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WALL CONSTRUCTION.

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1,029,822.

Patented June 18, 1912.

Fig. 1.

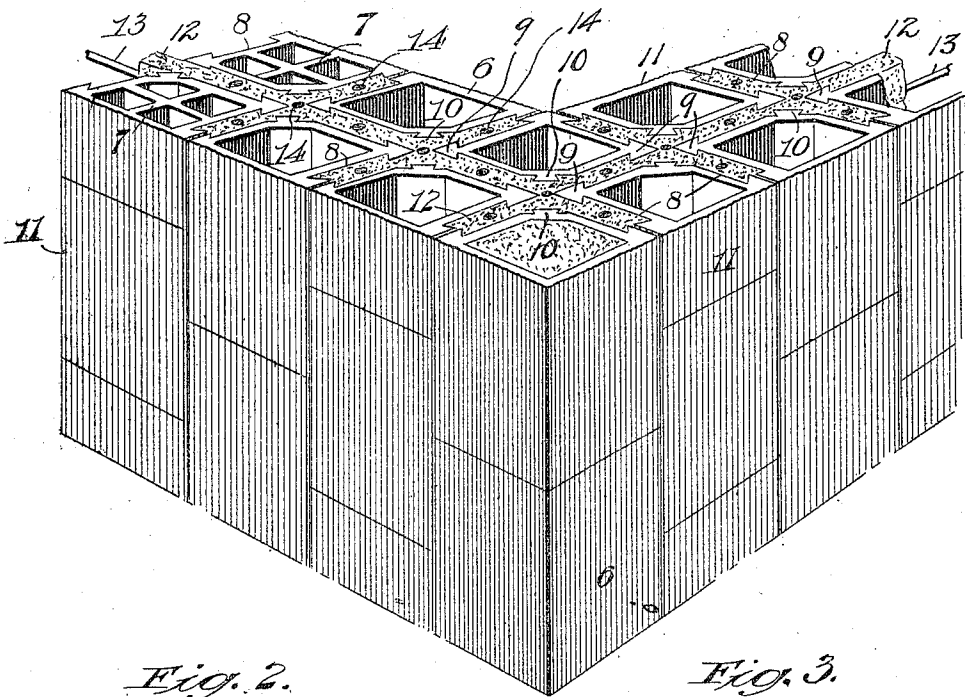


Fig. 2.

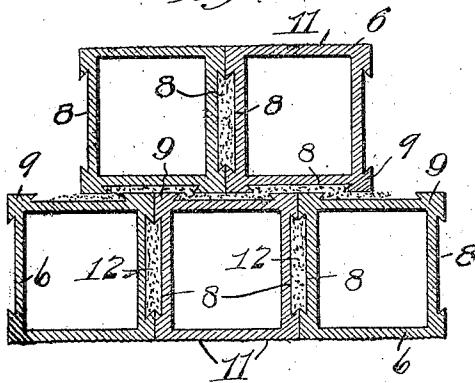
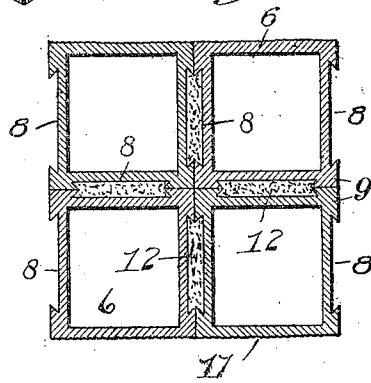


Fig. 3.



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UNITED STATES PATENT OFFICE.

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To all whom it may concern:

Be it known that I, CHARLES EDMUND RAFFERTY, a citizen of the United States, residing at Washington, District of Columbia, have invented certain new and useful Improvements in Wall Construction, of which the following is a specification.

This invention relates to wall or partition construction and particularly to a novel construction and improvement in the form and use of building blocks or building tiles designed to be embodied in the construction of walls, partitions, and for analogous purposes.

To this end the invention has in view the provision of a building block or tile which can be manufactured in a substantial and efficient form at little cost, and with no additional outlay or capital than is called for by the manufacture of regular building material of similar character, thereby eliminating the expense incident to lengthy transportation.

One of the distinctive objects of the invention is to provide hollow building blocks or tiles so made as to be interlocked and bonded together in a thoroughly practical wall construction embodying ample reinforcement, all of which may be accomplished without the use of skilled labor.

A further object of the invention is to construct a wall or partition of such material and in such a manner as to make its inclosures impervious to moisture, heat or cold; render it fireproof, sound-proof, durable, strong and of light weight; provide a flat surface so grooved or serrated as to enable cement, plaster or equivalent material to readily adhere thereto without the use of lathing or equivalent means for both interior and exterior finish; provide one or more continuous air chambers extending from the base throughout the entire height of the wall or partition, or for any desired height; provide spaces within its confines for the installation of all such piping and wiring as is in common use in modern buildings.

The invention also has for its general object the provision of a hollow building block or tile made of any suitable material available for the purpose, such as burnt clay, either vitrified or glazed, and which can be readily and inexpensively made into any desired form or size, but preferably of uniform size so as to secure simplicity and uni-

formity in their use in the construction of a wall or partition, as well as simplicity and economy in their manufacture, both of which are of practical importance in building construction. Furthermore, the improved construction of block or tile is regulated to such length as may be readily handled to quickly build a wall, or as may suit the requirements in various heights of walls; thus in a twelve inch wall twelve of the improved blocks or tiles (12x12x36), when so placed and bonded by pouring the concrete into the spaces provided therefor, would build the same area of wall as could be built with one thousand of the standard sizes of brick, besides being much more economical from the standpoint of labor, and being cooler and drier in summer and warmer and drier in winter.

The essential features of the invention are necessarily susceptible to embodiment in various forms of construction without departing from the spirit and scope of the invention, but several practical embodiments of the latter are suggested in the accompanying drawings, in which—

Figure 1 is a perspective view of a corner portion of a wall built in accordance with the present invention and embodying one form of the improved building block or tile. Fig. 2 illustrates a slightly different arrangement and form of the tiles. Fig. 3 illustrates another modification, particularly with reference to the arrangement of the tile.

Like references designate corresponding parts in the several figures of the drawings.

In the form of construction disclosed in Fig. 1 of the drawings each tile 6 is in the form of a rectangular tubular body which may have a single opening or aperture therethrough, or, as shown at 7, may have its interior subdivided into different compartments by a partition formation. These tiles can be made of any suitable material and constructed by means of any of the well-known tile or brick-making machinery, but irrespective of the method of making and the cross-sectional form of the tile bodies, a distinctive and important feature of the present invention resides in providing the individual tile in different faces with single longitudinally arranged undercut tie-receiving seats 8 extending the full length or height of the body. In the design of tile shown in Fig. 1 of the drawings, the

individual tile bodies are not only formed with the seats 8 referred to, but are also provided at certain corners thereof with longitudinal substantially triangular out-
 5 standing ribs 9, which in cross-sectional configuration are of an approximate arrow-head form. Also in the particular design being referred to other corners of the tile may be said to be truncated and formed
 10 with projecting dove-tailed corner ribs 10, likewise extending longitudinally of the tile body.

While the ribs 9 and 10 preferably preserve the specific shape referred to, it will,
 15 of course, be understood that any equivalent shape or disposition would answer the purposes of the present invention, but, assuming that the individual tiles are of the design and arrangement shown in Fig. 1
 20 of the drawings, it is to be noted that in building a wall structure the tiles are arranged vertically one upon the other and side by side, preferably with the joints broken, as illustrated in Fig. 1 of the drawing.
 25 The faces of the tiles which form the exposed surfaces of the wall may be scratched, roughened, grooved or otherwise serrated as indicated at 11, so that plaster, cement, or other surfacing material will
 30 readily adhere to said faces without the employment of lathing or equivalent expedients.

The tiles may be assembled in various ways, though in the form of construction
 35 anticipated in Fig. 1 when arranged in double rows it is preferable to preserve the order in such a manner that the arrowhead or equivalent ribs 9 will be arranged in diagonally opposite relation, while the other
 40 dove-tail ribs or equivalent elements 10 will likewise be arranged in diagonally opposite relation and respectively upon opposite sides of the vertical plane of the ribs 9. That is, diagonally opposite tiles 6, respectively,
 45 in the inner and outer rows present their ribs 9 in opposing but spaced relation, and the same condition is true with respect to the dove-tail rib 10, as it will be observed that throughout the entire wall or
 50 partition there occurs a multiplicity of groups of the ribs 9 and 10. Each group of these ribs embraces or includes a pair of the diagonally opposite corner ribs 9 and a pair of diagonally opposite corner ribs 10,
 55 and the spaces between and about the several ribs, and also between the several opposing faces of the tiles, and the seats 8 in the latter are designed to be filled with a suitable bond, preferably of the conventional concrete material. In the construction described it will be noted that the bonding material not only interlocks with and about the various corner ribs 9 and 10, but
 60 also completely fills into and interlocks with the undercut seats 8 in opposing faces of

adjacent tile. In this connection attention is also drawn to the fact that the tie-receiving seats 8 in the opposing faces of adjoining tile combine to form single large
 70 pockets extending not only longitudinally the full length of the individual tiles but also vertically throughout the entire height of the wall, so that when the bonding material is filled into these pockets a solid and
 75 substantial bond is provided which securely locks the adjoining tiles together. In this respect the invention provides what may be termed a single capacious tie-receiving seat or pocket between the opposing faces of adjoining tiles so that a large and strong bond
 80 may be placed therein to secure the functions referred to, and by reason of the undercutting, or dove-tail formation, of the seats 8 the interlocking action referred to is accomplished.

In carrying out the invention the wall structure may be additionally reinforced and strengthened by embedding in the bonding material between the tiles horizontal and vertical reinforcing bars 13 and 14,
 90 which may be utilized in any desired numbers and according to any desired plan without affecting the present invention, and said reinforcing bars may also be of any approved design. Furthermore, as suggested
 95 in the illustration of Fig. 1 of the drawings, the tiles forming the outside corners of the wall may be filled with concrete or cement material to provide practically a solid corner formation, which lessens the
 100 danger of breakage, and in this connection it will, of course, be understood that the said concrete or cement material may be additionally reinforced with steel to meet any desired degree of strength and rigidity
 105 which may be desired in any particular structure.

In the embodiment of the invention shown in Fig. 2 of the drawing there is suggested an arrangement of the tiles wherein the tiles
 110 of the inner row may be disposed in staggered relation to those of the outer row. Also in this arrangement there is suggested the plan of providing all of the tiles with arrowhead corner ribs 9 only, and the tiles
 115 in each row are arranged in side by side abutting relation, with the result of bringing the corner ribs 9 of adjoining tile in the same row into contacting matching relation, thus producing sectional dovetails. The
 120 sectional dovetails of one row of the tiles are disposed opposite the vertical centers of the seats 8 of the other row, so that when the bonding material is filled into the longitudinal spaces between the inner and outer
 125 rows the same not only fills into the seats 8, but also about the said sectional dovetails, with the result of securing a strong interlocking bond. In this form of construction the seats 8 in the opposing faces
 130

of the adjoining tiles in the same row are closed in, but are completely filled with the bonding material to secure the advantageous functions already referred to.

5 Referring to the plan of construction shown in Fig. 3, it will be observed that the tiles 6 are of the same formation as those shown in Fig. 2, but the tiles of the inner row are arranged in line with those of the
10 outer row so that all of the tie-receiving seats 8 register, and the bonding material 12 is thus located in separated pockets.

Various other variations may be resorted to in carrying out the invention without departing from the spirit or sacrificing any of the advantages thereof, and it will also be understood that the construction described and claimed herein is not only applicable to the building of walls or partitions,
20 but also to the building of columns, roofs, and other structural parts wherein the concrete material can be poured in mass into and through the spaces between the tile.

I claim:—

25 1. In a wall structure, a plurality of tubular tiles arranged vertically one upon the other and in double rows, said tiles being provided in opposing faces with single undercut tie receiving seats, and with out-
30 standing double shouldered corner ribs, the said tiles of the separate rows being so arranged as to expose said seats and said ribs for engagement by the bonding material and also arranged so as to permit continuous
35 horizontal and vertical bonding communication throughout the wall, and bonding material filled into said seats.

2. In a wall structure, a plurality of tubular tiles, arranged vertically one upon the other, and in double rows, said tiles being provided in opposing faces with single undercut tie receiving seats and with out-
40 standing double shouldered corner ribs, the said tiles of the separate rows being so arranged as to present said corner ribs in opposing relation and to provide continuous horizontal bonding communication through-
45 out the wall, and a continuous bond of the filling material.

3. In a wall structure, a plurality of tubular tiles arranged in vertical relation, each of said tiles having single broad undercut tie-receiving seats in different faces, forming outstanding substantially triangular ribs at the corners, certain of said tiles being
55 disposed in diagonal relation in the wall, with the points or edges of the ribs in opposing relation, others of said tiles having substantially dove-tailed ribs at their corners, said latter ribs being also disposed in
60 opposing relation and at the opposite sides of the triangular ribs, and bonding material located between the tiles and filling the undercut seats, thereby bonding together said various tiles.

4. In a wall structure, a plurality of tubular tiles, arranged vertically one upon the other, and in double rows, said tiles being provided in opposing faces with single undercut tie-receiving seats, with outstanding
70 arrowhead corner ribs, and also with truncated corners having dove-tailed ribs, the said tiles of the separate rows being so arranged as to present groups of the arrowhead and dove-tailed ribs in diagonally
75 opposite relation and said truncated corners permitting continuous communication throughout the wall for a continuous bond of the filling material.

5. In a wall structure, a plurality of tubular tiles arranged vertically one upon the other, said tiles being provided in opposing faces with single undercut tie-receiving seats forming shouldered ribs at the corners, the said tiles being arranged in double rows
85 and spaced apart so as to expose said seats and said ribs for engagement by the bonding material and so as to provide continuous horizontal bonding communication throughout the wall, and bonding material filled
90 into said seats.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

CHARLES EDMUND RAFFERTY.

Witnesses:

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