall as the load will be finally borne, in part or wholly by the mortar beds.

In the construction shown in Figs. 1 to 9, only the portions of the side walls intermediate the end walls and the partition are shortened to form the grooves 8 for the mortar beds, and the flanges 4 are made of an equal length. If desired, the side walls may be cut away for their entire length, so that only the partitions and the portions of the end walls intermediate the side walls will project beyond the latter, as shown in Figs. 10 and 11 and 12. In such case the flange 4^a is preferably made of a length equal to the distance between the end walls and the lower edge of the partition is notched for the reception of the upper edges of the flanges; the flanges 4^a may extend the entire length of the block in which case both the end walls and the partition will be notched as hereinbefore stated.

If desired, the end walls and partition may extend above the side walls distances equal to the height of the flanges 4^a as shown in Figs. 11 to 17 inclusive, in which case the side walls on the opposite side of the block will extend below the end walls and partitions sufficiently far to overlap the flanges 4^a short distances as shown in Fig. 17.

The improvement has been described in connection with blocks having openings so formed therethrough that when the blocks are laid up in a wall, vertical passages are formed therein. The improvements, as regards generic features, are equally applicable where the passages in the blocks will be horizontal. As shown in Figs. 18 to 21, the blocks 10 are provided on one side with ribs 11 arranged parallel with the outer side walls or faces 12 of the block, but at such distances from such faces that outer surfaces *a* of the ribs will coincide with planes coincident with the inner surfaces of the side walls as shown in Figs. 20 and 21, whereby ledges *b* of widths equal to the thickness of the side walls will be formed outside of the ribs. It is preferred that the inner surfaces of the ribs should be inclined to facilitate the placing of another block thereon. The side of the block opposite that having the ribs 11 has its median portion constructed to project in between the ribs of a similar vertically adjacent block. This projecting portion 13 is preferably formed by recessing the block in line with the outer or side walls of the block as shown at *c*.

In the construction shown in Figs. 1 to 11, the temporary supporting elements are the end walls and partitions or portions of the block at an angle to the side walls on which the mortar beds are formed after the blocks are placed in position in a wall. In the construction shown in Figs. 18 to 21, the ribs 11 which are parallel with the outer faces or side walls, form the temporary supporting elements as well as the rear walls of the grooves in which the mortar beds are formed. Although the two blocks are distinguished one from the other by the arrangements of the temporary supporting elements, it is characteristic of both forms that the temporary supporting elements are intermediate planes coincident or substantially so with the inner faces of the side walls of the blocks, and that in walls formed in either construction of blocks, the grooves in which the mortar beds are formed, are in alinement with the side walls of the block and are accessible from outside the wall and can therefore be formed after the blocks have been placed in the wall and assumed the desired permanent positions. The mortar when applied fills up the outwardly opening spaces formed in placing the blocks in position and when hardened, locks the blocks in position and increases the bearing areas of the one block on another.

It is characteristic of the improvement described herein that when it is desired to coat a surface or surfaces of a wall formed as described, the coating material will enter the grooves at the joints, thereby forming not only load carrying elements of the wall as hereinbefore described, but also keys or anchors holding the stucco or plaster in position and ribs strengthening the coating. As the coating extends over the entire surface or surfaces of a wall and will adhere firmly thereto, it will form an additional load carrying element of considerable efficiency by reason of the ribs integral therewith and mechanically engaging the blocks.

It will be understood that in designating certain parts as temporary supports, it is not meant that such become ineffective after the mortar beds are formed, but that such parts are the sole supports during the laying up of the wall and until the mortar beds are formed and hardened.

I claim herein as my invention:

1. A wall consisting of a plurality of rows of blocks, each row consisting of a plurality of blocks arranged end to end, said blocks being so spaced as to provide grooves between adjacent blocks having depths equal to the desired widths of the mortar beds and a layer of mortar extending over such wall and having portions projecting into said grooves to form the mortar beds and providing the sole bond between the blocks.

2. A wall consisting of two parallel but spaced vertical elements having thicknesses at least equal to the desired widths of mortar beds, each element consisting of shaped members and alternating mortar beds and transverse connecting elements integral with oppositely disposed, spaced members in the vertical elements and each transverse element being directly in contact with adjacent elements and adapted to maintain the vertical elements in spaced relations and a layer of mortar over a face of the wall and having portions projecting in between the vertical elements and forming the mortar beds of the walls and forming the only bond between the vertical elements.

3. A wall consisting of hollow blocks provided with portions intermediate the side walls and adapted to bear on intermediate portions of vertically adjacent blocks and holding the edges of the side walls spaced from those of the vertical adjacent blocks, the side walls having a thickness at least equal to the desired widths of mortar beds, mortar beds interposed between adjacent but spaced edges of the side walls and a layer of mortar extending over a face of the wall and integral with the mortar beds between the blocks said mortar portions forming the sole bond between adjacent blocks.

In testimony whereof, I have hereunto set my hand.

SHERBURNE H. WIGHTMAN.