(No Model.) 2 Sheets—Sheet 1.

T. A. LEE.

FLOOR AND FLOOR BLOCK.

No. 522,425. Patented July 3, 1894.

Fig. 1.

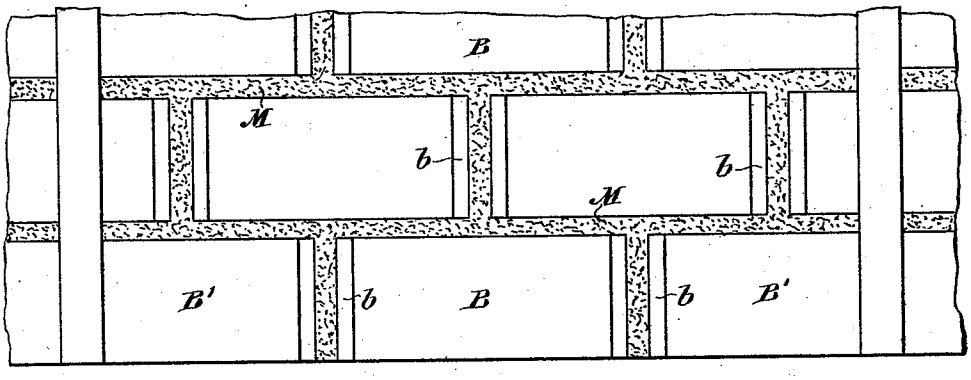


Fig. 2.

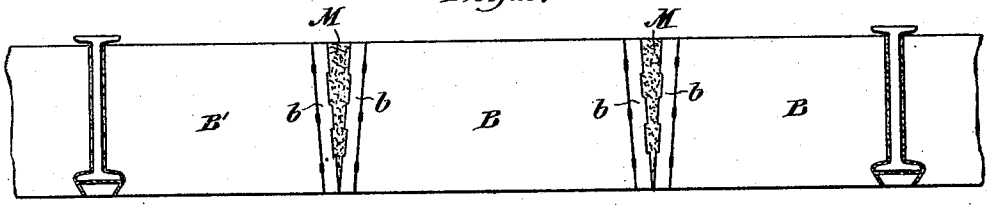


Fig. 3.

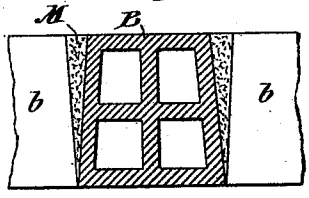


Fig. 4.

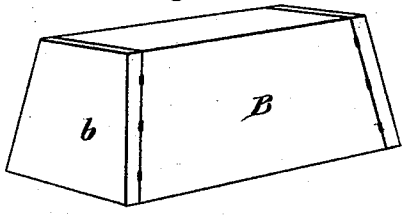


Fig. 5.

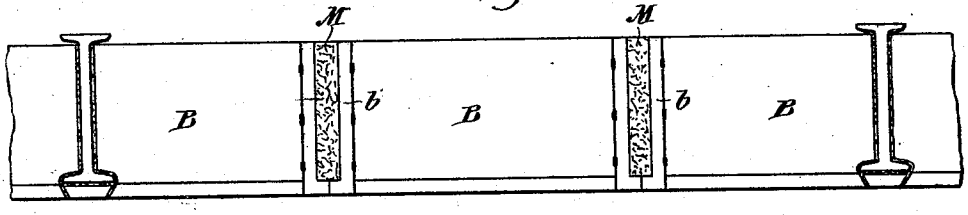
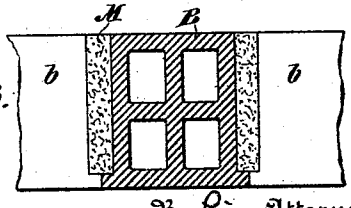


Fig. 6.



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(No Model.) 2 Sheets—Sheet 2.

T. A. LEE.

FLOOR AND FLOOR BLOCK.

No. 522,425. Patented July 3, 1894.

Fig. 7.

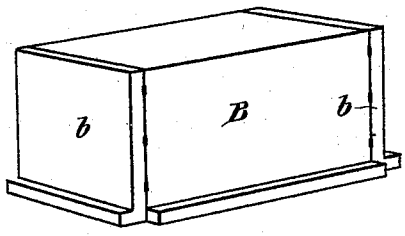


Fig. 8.

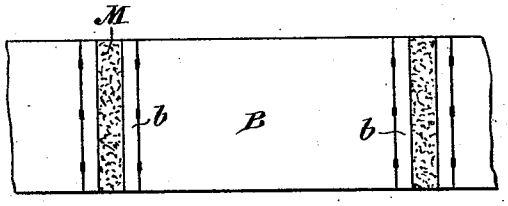


Fig. 9.

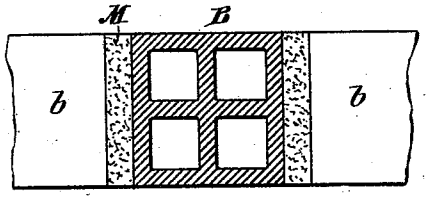


Fig. 10.

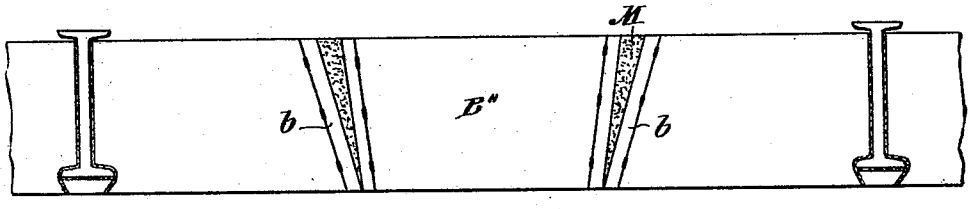
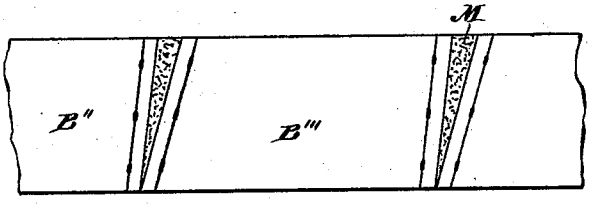


Fig. 11.



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UNITED STATES PATENT OFFICE.

THOMAS A. LEE, OF NEW YORK, N. Y.

FLOOR AND FLOOR-BLOCK.

SPECIFICATION forming part of Letters Patent No. 522,425, dated July 3, 1894.

Application filed April 27, 1893. Serial No. 472,115. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. LEE, of the city of New York and State of New York, have invented certain new and useful Improvements in Floors and Floor-Blocks, of which the following is a description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates particularly to the formation of fire-proof floors of porous terra cotta or other tile and to floor blocks for use therein. My purpose is to produce floors and floor blocks in such a manner that unskilled labor may surely and accurately lay the floors, and that the floors when complete may be as strong, light, and durable, as those far more expensively and carefully formed by other methods employing high priced expert labor.

To these ends, my invention is embodied in the floor construction and in the individual blocks and parts, constructed, arranged, combined, and used, substantially in the manner hereinafter described, illustrated, and claimed.

Fire proof tile floors have usually heretofore been constructed on the arch or on the I-beam-and-flat-arch principle, the floor blocks or arch-blocks being carefully cemented upon their faces and ends and placed in position by skilled masons. Under my invention the floor blocks, containing hollows, as usual, are about two feet long and fitted at the factory with end slabs covering the ends of the hollows and completely inclosing them. In its preferred form the walls of each block, including the end slabs, are inclined inward or toward each other as they approach the top of the block, or are formed with a projecting flange or rib at the base; so that, when placed together base-to-base upon the scaffolding or temporary support, channel-shaped spaces are left between the blocks. After being laid in position the plaster or other cement is poured or preferably packed and pounded into the channels, completing the floor. By this process I am enabled to use unskilled labor, for it is only necessary to instruct the workmen to first lay the blocks regularly in courses with their bases touching and breaking joints and to afterward fill the channels with the cement.

Such briefly, is my invention. In the accompanying drawings I illustrate it as applied to the I-beam-and-flat-arch-construction; though it is equally applicable to other forms, as illustrated for example in an application filed by me herewith, Serial No. 472,116, and entitled fire-proof floor construction.

In the accompanying drawings, Figure 1 is a plan view of one type of my invention, as applied to the flat-arch. Fig. 2 is a side view of a course of tiles in the same type. Fig. 3 is a cross section of Fig. 2 through the center of one of the blocks and the joints of the neighboring blocks, showing part of the ends of the neighboring blocks. Fig. 4 is a view of a single block as completed at the factory. Fig. 5 is a view corresponding with Fig. 2 but showing a modification. Figs. 6 and 7 are the corresponding section and view of detached block. Figs. 8 and 9 are a fragmentary side view and cross section of the simplest form of my invention. Fig. 10 illustrates the employment of arch blocks formed to allow radial or inclined joints, as in the more proper forms of arched arches; and Fig. 11 shows the intermediate arch blocks for arches requiring them to fill in between the keystone block and the abutments.

In the figures like letters of reference refer to like parts.

In the first four figures I show the form of my invention that employs blocks having smooth flat inclined faces. Fig. 4 shows a single block as completed at the factory. It corresponds, when in place, to about two of the ordinary rectangular blocks, the inclination of the sides being solely for the purpose of leaving V-shaped channels between adjacent blocks. The main portion of the block about two feet long is indicated by B, and the end slab by *b*. The slabs close the ends of the hollows giving the block four plane walls inclining inward, and, (with top and bottom) completely inclosing the hollows. The blocks therefore leave the factory, to all intents and purposes, as if they were light solid blocks. Fig. 3 shows a cross section of the block with its interior walls and hollows. In employing this form of block I first place end or springer blocks B′ properly cemented to the I-beams; though I may arrange the end block also with inclined faces toward the I-beams and fill in between with cement. After the end blocks

have been put in place the workmen can lay the other blocks in regular courses with bases touching each other and breaking joints. There will then be left V-shaped channels or spaces between the courses and between the blocks in each course. After this, cement may be poured in to entirely fill all the channels flush with the upper face of the floor. On account of the lesser strength, however, of the cement, necessarily employed for this purpose, I prefer to use a somewhat dryer composition and press it or tamp it firmly down between the blocks. This produces a very hard setting firm construction. It is of course well understood that in a flat arch or similar floor the compression strains are principally near the upper face of the floor and therefore the advantages of my construction will be apparent. Owing to the V-shape of the mortar joint the upper portions of the walls of the tiles are strongly reinforced by the broad ribs of cement or plaster running through the floor parallel with and between each course. This is one of the great and peculiar advantages of my invention, giving a maximum of strength for a minimum of material.

In Figs. 5, 6, and 7, the same general principle of construction is followed out; but in place of the inclined sides I employ vertical block walls with projecting flanges or ribs at the lower edges, thus providing a projecting base and insuring spaces for the cement between the blocks, yet preserving all the advantages of perpendicular sides. In this way I avoid the danger of detaching, by shock or concentrated loads, a single block; for it will be apparent that rectangular blocks would be more firmly retained by the surrounding blocks and cement than would the truncated-cone-shaped block first described. The blocks and end slabs *b* are formed in dies, in a manner well understood, and are preferably cemented together at the factory, ready for use.

Figs. 8 and 9 show the rectangular block with the base flanges omitted. In this form it is necessary to space the blocks as they are laid, which may be done by temporary wooden spacing pieces or by cord guides for each course. The cement is filled in after the spacing pieces have been removed, and the floor is completed as in the other forms of my invention.

Where it is desired to incline the joints of the arches, as has heretofore very commonly been done, the inclination of my end slabs is increased or diminished accordingly, to allow the same space as before but to form an inclined joint. The shape of the blocks for such cases is illustrated in Figs. 10 and 11. B″, Fig. 10, indicates the key block or key stone of the arch, and B‴, Fig. 11, indicates the intermediate block employed where five or more blocks to the span are used.

It must be understood from the foregoing description that all four sides of each block need not necessarily be inclined, flanged, or otherwise formed, or spaced, according to my invention; because clearly the precise form of the cement joint running parallel with the course has little or nothing to do with the form of the joints used between the ends of blocks in each course. Therefore I employ the term "walls" in the claims as applying alike to the side walls and to the end walls or slabs. Preferably, however, I form the incline or flange upon the side walls of the block as that conformation requires little change in the dies used.

I have now explained the essential features of my invention, and therefore, desiring to secure by these Letters Patent all modifications that may be made without departing from the principles of my invention, as well as the details and features herein shown, I claim as my own the following:

1. A floor or like structure constructed of courses of tiles or floor blocks, without the use of I-beams or other girders within the said courses, the said tiles or blocks being provided with inclined sides forming channels between them, and mortar or other cement filling in the said channels and forming compression resisting ribs, substantially as and for the purposes set forth.

2. A floor or like structure constructed of courses of tiles or floor blocks extending between supports and without the use of I-beams or other girders within the said courses, the said tiles or blocks being laid with spaces or channels as distinguished from mere cement joints between adjacent courses and between adjacent blocks in each course, and mortar or other cement filling in said channels substantially as and for the purposes set forth.

3. A floor or like block consisting of a hollow tile B and end slabs *b* closing the ends of the hollows, the walls of the said block projecting at the base whereby channels for the cement may be formed between adjacent blocks when placed base-to-base, substantially as, and for the purposes, set forth.

4. In combination in a floor, roof, or like structure, blocks provided with hollows, and slabs closing the said hollows and projecting bases leaving channels between adjacent blocks, and mortar or other cement filling the said channels, substantially as, and for the purposes, set forth.

5. In combination in a floor, roof, or like structure, blocks provided with hollows and slabs *b* closing the said hollows, and laid with spaces between adjacent blocks, and ribs of mortar or other cement filling the said spaces between the blocks, substantially as, and for the purposes, set forth.

In testimony whereof I have hereto set my hand this 21st day of April, 1893.

THOMAS A. LEE.

Witnesses:
HAROLD BINNEY,
MAY G. RIDLEY.