T. H. GERAERDTS.

FIREPROOF WALL.

APPLICATION FILED SEPT. 20, 1912.

1,107,779.

Patented Aug. 18, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

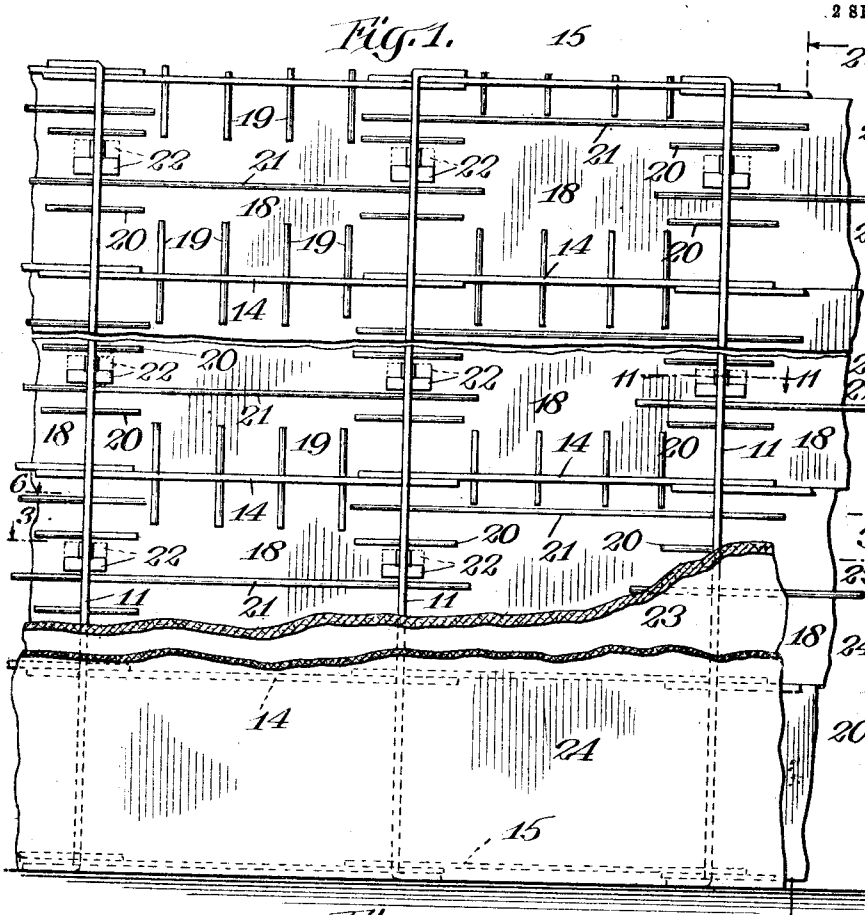


Fig. 2.

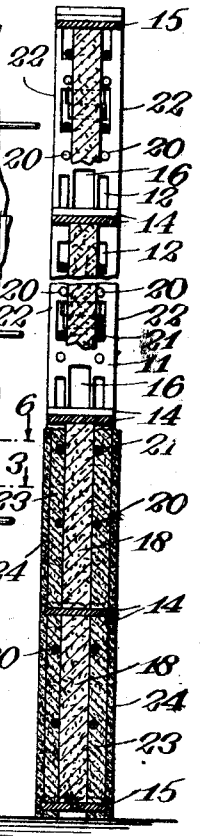


Fig. 3.

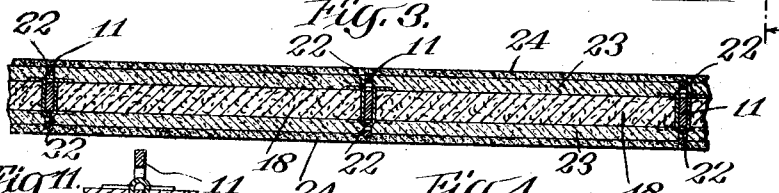


Fig. 11.

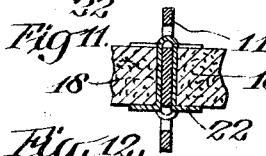


Fig. 4.

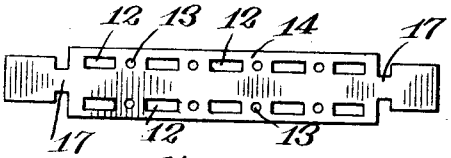


Fig. 5.

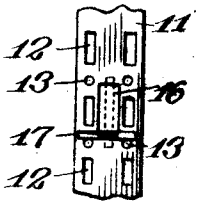


Fig. 12.

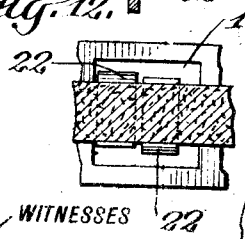
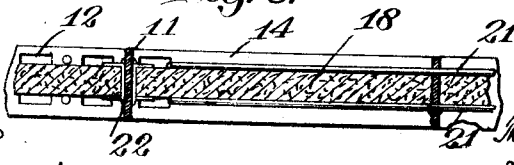


Fig. 6.



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2 SHEETS—SHEET 2.

Fig. 7.

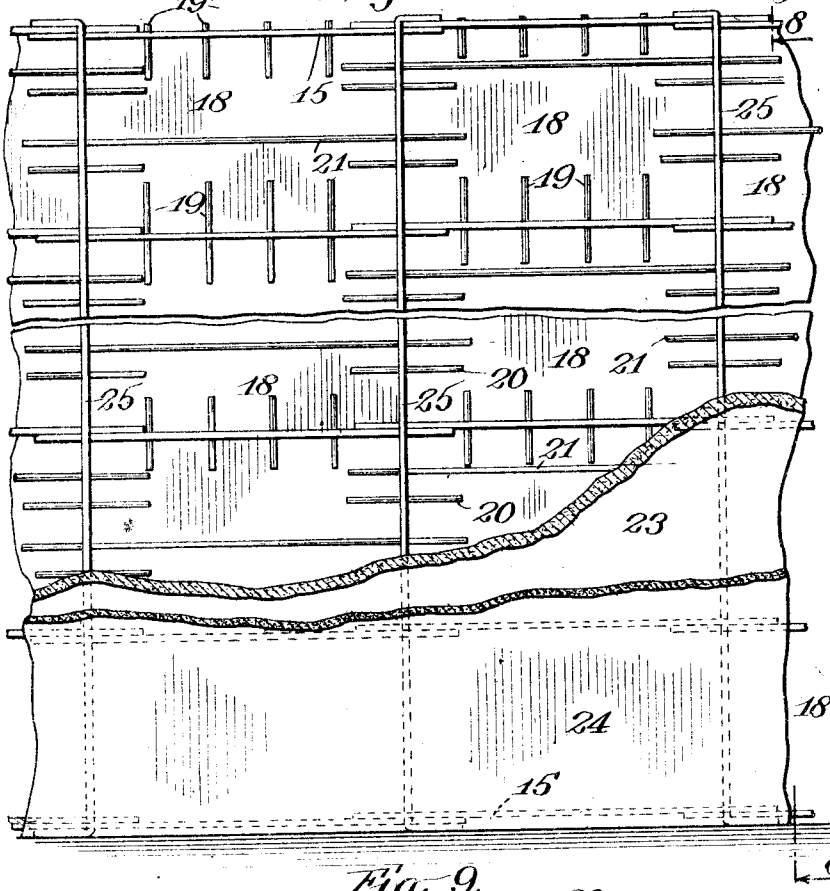


Fig. 8.

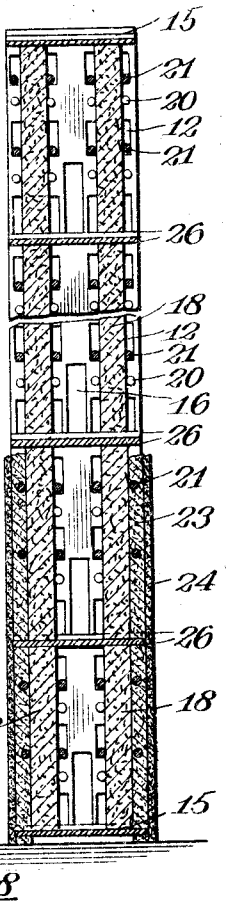


Fig. 9.

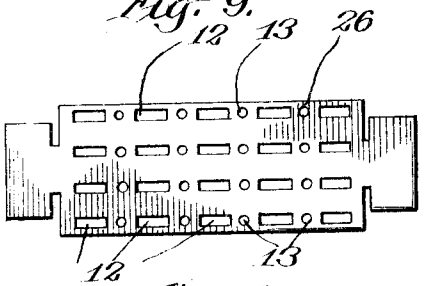


Fig. 10.

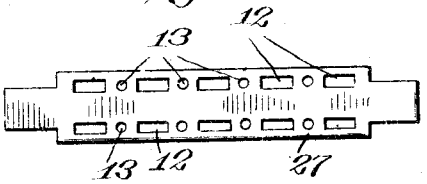
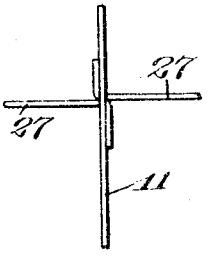


Fig. 13.



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THEODOORUS HUBERTUS GERAERDTS, OF NEW YORK, N. Y.

FIREPROOF WALL.

1,107,779. Specification of Letters Patent. Patented Aug. 18, 1914.

Application filed September 20, 1912. Serial No. 721,396.

To all whom it may concern:

Be it known that I, THEODOORUS HUBERTUS GERAERDTS, a citizen of the United States, residing in the borough of Manhattan, city of New York, in the county of New York and State of New York, have invented a certain new and useful Improvement in Fireproof Walls, of which the following is a specification, reference being had therein to the accompanying drawings, forming part thereof.

My invention relates to building walls, especially interior walls or partitions, and my invention is best adapted for embodiment in fireproof walls, although it is not limited thereto.

An object of my invention is to provide a wall construction which will be simple, sanitary and inexpensive, and which may be easily and quickly erected, and will be strong, durable and well reinforced and able to withstand all the stresses to which walls are subjected.

Another object is to provide a construction which will withstand high temperatures without warping or otherwise becoming injured.

Further objects of my invention will appear from the following description.

My invention comprehends a wall construction in which the studs are tied together by stiffening plates and in which the building blocks are held against lateral escapement by vertical dowels, extending through perforations in the stiffening plates. More specifically the studs are provided with perforations through certain of which horizontal dowels extend and coöperate with the vertical dowels in retaining the blocks.

My invention also comprehends yokes which hook over the studs and engage the blocks and hold them against lateral movement relative to the studs.

More specifically the members are of metal and the perforations occupy a substantial portion of the length of the members along their lateral edges.

My invention also comprehends various other features and details of construction, and arrangements and combinations of parts, as will hereinafter more fully appear.

I shall now describe the embodiments of my invention illustrated in the accompanying drawings, and shall thereafter point out my invention in claims.

Figure 1 is an elevation, partly in section, of a portion of a wall embodying my invention. Fig. 2 is a transverse sectional elevation of the same on line 2—2 of Fig. 1, looking toward the left. Fig. 3 is a horizontal section of the same on line 3—3 of Fig. 1, looking down. Fig. 4 is a detail in plan of a stiffening plate. Fig. 5 is a face elevation of a portion of a stud showing the stiffening plate in section and in locked position in the slot. Fig. 6 is a horizontal section of the parts shown in Fig. 1 on line 6—6 looking down. Fig. 7 is a view corresponding to Fig. 1, showing a modified embodiment of my invention. Fig. 8 is a transverse sectional elevation of the same on line 8—8 of Fig. 7, looking toward the left. Fig. 9 is a detail in plan of the stiffening plate employed in the construction shown in Fig. 7. Fig. 10 is a similar view of another form of stiffening plate. Fig. 11 is a sectional detail taken on line 11—11 of Fig. 1, looking down. Fig. 12 is a right end elevation of the same. Fig. 13 is a detail in side elevation of a portion of a locking stud and stiffening plate as shown in Fig. 10 in locked position therein.

In the embodiment of my invention illustrated in Figs. 1 to 6, inclusive, and in Figs. 11 and 12, metal studs 11 are employed, which are provided near each edge with perforations which occupy a substantial portion of the length of the studs, thereby providing but a relatively small amount of material for the transmission of heat from the outside to the middle of the studs. These perforations are shown as consisting of a series of elongated slots 12 and round holes 13 alternately arranged. Extending between the studs and secured thereto are horizontal stiffening plates 14, while their bottoms and tops are braced by tie plates 15, which are slotted for the reception of the studs. The studs 11 are also provided with a series of central elongated longitudinally extending slots 16, and the stiffening plates 14 are provided with reduced ends, as shown in Fig. 4, adapted to enter the slots 16 in upright position, as shown in dotted lines in Fig. 5. At the juncture of the reduced ends with the main portion of the stiffening plates 14, locking notches are provided extending in from each side, leaving a central neck portion 17 of the width of the slots 16, whereby the plates may be turned down to the horizontal position shown in the drawings and locked against longitudinal movement. These parts may be readily and easily as-

sembled, section by section, and they cooperate to make a firm, rigid structure. The stiffening plates 14 are also provided with a series of perforations 12 and 13 along each edge, as in the vertical studs.

In each of the rectangular spaces bounded by the adjacent studs 11 and stiffening plates 14 is provided a building block 18, of any suitable material, preferably plastic blocks such as fiber boards, concrete blocks or plaster boards, forming a succession of tiers of superposed blocks in the usual way. These building blocks are disposed substantially in the middle transversely of the studs, as shown in Fig. 2, and are of a width substantially equal to the distance between the lateral perforations in the studs 11 and in the stiffening plates 14, and to aline these building blocks 18 and secure them in place, short vertical dowels or pins 19 are inserted through certain of the perforations in the stiffening plates 14, preferably through the round perforations 13, as shown, and these vertical dowels in each stiffening plate bridge the horizontal joints of two adjacent building blocks 18 and hold them against lateral displacement. Coöperating with these vertical dowels 19 are short horizontal dowels 20 inserted through certain of the perforations in the studs 11, preferably through the round perforations as shown. These horizontal dowels 20 bridge the vertical joints of two adjacent building blocks 18 and hold their ends against lateral movement. Through certain of the other perforations in the studs extend bracing rods 21 on each side of the building blocks 18. These bracing rods 21 are of a length somewhat exceeding the distance between two studs 11, and their ends, therefore, extend some distance through the perforations in the studs along the building blocks of the adjacent sections of the wall, as shown, and they thereby serve as reinforcing members and help to tie adjacent sections together.

In addition to the vertical and horizontal dowels for retaining the building blocks, yokes 22 may be employed. These yokes are substantially U-shape and are provided with outwardly turned ends, and are designed to pass through certain of the perforations in the studs 11, preferably through the slots 12, and to hook over the central portions of the studs 11 and extend transversely of the wall. They are arranged in pairs, one on top of the other, and extending in opposite directions, and the adjacent building blocks 18 are disposed between the coöperating outwardly turned ends of the yokes, as shown in Figs. 11 and 12, the yokes being of such length that the blocks fit snugly between the complementary outwardly turned ends. This interior construction is finally covered with mortar 23 and the usual white finish 24, as is customary. This mortar fills in between all the parts so as to render the whole structure solid and rigid, and it extends through the perforations in the framework and the successive sections are thereby bonded, while the rods and dowels are embedded in the mortar and serve as reinforcing members and tie the adjacent sections together. This mortar, being highly refractory, prevents heat from being conducted through the perforations into the middle portions of the studs 11 and the stiffening plates 14, and the framework is thereby prevented from warping and causing the wall to collapse or to be injured when it is subjected to excessive heat, as in the case of a fire.

In Figs. 7 to 9, inclusive, I have shown my invention embodied in a double or hollow wall. The studs 25 and the stiffening plates 26 are of double width and are provided with two rows of perforations 12 and 13 in each longitudinal half, the building blocks 18 of the opposing subwalls being disposed between the respective pairs of rows, as shown in Fig. 8, and the reinforcing and retaining rods and dowels being duplicated. The yokes 22 are omitted in this embodiment, although it is evident that they could also be included, if desired. Otherwise, this construction corresponds to that previously described.

In Figs. 10 and 13, a modified form of stiffening plate 27 is shown. The ends are reduced to the width of the slots 16, which are made short in this instance, and are inserted through the slot and turned either up or down, the similar complementary end of another stiffening plate 27 being inserted in the slot alongside of the first and turned in the opposite direction, as shown in Fig. 13, the stiffening plates being thus secured to the stud.

It is obvious that various other modifications may be made in the constructions shown in the drawings and above particularly described within the principle and scope of my invention.

I claim:

1. In a building wall, in combination, building blocks, vertical studs, stiffening plates extending between the studs and supported thereby and arranged to support the building blocks, each plate being provided along each lateral edge outside of its respective building block with a plurality of dowel-receiving and mortar-receiving openings, and dowels extending through said dowel-receiving openings and bridging the joints of the adjacent building blocks.

2. In a building wall, a plurality of vertical studs provided with a series of perforations along each edge, horizontal stiffening plates extending between the studs and having their ends secured thereto and provided with a series of perforations along

each edge, building blocks disposed in the respective spaces between the adjacent studs and stiffening plates, horizontal block-retaining dowels extending through certain of the perforations in the studs and bridging the joints of the adjacent building blocks, and vertical block-retaining dowels extending through certain of the perforations in the stiffening plates and bridging the joints of the adjacent building blocks.

3. In a building wall, a plurality of vertical studs provided with a series of perforations along each edge, horizontal stiffening plates extending between the studs and having their ends secured thereto and provided with a series of perforations along each edge, building blocks disposed in the respective spaces between the adjacent studs and stiffening plates, horizontal block-retaining dowels extending through certain of the perforations in the studs and bridging the joints of the adjacent building blocks, horizontal bracing members extending between adjacent studs along the sides of the building blocks and through others of the perforations in the studs, and vertical block-retaining dowels extending through certain of the perforations in the stiffening plates and bridging the joints of the adjacent building blocks.

4. In a building wall, a plurality of vertical studs provided with a series of perforations in each edge, tiers of superposed building blocks disposed between the adjacent studs, and a plurality of block-retaining yokes extending through certain of the perforations in the studs and hooked over the studs and engaging the blocks and holding them against lateral movement relative to the studs.

5. In a building wall, a plurality of vertical studs provided with a series of perforations along each edge, tiers of superposed building blocks disposed between the adjacent studs, horizontal block-retaining dowels extending through certain of the perforations in the studs and bridging the joints of the adjacent building blocks, horizontal bracing members extending between adjacent studs and through others of the perforations in the studs, and a plurality of block-retaining yokes extending through others of the perforations in the studs and hooking over the studs and engaging the blocks and holding them against lateral movement relative to the studs.

6. In a building wall, a plurality of vertical studs provided with a series of perforations along each edge, horizontal stiffening plates extending between the studs and having their ends secured thereto and provided with a series of perforations along each edge, building blocks disposed in the respective spaces between the adjacent studs and stiffening plates, horizontal block-retaining dowels extending through certain of the perforations in the studs and bridging the joints of the adjacent building blocks, horizontal bracing members extending between adjacent studs and through others of the perforations in the studs, vertical block-retaining dowels extending through certain of the perforations in the stiffening plates and bridging the joints of the adjacent building blocks, and a plurality of block-retaining yokes extending through others of the perforations in the studs and hooking over the studs and engaging the blocks and holding them against lateral movement relative to the studs.

In testimony whereof I have affixed my signature in presence of two witnesses.

THEODOORUS HUBERTUS GERAERDTS.

Witnesses:

VICTOR D. BORSE,

WM. ASHLEY KELLY.