L. T. SCOFIELD.

Fire-Proof Floor and Ceiling.

No. 161,357. Patented March 30, 1875.

Fig. 1.

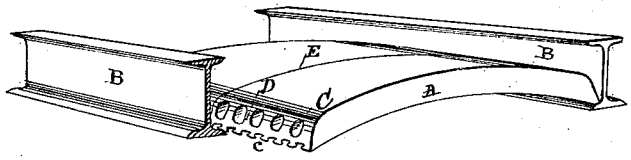


Fig. 2.

Fig. 3.

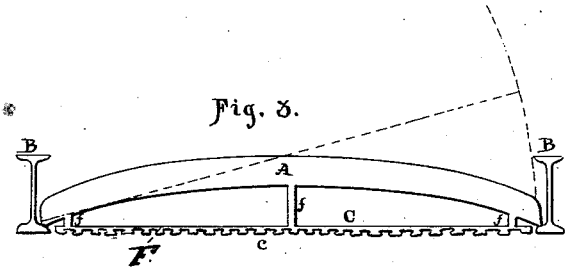
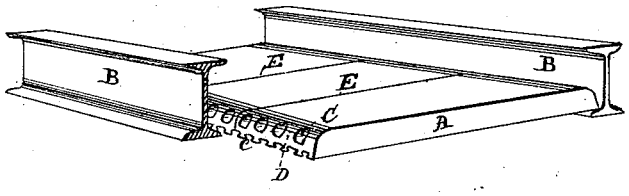


Fig. 4.



WITNESSES:

Thomas M. Bartlett

E. K. Chamberlin

INVENTOR.

Levi T. Scofield

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

LEVI T. SCOFIELD, OF CLEVELAND, OHIO.

IMPROVEMENT IN FIRE-PROOF FLOORS AND CEILINGS.

Specification forming part of Letters Patent No. **161,357**, dated March 30, 1875; application filed December 12, 1874.

To all whom it may concern:

Be it known that I, LEVI T. SCOFIELD, of Cleveland, county of Cuyahoga, State of Ohio, have invented a new Improvement in Fire-Proof Floors and Ceilings; and declare the following to be such a full, clear, and exact description thereof as will enable others skilled in the art to which my invention relates to make and use it, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates, first, to tiling, made in arch form to span in a single piece the space between the I-beams or other abutments that are designed to support a floor or ceiling, the said tiling provided with parallel openings or orifices extending in the direction of the thrust of the arch from one beam or support to the other beam or support, the said tiling forming the complete arch—that is, extending in a single piece from one springing line to the other springing line—or, in other words, not made up of separate voussoirs, thus forming a light structure, and one that shall have great strength, owing to the unbroken webs that extend from the upper to the lower surface of the said tile between the said orifices. My invention consists, secondly, of a tile made in a similar manner, and provided with similar orifices, except that the said tile is flat or straight instead of arched.

In the drawings, Figure 1 is a view in perspective of a tiling, made in accordance with my invention, as the same would appear between two I-beams. Fig. 2 is a cross-section of the said tiling taken in the direction of the beams. Fig. 3 is a view of the arched tiling, with a flat tiling in connection therewith, the said flat tiling supported by intermediate ribs. Fig. 4 is a view similar to Fig. 1, except that the tiling is made flat.

A is a tiling, made of terra-cotta, or any other suitable material. B B are I-beams, designed to support the floor or ceiling. C are the orifices, that extend through the tiling from beam to beam. D represents the webs, or the solid portions of the said tiling between the orifices C. The said webs are made solid with the upper and lower surfaces of the tile, and extend, unbroken, from beam to beam. E is that portion of the tiling which joins the next succeeding one. F is a flat surface beneath the arch-tiling A. It is provided with ribs *f*, which give it strength and stiffness. Corrugations are shown in the drawings, on the under side of the tiles, to answer the purpose of laths; but the said corrugations form no part of my invention. The orifices C, it will be observed, extend, unbroken, from beam to beam, as do also each of the separate pieces of tile—that is, the tile starts from the springing line upon one beam or point of support, and extends all the way across to the other springing line on the other beam or support, and is not broken up between the said springing lines by voussoirs. This method of making the tiles of unbroken surface above and below, and with orifices that extend at right angles to the points of support from beam to beam, causes the material between the said orifices to form webs that widen out at the top and bottom, and act as so many arches or curved I-beams, and each of them possesses great strength, being equal in depth to the thickness of the entire tiling. The ends of the tile, and consequently the ends of each of the webs, have a bearing on the flanges of the iron beams or supports.

It is evident that these continuous unbroken webs, extending from beam to beam, are only possible in a hollow tile, when the said tile is constructed, substantially as described, in accordance with my invention, and cannot be attained where the arch or space between two beams is made up of several voussoirs; nor is it possible where the orifices in the said tiles run in a direction parallel to the said beams or supports.

It is evident that the orifices C may either be circular, in cross-section, square, or of any other desired sectional figure; but the simplest form, and that which is probably of easiest construction, is shown in Fig. 1.

Instead of making the tiling of arched form, as shown in Fig. 1, they may be flat, as shown in Fig. 4, without departing from the principle of my invention, in which condition it would have the strength of so many I-beams placed side by side, and in this condition may serve either the purpose of a floor or ceiling.

The said tiling may be formed in any other suitable manner. One method of forming the

arched tiles is to force the clay, or other material from which it is made, through a die of a tiling-machine, so arranged by screens as to allow the clay to pass more freely through the upper part of the die than the lower, or vice versa, thus giving the curve to the tiles as they pass through the dies. The ends of the tiles may then be cut off with a fine wire stretched in a frame, and arranged to run in grooves, which will give the proper shape to the ends of the tiles, whereby they may fit against the I-beams or their supports. The tiles may then be dried on sheet-metal curved beds that will preserve the form. They can be made in sections from twelve to sixteen inches wide, or more, and of the necessary length to be fitted in between the beams—that is, so that a single piece will stretch from one beam to another. The ends adjacent to the supports should be bedded in cement, so as to fit snugly.

A floor or ceiling formed of tiles of this description will be fire-proof, and otherwise indestructible, and the tiles themselves are of such a form as to possess the maximum of strength with the minimum of weight, and are sufficiently strong to stand any ordinary weight that may be put upon them. By employing this tiling to span the space between the beams or supports B, the trouble and expense of erecting casters, ordinarily employed in the construction of brick arches or hollow tile skew-backs, are avoided.

It is also apparent that my invention is not limited to the construction of floors or ceilings, but is equally applicable in the construction of covers for sewers or tunnels, &c.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A tile of terra-cotta, burnt clay, or any other suitable material, constructed to span, in a single piece or length, the space between two beams, and provided with the hollow spaces C, extending from beam to beam, substantially as and for the purpose described.

2. A tile designed to span, in a single length, the space between two beams or supports, the said tile provided with orifices extending from beam to beam, and with intermediate unbroken webs *f*, substantially as and for the purpose described.

LEVI T. SCOFIELD.

Witnesses:
THOMAS M. BARTLETT,
E. K. CHAMBERLIN.