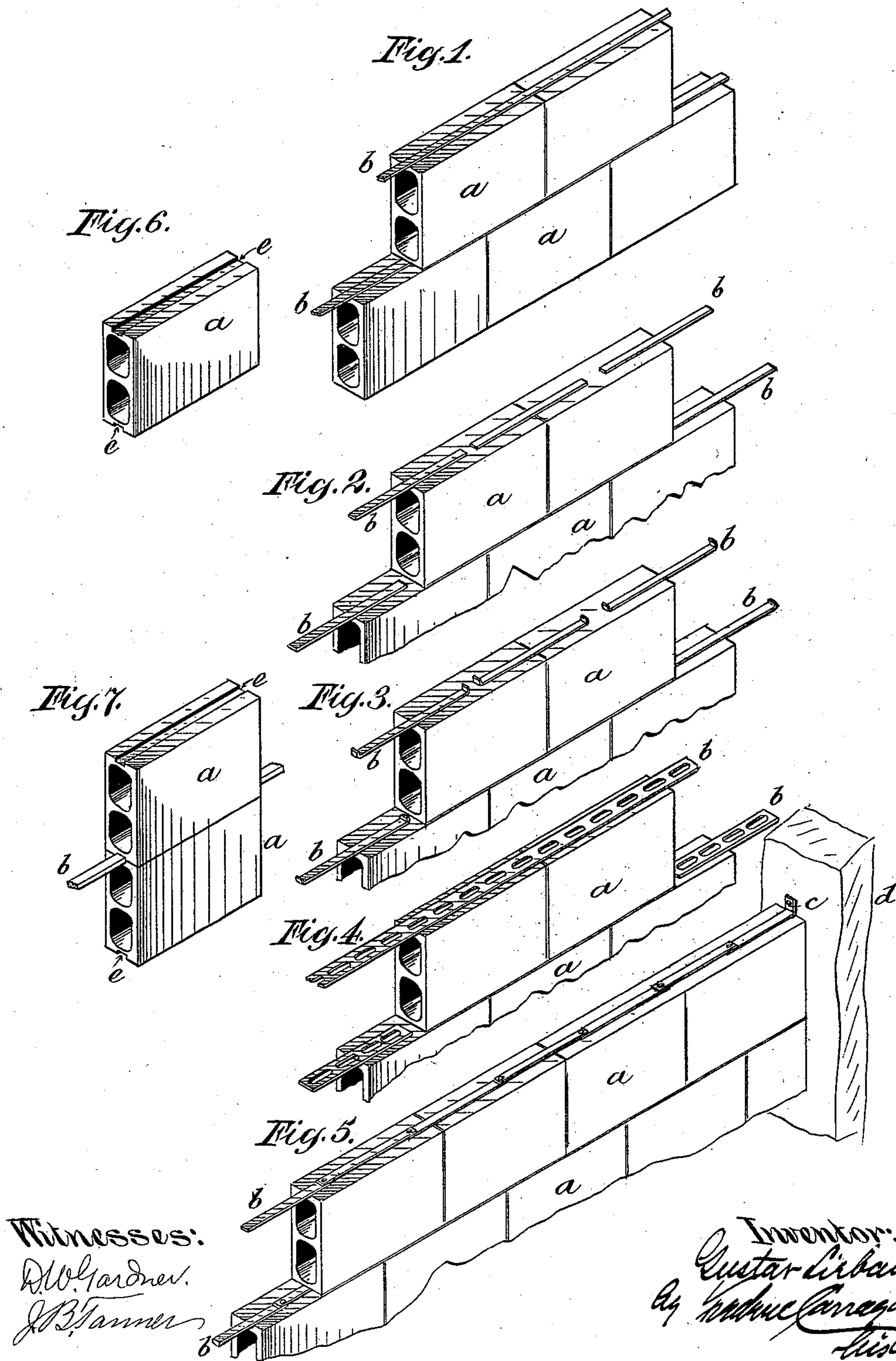


(No Model.)

G. LIEBAU.
FIREPROOF WALL OR PARTITION.

No. 533,068.

Patented Jan. 29, 1895.



Witnesses:
D.W. Gardner.
J.B. Tanner

Inventor:
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UNITED STATES PATENT OFFICE.

GUSTAV LIEBAU, OF BROOKLYN, ASSIGNOR OF ONE-HALF TO HENRY A. MAURER, OF NEW YORK, N. Y.

FIREPROOF WALL OR PARTITION.

SPECIFICATION forming part of Letters Patent No. 533,068, dated January 29, 1895.

Application filed May 29, 1894. Serial No. 512,868. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV LIEBAU, a subject of the Emperor of Germany, now residing at Brooklyn, (Gravesend Beach,) in the county of Kings and State of New York, have invented certain new and useful Improvements in Fireproof Walls or Partitions, of which the following is a specification.

This invention relates to certain new and useful improvements in fire proof walls and partitions, and particularly to that class constructed of bricks, tiles, slabs and analogous materials.

All walls or partitions with which I am familiar, either lack the quality of being fireproof, or are of great comparative thickness, thus consuming and wasting valuable space. It is, therefore, the object of my invention to produce a wall, &c., which will be thoroughly fire-proof, and at the same time be of extreme thinness, lightness and rigidity, and which will also be simple and economical in construction.

To these ends, therefore, my said invention consists in a thin wall or partition composed of bricks, tiles or like building materials, laid in mortar or other cement, and without independent lateral support, and a flat strip or strips of band metal built into the wall between the courses and parallel with them, these strips, in whatever number used, being wholly inclosed by the mortar to protect them from atmospheric influences and to insure the integrity of the wall, the end strip or strips being upset and secured to the main walls or other adjacent support, all as hereinafter more particularly set forth and finally claimed.

Referring to the accompanying drawings illustrating said invention, in the several figures of which like parts are similarly designated, Figure 1, is an isometrical perspective view of two courses of hollow bricks, showing my invention applied thereto. Figs. 2, 3, 4 and 5 are similar views illustrating modifications of the metallic keys. Fig. 6, is a similar view of a special form of brick which may sometimes be used to advantage; and Fig. 7, is a like view of two courses of such bricks, showing the application of my invention thereto.

a, are bricks, tiles, blocks, slabs, or analo-

gous articles, laid, preferably on edge in mortar, in the ordinary manner. In the mortar upon the top of preferably each course, are embedded the strips *b*, which preferably consist of ordinary band iron, on account of cheapness and strength; which may be of any length, and which are laid end-to-end, or slightly overlapping each other, on each course where placed, forming a continuous, but ununited series of keys. When the invention is used in constructing partitions, the outer ends of the last strips of each course may be upset, or bent at right angles, as shown at *c*, Fig. 5, and secured by a nail, screw, or otherwise to the main walls, or to the studding *d*, of the building, although this is ordinarily unnecessary. I have found that good results, especially in walls presenting a relatively small area, may also be obtained by employing short strips of the band iron embedded in the mortar over each joint of the course, as shown in Fig. 2; and a still firmer hold in the mortar may be obtained, and the rigidity of the wall or partition thus enhanced, by bending or upsetting the ends of these short strips, as illustrated in Fig. 3, and said strips may then be laid, either as shown, or inverted, always preferably spanning and tying or keying each joint in the course where laid.

A further modification of my invention is illustrated in Fig. 4, where the metallic strips, whether long and covering several bricks, tiles, &c., or short, as in Figs. 2 and 3, are provided with a number of holes or openings, through which the mortar unites and sets, thus imparting to the resultant structure great stability and strength.

Where it is desired to construct a wall or partition of great length, I have found it advantageous to rivet or otherwise unite the metallic strips *b*, as shown in Fig. 5, to form a continuous strip, thus presenting a much greater resistance to be overcome before any part of the wall can bulge or fall, and when a wall is so constructed, the ends of the strip may be bent up and secured to the main wall or to the studding, as at *c*, and as previously described.

In Figs. 6 and 7, I have illustrated a brick, or tile, specially constructed, in that it is provided with the upper and lower longitudinal

grooves or channels *e*, and the strips or keys *b*, may be either of sufficient thickness, when embedded in the mortar between these bricks, to engage the upper groove of the lower, and the lower groove of the upper course, as in Fig. 7, or they may be of a thinness so as to lie wholly within one or the other of said grooves.

In the construction of thin walls and partitions, there is little or no danger of the same falling as an entirety, owing to the friction, and the adhesive quality of the mortar upon the main walls, the floor and the ceiling; the difficulty which has been experienced consisting in the liability of some portion of the wall or partition to bulge or sway, thus overcoming the center of gravity and falling. By my invention this is rendered impossible, as the keys tie one portion of the wall to another and to enable any part of said wall to bulge or fall, the strips must be bent, curved or broken at the point of their greatest strength: *i. e.*, on a horizontal plane at right angles to their length, and to accomplish this, the cohesive quality of the mortar must be overcome, not alone at the place of weakness, but for a considerable distance at each side thereof, which, as stated, is practically impossible.

I have found in practice that by my invention, I am enabled to construct walls and partitions, of unusual thinness, for example, as thin as an inch or an inch and a half, or more; which are thoroughly rigid, absolutely fire-proof, and especially when constructed of the hollow tiles shown in the drawings, sound proof; which obviates the use of uprights or studs now necessarily employed, and which by first bending, curving, or otherwise manipulating the metallic strips, can be of any desired contour known to the builders' art, whether angular, curved, or otherwise.

It will be manifest from the foregoing, that my invention is applicable to all walls and partitions, whether the outer and main walls of a building, or the inner walls or partitions; and I do not wish to limit or confine myself to the details herein shown and described, as obviously many changes and alterations may be made therein without departing from the principle and scope of my invention, and involving merely a mechanic's skill. For example, the invention may be used with solid bricks, tiles, stones, stone blocks, slabs, &c.,

and each course may be keyed, or alternate courses, depending upon the area of the wall and the side pressure to be sustained thereby. Again, in place of the perforated strips shown in Fig. 4, wire netting reinforced on its longitudinal edges may be used with good results, and the strips or keys may be of any desired cross section. All these and many other modifications, however, are clearly within the scope and purview of my invention, the gist of which lies in embedding in the mortar between courses of masonry, strips of band metal to which the mortar adheres, and about which it coheres, thus transmitting and diffusing strains.

What I claim as new, and desire to secure by Letters Patent, is—

1. A thin wall or partition composed of brick, tiles or the like laid in mortar, or other cement, and without independent lateral support, and a flat strip or strips of band metal built into the wall between and parallel with the courses and wholly surrounded by the mortar, the end strip or strips being upset and secured to the main walls or adjacent support, substantially as described.

2. A wall or partition composed of brick, tiles or the like, having upper and lower longitudinal grooves or channels, and laid in mortar or other cement, strips of band metal interposed between courses, engaging the upper groove of the lower and the lower groove of the upper bricks, surrounded by the mortar, &c., and breaking joints with the bricks, and adapted, upon the setting of the mortar to form keys or binders to firmly hold the structure against lateral displacement of any part thereof, substantially as described.

3. A wall or partition composed of brick, tiles, or the like, laid in mortar or other cement, and having interposed between the courses strips or keys, the outer ends of the last keys being upset and secured to the main walls or other support, substantially as described.

Signed at New York, in the county and State of New York, this 25th day of May, A. D. 1894.

GUSTAV LIEBAU.

Witnesses:

FREDERIC CARRAGAN,
J. B. TANNER.