(No Model.) 2 Sheets—Sheet 1.

E. R. STORM.

CONSTRUCTION OF BUILDINGS.

No. 524,472. Patented Aug. 14, 1894.

Fig. 1.

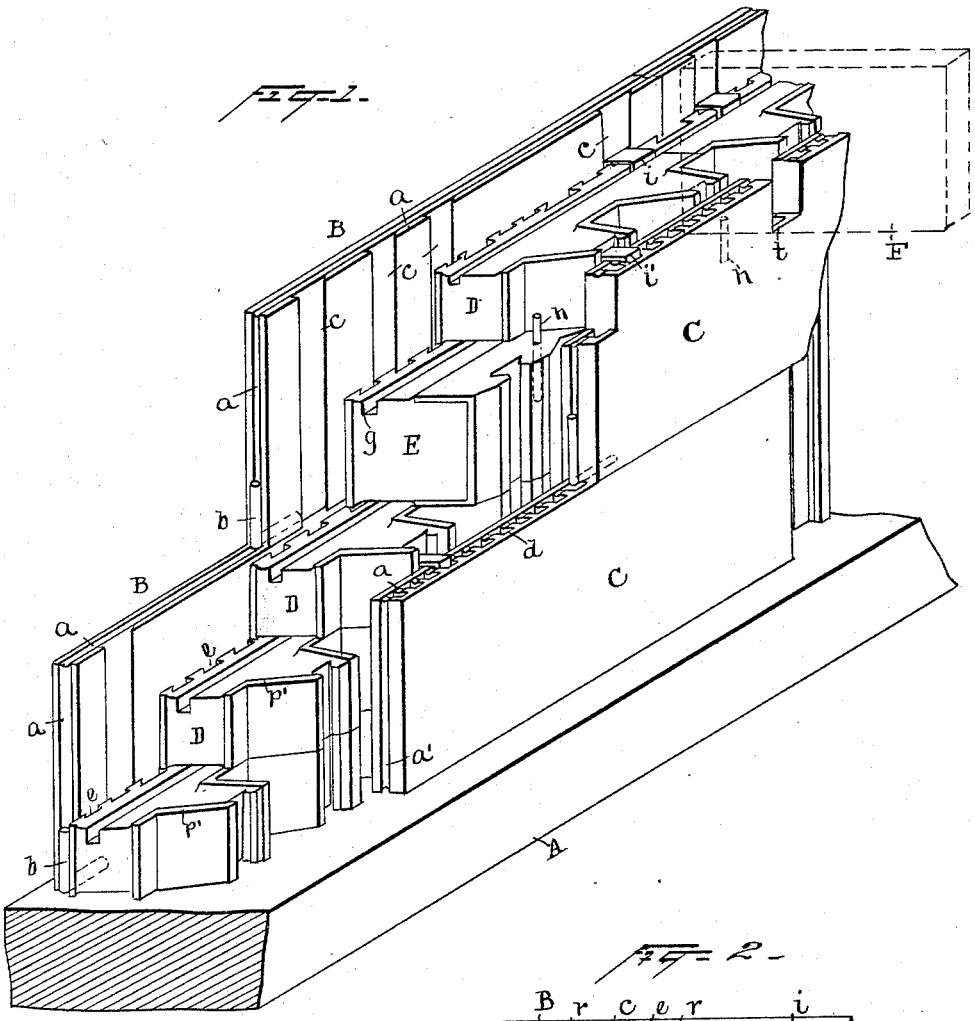


Fig. 3.

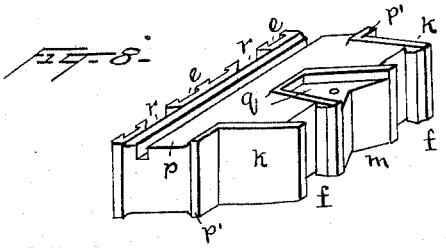
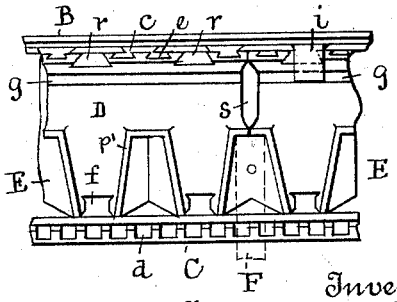


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

E. R. STORM.

CONSTRUCTION OF BUILDINGS.

No. 524,472. Patented Aug. 14, 1894.

Fig. 3.

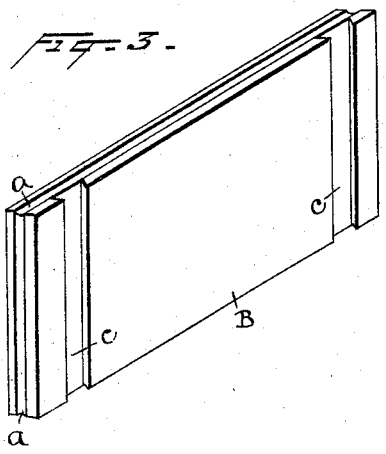


Fig. 4.

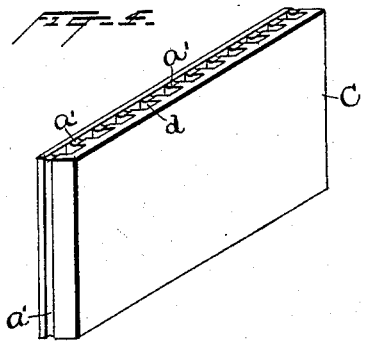


Fig. 7.

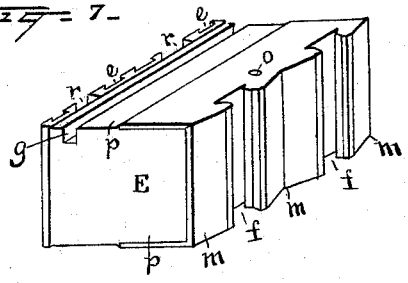
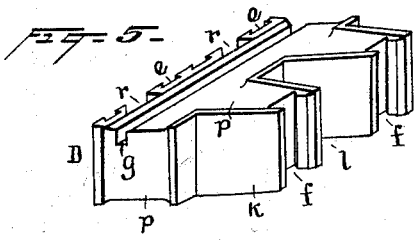


Fig. 5.



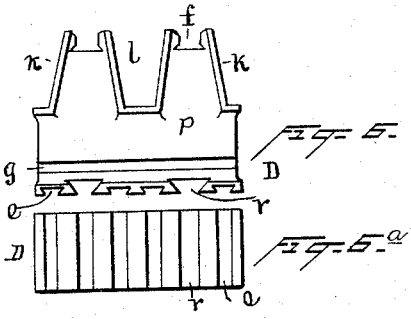


Fig. 6.

Fig. 6a.

Fig. 10.

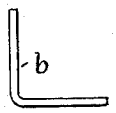


Fig. 11.

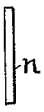
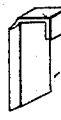


Fig. 9.



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UNITED STATES PATENT OFFICE.

EDWIN R. STORM, OF NEW YORK, N. Y.

CONSTRUCTION OF BUILDINGS.

SPECIFICATION forming part of Letters Patent No. 524,472, dated August 14, 1894.

Application filed April 3, 1893. Serial No. 468,776. (No model.)

To all whom it may concern:

Be it known that I, EDWIN R. STORM, a citizen of the United States, residing at New York city, in the county and State of New York, have invented a certain new and useful Improvement in the Construction of Buildings, of which the following is a specification.

My invention relates to the methods and materials employed in constructing the walls of buildings, particularly in those buildings wherein fire-proof materials are employed, my object being to produce a dry, well-ventilated, strong, and easily and quickly constructed wall.

In carrying my invention into effect, I make use of slabs or flat blocks of the material selected for the exposed exterior and interior surfaces of the walls, and filling blocks for the inner part of the wall; and I provide such slabs and blocks with grooves, which are designed to receive and retain a cement, preferably a liquid mortar or grout, so that when the grout becomes set, there will be a good union between adjacent blocks and slabs. In addition to securing the blocks together in this way, I prefer to use suitable anchors of metal or other suitable material. The filling blocks are preferably of such shape as to provide air spaces within the walls.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a portion of wall, embodying my invention; Fig. 2, a plan view of a part of the same; Fig. 3, a perspective view of one of the slabs used for the exterior of a wall, which may on its outer surface be either plain or ornamental; Fig. 4, a perspective view of one of the slabs used for the interior of a wall, which may also be either plain or ornamental on its outer surface; Fig. 5, a perspective view of one of the filling blocks, or blocks used between the exterior and interior slabs; Fig. 6, a top view of one of these blocks; Fig. 6ª, a side view of one of these blocks; Fig. 7, a perspective view of the form of filling block used in the course upon which the girders or floor beams rest; Fig. 8, a perspective view of a modified form of filling block, upon which girders and floor beams rest. Fig. 9 shows the anchor employed to assist in securing the exterior and interior slabs to the filling blocks. Fig. 10 shows an anchor employed to assist in getting adjacent slabs in line and to make a good union between them; and Fig. 11 shows a metal pin or rod employed as an anchor for girders or beams.

A indicates the foundation or footing for the wall, which may be constructed in any suitable manner. The thickness of the wall is preferably made up of three layers placed vertically side by side, and each composed of a number of blocks or slabs as hereinafter explained.

B B are the slabs which make up the exterior vertical layer of a wall constructed in accordance with my invention. These slabs may be made of any suitable material, such as stone, baked clay, cement, plaster, or metal, of any desired shape, but preferably rectangular, and, as before stated, may be plain or ornamental. The surface of the wall is composed of a suitable number of slabs B united together at their edges as shown.

The edges of the slabs B, either wholly or at the corners, are provided with grooves *a* to receive the anchors *b*, which serve to aid in placing the slabs in line, and to assist in mechanically joining adjacent slabs. As indicated in Fig. 1, each anchor may serve to connect three slabs in line, where the slabs break joints. Such anchors may be made in various forms to meet all requirements, both as to the form and shape of grooves in the slabs and the mode of setting the slabs, that is, the method pursued in setting the courses. The slabs B are also provided with dove-tailed grooves *c*, which grooves may be both lengthwise and crosswise of the slab, and which serve to hold the grout and provide mortises for the anchors.

C, C represent slabs which compose the interior vertical layer of the wall, made either plain or ornamental, and of the same material as the slab B, or of a different material. These slabs have grooves *a'*, similar to grooves *a* on the slabs B, and serving the same purposes. They are preferably made hollow, or having a number of passages *d* therein, as shown, for the purpose of arresting dampness. These passages extend from edge to edge of the slab, and may extend horizontally instead of vertically as illustrated.

D and E represent the filling blocks, forming the third or intermediate vertical layer which may be made in various shapes and sizes, but preferably are of the shape shown, and in short lengths. The filling blocks are provided with dovetailed grooves *e* and *f* and longitudinal slots *g*. The anchors *i* engage with slots *g* and grooves *c* to aid in securing the exterior slabs to the filling blocks; and in grooves *f* anchors *i'* are mortised and engage with passages *d* in slabs C to aid in securing them to the filling blocks.

Blocks D are made in such shape that when laid one upon the other in filling in a wall, preferably breaking joints, to form a bond there will be formed continuous air spaces the whole height of the wall. The preferred shape is that illustrated in the drawings in which the blocks have projections *k*, the spaces *l* between these projections forming the air spaces. These projections may be of any desired length or shape. The dove-tailed grooves *f* of blocks D before referred to are formed in the projections *k*.

Blocks E are used as the filling blocks on the line or course where the floor beams or girders F are placed and are of such shape as to afford a good bearing or sill for the end of the beam or girder, and at the same time maintain the continuous air spaces. The preferred shape is shown in Fig. 7. These blocks are not provided with projections *k* like blocks D, but have the grooves *e* and *f* corresponding with the grooves *e* and *f* in blocks D, and also have the longitudinal slot *g*. Each of these blocks is beveled inwardly from each side of grooves *f* as at *m*, and these beveled parts of the block are set directly over spaces *l*, formed by projections *k* on blocks D, so that the open passage formed by spaces *l* will not be entirely closed. The floor beams or girders are seated on this part of blocks E, and as shown in dotted lines (Figs. 1 and 2) the beam is seated between projections *k* of the next higher block D.

The blocks E, partly closing the ducts *l*, form a dry and ventilated seat for the beams, and a floor beam or girder so seated will not be liable to either damp or dry rot. The beams are preferably secured in place by pins or anchors *n* set in holes *o* in the blocks E, the beams or girders having corresponding holes. Securing the beams or girders in this manner also serves to prevent the bulging or spreading of the walls.

The modified form of block E shown in Fig. 8, is like blocks D except that it has no space *l*, the block being solid and beveled inwardly at *m*, like the block shown in Fig. 7.

The blocks are all made flat on bottom, and the tops and ends are made either wholly or partly concave, as indicated at *p*, and provided at their edges with raised ribs *p'*.

The filling blocks, in addition to the grooves *e*, have deeper dove-tailed grooves *r*, which communicate with the cavities formed by the concave surfaces of the blocks, through which grooves the grout to fill these cavities is poured; the grout is also poured into the space formed at *s* (see Fig. 2), between the ends of adjacent blocks. The grooves *r* may be of any desired shape, but in the preferred form are dove-tailed grooves, which reproduces a better joint between the filling blocks and the slabs.

All the grooves and spaces between the blocks, except the air spaces *l*, are filled with the liquid grout, mortar, or cement, the same being preferably poured into such spaces as the respective courses are laid; and such material, upon hardening, holds the blocks together and converts the whole into a solid and substantial structure.

In some instances, a slab C of the interior of the wall has an opening *t*, where it happens that the course of blocks E is somewhat below the top of a slab C. This, as shown in Fig. 1, will necessitate the cutting away of a portion of slab C, to admit of the floor beams or girders being seated upon blocks E. The number of grooves *e* in the blocks and *c* in the slabs may be greater or less, as may be desired.

What I claim is—

1. A wall having in combination two or more vertical layers of blocks, having channels in the meeting sides of the blocks, cavities between the horizontal surfaces of the blocks, and cement filling said channels and cavities, substantially as set forth.

2. A wall having in combination a vertical layer of blocks having longitudinal grooves or channels in their horizontal surfaces, an adjacent vertical layer of blocks having grooves or channels in their faces, anchors engaging the grooves or channels of the vertical blocks and the grooves or channels of the horizontal blocks, and cement filling all the grooves or channels, substantially as set forth.

3. A wall having in combination three vertical layers of blocks, the middle layer being blocks having projecting parts between which are recesses which form air spaces within the wall, substantially as set forth.

4. A wall having in combination three layers of blocks, the inner or middle layer being blocks having projecting parts between which are recesses, and such blocks being situated with said recesses in line so as to form continuous air spaces throughout the wall, substantially as set forth.

5. A wall having in combination outer vertical layers of blocks, and an inner vertical layer of blocks of such shape as to form continuous air spaces, those of said inner blocks at the line where floor beams are placed being of such shape as to partly close such air spaces, substantially as set forth.

6. A wall having in combination an outer layer and an inner layer of flat blocks or slabs, and an intermediate layer of filling blocks, the blocks of the different layers having channels in their meeting surfaces, and

cement filling said channels, substantially as set forth.

7. A wall having in combination an outer layer of flat blocks or slabs, situated with their edges together, and having channels in their faces on one side, an adjacent layer of filling blocks, having channels in their faces on both sides, an inner layer of flat blocks or slabs having channels in their faces adjacent to the filling blocks, and cement filling said channels, substantially as set forth.

8. A wall having in combination an outer layer of flat blocks or slabs, situated with their edges together, and having channels in their faces on one side, an adjacent layer of filling blocks, having channels in their faces on both sides, an inner layer of flat blocks or slabs having channels in their faces adjacent to the filling blocks, and cement filling said channels, and anchors or connecting devices joining the blocks at suitable intervals, substantially as set forth.

9. The combination with building blocks placed with their edges abutting and having meeting grooves in said edges, of the angular anchors placed in said grooves, whereby three or more blocks are joined, substantially as set forth.

10. A wall having in combination outer vertical layers of blocks, said blocks having grooves around their edges, anchors registering in said grooves and mechanically joining adjacent blocks, channels on the inner surfaces of said blocks, filling blocks having channels on the sides adjacent to one of the outer layers of blocks, projections on the opposite side abutting against the other outer layer of blocks, said projections having channels formed therein, air spaces formed between said projections, and cement filling all said channels, substantially as set forth.

11. A wall having in combination outer layers of vertical blocks, said blocks having grooves around their edges, anchors registering in said grooves and mechanically joining adjacent blocks, channels on the inner surfaces of said blocks, filling blocks having channels on the side adjacent to one of the outer layers of blocks, projections on the opposite side abutting against the other outer layer of blocks, said projections having channels formed therein, air spaces formed between said projections, longitudinal channels on the upper side of said filling blocks, anchors registering with the channels on the blocks of one outer layer and the longitudinal channels of the filling blocks, anchors registering with the channels on the projections of the filling blocks and the passages or holes in the blocks of the adjacent outer layer, and cement filling all the channels, substantially as set forth.

This specification signed and witnessed this 30th day of March, 1893.

EDWIN R. STORM.

Witnesses:
EUGENE CONRAN,
W. PELZER.