Sept. 27, 1932. H. P. C. KEULS 1,879,311

WALL STRUCTURE

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Fig. 1.

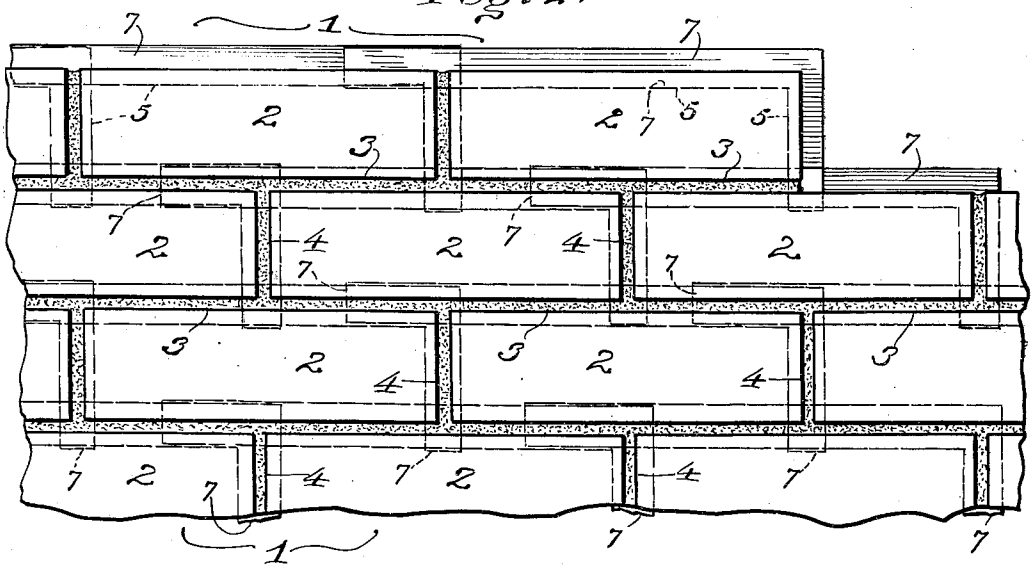
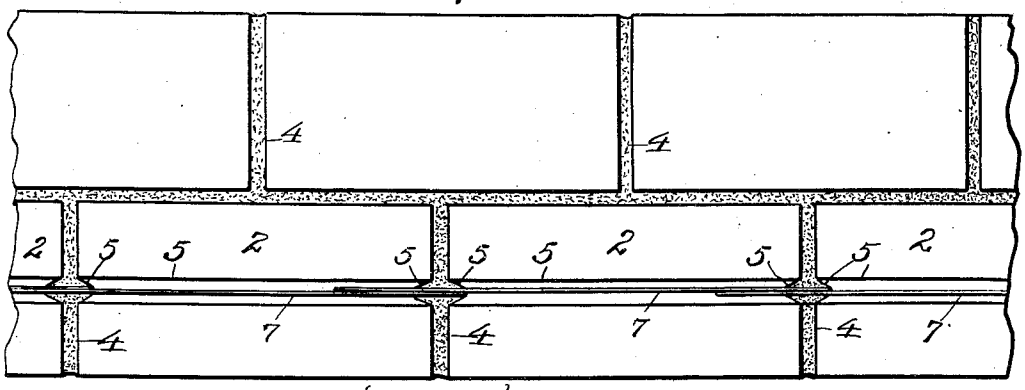


Fig. 2.



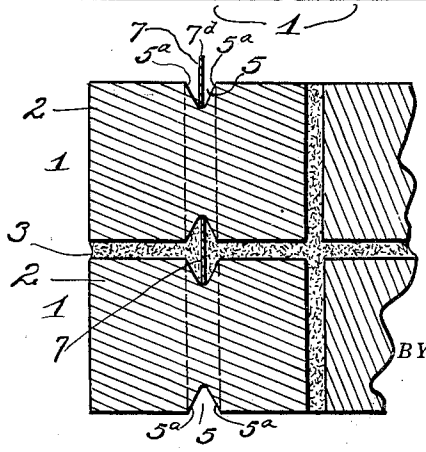


Fig. 3.

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Fig. 4.

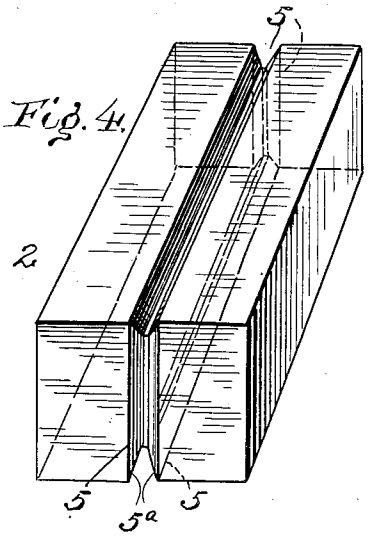
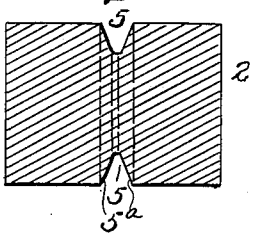


Fig. 5.



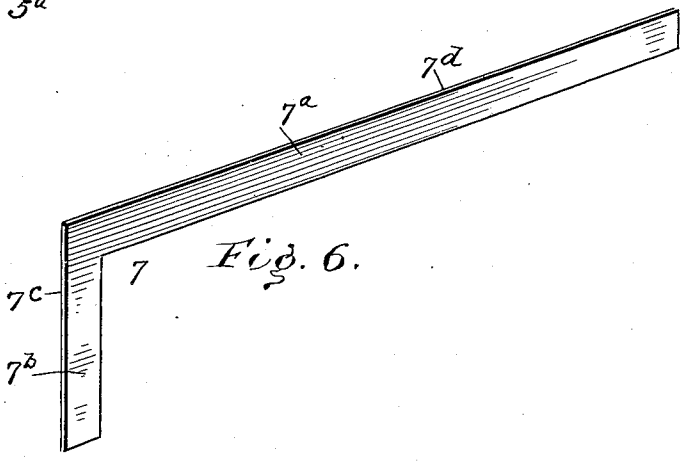
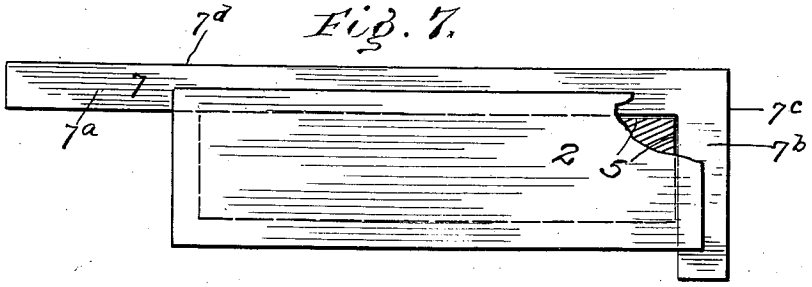


Fig. 6.

Fig. 7.



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Patented Sept. 27, 1932

1,879,311

UNITED STATES PATENT OFFICE

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WALL STRUCTURE

Application filed July 25, 1931. Serial No. 553,087.

This invention relates to wall constructions as made up of building blocks, such as bricks, tiles, stone or composition wall units, and the like, which are laid with mortar or other suitable binder material between them, forming joints, and the invention is an improvement on a prior invention made by me directed to the employment of sealing strips in the joints between the blocks to prevent the passage, penetration or seepage of water or moisture through the joints.

In said prior invention, forming the subject of an application for Letters Patent filed by me February 24th, 1931, Serial No. 517,803, building blocks, specifically in the form of bricks, are formed with grooves communicating with the joints between the bricks and sealing strips are seated in the grooves and embedded in the mortar of the joints filling the grooves, thereby forming in the joints, barriers or seals against the passage of water therethrough.

The improved characteristic of the present invention resides in the cross sectional form of the grooves to receive the sealing strips; and also in the specific form of such strips, with the object of obtaining a better and more effective sealing action, and with the further object of centering the building blocks relative to each other in the building of the wall; and with these and other objects in view the invention consists of the improved form, construction and relation of parts which will be described in detail in the specification to follow, and the novel features of which will be set forth in the appended claims.

In the accompanying drawings:

Fig. 1 is a front elevation of a portion of a wall structure having my invention embodied therein, parts being broken away to better show the construction;

Fig. 2 is a horizontal sectional plan view of the same on the line 2—2 of Fig. 1;

Fig. 3 is a cross section on the line 3—3 of Fig. 1;

Fig. 4 is a perspective view of one of the blocks;

Fig. 5 is a cross section through the same;

Fig. 6 is a perspective view of one of the centering and sealing strips; and

Fig. 7 is an elevation of one of the blocks and one of the sealing strips positioned in the grooves thereof, showing how the strips are assembled in the laying of the blocks to center the latter.

Referring to the drawings:

The wall as shown in Fig. 1 is made up of courses 1 of building blocks 2 (here shown as bricks), which courses are laid as usual one over the other with horizontal joints 3 between the courses, and with vertical joints 4 between the blocks of a course and breaking joint as usual with the vertical joints of the adjacent courses.

In order to seal the vertical and horizontal joints between the blocks, to prevent the passage of water and moisture, etc., each block is formed, as best shown in Figs. 4 and 5 with horizontal grooves 5 in the sides of the blocks and similar vertical grooves 5 in the ends of the blocks, which side and end grooves are preferably joined to each other to form a continuous groove entirely around the block, the said grooves of adjacent blocks being preferably alined with each other as shown. These grooves are adapted to receive strips 7 of a material impervious to moisture, preferably some suitable metal, which strips in cooperation with the mortar or other binder filling the spaces between the blocks and filling the grooves, act as effective seals and prevent the passage or seepage of water or moisture through the joints.

In accordance with the present invention, the grooves in the blocks are formed with side walls 5^a which converge toward each other toward the bottom of the grooves. In other words, said grooves are V-shaped in cross section, presenting, where the edge of the inserted strip contacts with the bottom of the groove, a sharp angle as best shown in Fig. 3, in which the edge of the strip is held against lateral displacement. A groove of this form possesses several advantages, as it affords in connection with the sealing strip seated therein and the mortar embedding the strip and filling the groove, a very effective barrier or seal against the passage of water or moisture around the edges of the strip; and further, it acts to maintain the strip centrally

in the groove and in an upright position therein, this latter function being performed by the employment of a sealing strip of angular form as shown in Fig. 6, having a horizontal arm 7^a to seat in the horizontal groove in the block, and a connected vertical arm 7^b to seat in the vertical groove in the block as shown in Fig. 7.

By reason of the maintenance of the strip in an upright position in the block in this manner, the blocks will be accurately centered, both in respect to the individual blocks of a course, and in respect to the courses themselves, since a sealing strip applied to the brick as shown in Fig. 7 will present a centering edge 7^c at the side to seat in the end groove of the next block of a course, and will present a centering edge 7^d at the top to enter the groove in the underside of the block of the course above. In this way the blocks of a course, and the several courses of blocks, may be accurately centered in the building of a wall without the necessity of employing plumb lines, squares, or other testing instruments as is now generally practiced.

The width of the strips are such in relation to the depth of the grooves in the bricks, that with the edges of the strips seated in the bottoms of the grooves, the blocks will be maintained spaced from each other to receive the mortar or binding material forming the joints. For instance, to lay the bricks with a 3/8″ joint between them, the depth of the grooves in the bricks will be 2/8″, and a 7/8″ strip will be employed. In this way the strips in connection with the grooves, predetermine and control the thickness of the joint, and insure a uniform joint between the bricks throughout the wall.

In the building of a wall employing building blocks or bricks and centering and sealing strips of the form above described, after placing in position the first block with mortar on its end, one of the sealing strips is set in place with the horizontal arm thereof seated in the horizontal groove in the upper side of the block, and with the vertical arm seated in the vertical groove in the end of the block and embedded in the mortar thereon. The second block of the course is now (after having mortar spread on its adjacent end) placed against the first block and its end groove seated over the centering edge 7^c of the vertical arm of the strip, and after this block is properly tamped in position, a second sealing strip is set in the grooves thereof, with its left hand end overlapping the right hand end of the first strip; and these operations are repeated until the first course of bricks is laid, which course will present on its upper side open grooves with the horizontal arms of the sealing strips seated therein and projecting upwardly therefrom.

The mason now covers the laid course of blocks with a layer of mortar, and the second course of bricks is laid in a manner similar to the first course, each block of the course being placed upon the blocks of the first course and being centered thereon by seating the grooves in the undersides of the blocks around the horizontal projecting edges of the first sealing strips, and as the blocks of the second course are tamped down, the mortar will be pressed up into the grooves in the undersides of the same and will embed the sealing strips projecting therein.

The length of the end arms 7^b of the sealing strips will preferably be such that when seated in place as shown in Fig. 7, the lower ends of these arms will project some distance below the lower side of the block so as to extend in the horizontal grooves in the upper side of the next block beneath, thereby producing a very compact and effectual interlocking of the vertical arms of the strips with the blocks of the adjacent courses, in addition to the interlocking effected by the extension of the upper and lower edges of the horizontal arms of the strips in the grooves of the blocks of the adjacent courses.

The extension of the ends of the vertical arms of the angular sealing strips into the adjacent horizontal joints between the blocks, effects an interlocking of the courses of the blocks with each other, and a tying of said courses together, thereby reinforcing the wall structure as a whole, and enabling a wall of the thickness of a single block or brick, to withstand stresses, which without such reinforcement, would require a wall of the thickness of several blocks. Such reinforcement of the wall, obtained by the use of the angular strips, is not dependent upon the seating of said strips in grooves in the blocks, but will result from the mere embedding of the strips in the mortar or binding material constituting the joints between the bricks.

In carrying out my invention, I prefer to employ grooves in the blocks of V-shape in cross section to maintain the strips centrally in upright position in the performance of their centering functions, but it will be understood that the invention is not limited to grooves of this specific form, since the invention includes within its scope, other means in respect to the relative form of the strips and grooves which will maintain the strips in upright position to enable them to effect the centering of the blocks as the building of the wall progresses.

While in the foregoing description and accompanying drawings I have set forth my invention in the particular detailed form and construction of the parts which I prefer to adopt, it will be understood that these details may be variously changed and modified by the skilled mechanic without departing from the limits of the invention; and further, it will be understood that the invention is not limited to any particular form or construc-

tion of the parts, except in so far as such limitations are specified in the claims.

Having thus described my invention, what I claim is:—

1. In a wall construction, the combination of courses of building blocks disposed one course above the other, and each block formed with grooves alined with the grooves of adjacent blocks, block centering and sealing strips extending in the grooves of the blocks of a lower course and extending upwardly into the grooves of the blocks of the next course above, said strips being maintained in upright position by the lower blocks independently of the blocks above; whereby in the building of the wall the blocks are centered relative to each other.

2. In a wall construction, the combination of courses of building blocks disposed one course over the other and each block formed with vertical and horizontal connected grooves V-shape in cross section, with the grooves of adjacent blocks alined with each other, block centering and sealing strips disposed in the alined grooves and comprising each a horizontal arm seated in the alined horizontal grooves of the blocks of adjacent courses, and a vertical arm connected with the horizontal arm and seated in the vertical alined grooves of adjacent blocks of a course; whereby the arms of said strips are maintained centrally of the grooves in upright position and the blocks thereby centered relative to each other.

3. In a wall construction, the combination of courses of building blocks disposed one course over the other and each block provided in its sides and ends with connected grooves V-shape in cross section, with the grooves of adjacent blocks alined with each other both at the sides and ends of the same, angular block centering and sealing strips disposed in the alined grooves and comprising each a horizontal arm seated in the alined horizontal grooves of the blocks of adjacent courses, and a connected vertical arm seated in the alined vertical grooves of the adjacent blocks of a course; whereby the arms of the strips are maintained centrally of the grooves in upright position, and the blocks of one course centered relative to those of another course.

4. In a wall construction, the combination of courses of building blocks disposed one course above the other, said blocks being each formed in adjacent vertical faces with vertical grooves V-shape in cross section, and being formed in adjacent horizontal faces with horizontal grooves V-shape in cross section, binder material between said blocks constituting vertical joints between the individual blocks of a course and horizontal joints between the courses of blocks, vertical sealing strips embedded in the binder material of the vertical joints and extending into the vertical grooves in adjacent blocks to seal the vertical joints, and horizontal sealing strips embedded in the binder material of the horizontal joints and extending into the horizontal grooves in adjacent blocks to seal the horizontal joints.

5. In a wall construction, the combination of courses of building blocks disposed one over the other and each block provided with a continuous groove V-shape in cross section extending entirely around it, with the grooves of adjacent blocks alined with each other at the sides and ends of the blocks, angular block centering and sealing strips in the alined grooves, each strip comprising a horizontal arm seated in the alined horizontal grooves of the blocks of adjacent courses, and a connected vertical arm seated in the alined vertical grooves of adjacent blocks of a course; whereby the strips serve to center the blocks relative to each other, and a binder material between the blocks, extending into the alined grooves and embedding said strips.

6. In a wall construction, the combination of courses of building blocks arranged one over the other and each block formed with connected vertical and horizontal grooves, with the grooves of adjacent blocks alined with each other, sealing strips disposed in the alined grooves and comprising each a horizontal arm seated in the alined horizontal grooves of the blocks of adjacent courses, and a vertical arm connected with the horizontal arm and seated in the alined vertical grooves of the adjacent blocks of a course, the lower ends of said vertical arms extending respectively into the horizontal grooves of the next blocks beneath.

7. The combination of elements set forth in claim 6, characterized by the fact that the free end of the horizontal arm of each strip overlaps the opposite end of the horizontal arm of the adjacent strip.

8. A block centering and sealing strip for wall constructions made up of courses of building blocks having horizontal and vertical grooves alined in respect to the adjacent blocks, said strip comprising a horizontal arm adapted to seat in the horizontal alined grooves of the blocks of adjacent courses, and a vertical arm connected with the horizontal arm and adapted to seat in the vertical alined grooves of the adjacent blocks of a course.

9. In a wall construction, the combination of courses of building blocks disposed one course over the other, and a binder material between the blocks forming horizontal joints between the courses and vertical joints between the individual blocks of a course, reinforcing strips disposed in said joints and comprising each a horizontal arm extending in the horizontal joint between adjacent courses of bricks and embedded in the binder material thereof, and a vertical arm connected with the horizontal arm and extending in the vertical joint between adjacent blocks and

embedded in the binder material thereof, the ends of the vertical arms of the several strips extending into the horizontal joints between the courses of blocks.

10. The combination of an improved building block for wall constructions and a block centering and sealing strip comprising a horizontal arm and a vertical arm, the block being formed in its sides and ends with longitudinally extending connected grooves, the grooves in the sides and ends of the block being respectively adapted to receive the horizontal arm and the vertical arm of said strip and being of a cross sectional form which, while permitting of the entrance of mortar therein, will conjointly, in cooperation with the two arms of the strip, prevent tipping or lateral displacement of the same, and thereby hold the strip in upright centering position.

11. The improved building block for wall structures, said block being formed with a groove of general V shape in cross section extending continuously therearound, in combination with a block centering and sealing strip comprising a horizontal arm seated in the horizontal portion of the groove, and a vertical arm seated in the vertical portion of the groove; whereby the sharp angles at the bottoms of the horizontal and vertical portions of the groove conjointly will hold the strip against lateral displacement or tipping, and will maintain the same in upright centering position.

In testimony whereof, this specification has been duly signed by:

HENRY P. C. KEULS.