2 Sheets—Sheet 1.

W. DALE.

Illuminating Tiles for Covering Vaults, &c.

No. 211,297. **Patented Jan. 14, 1879.**

Fig. 1.

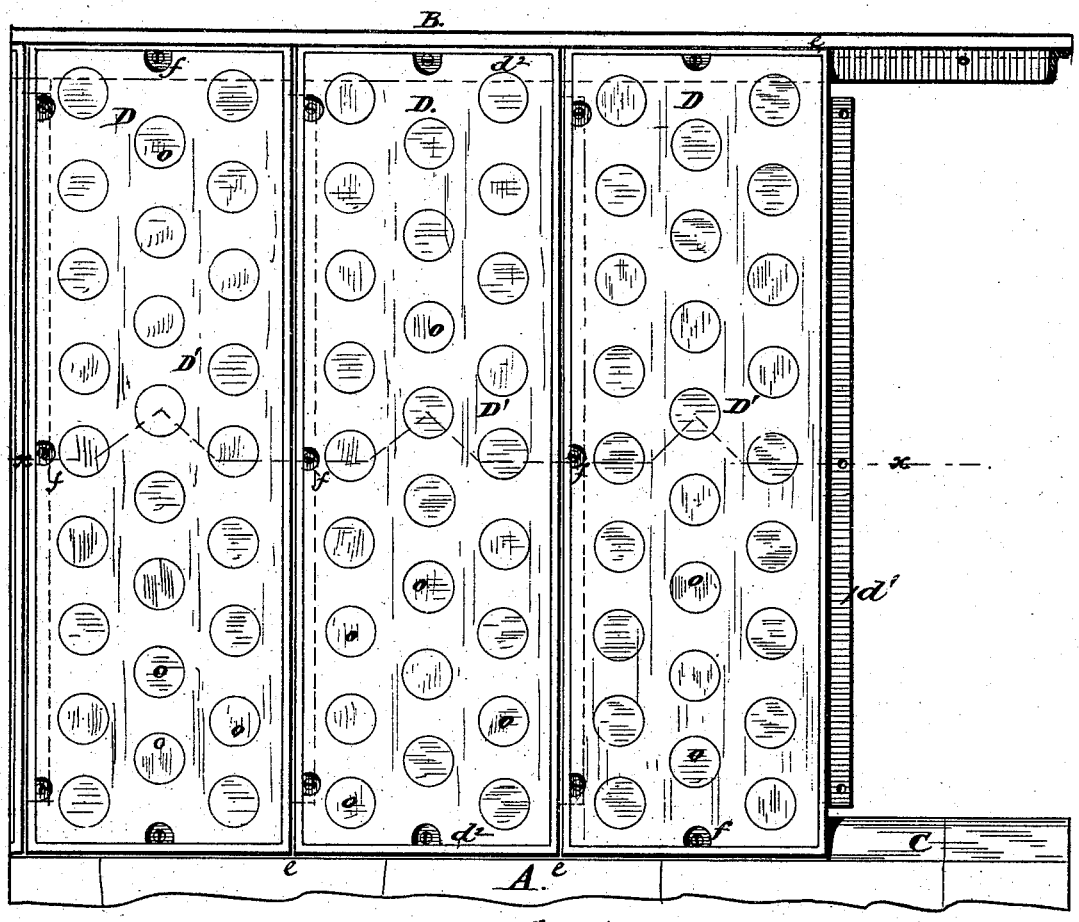


Fig. 2.

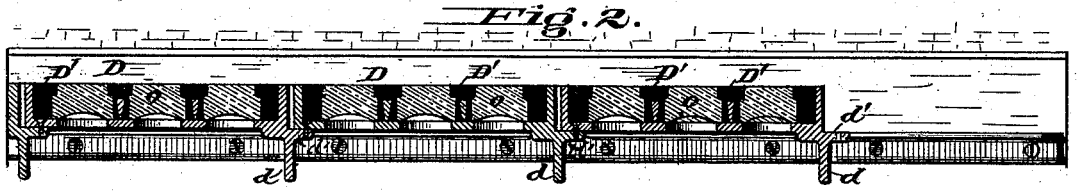
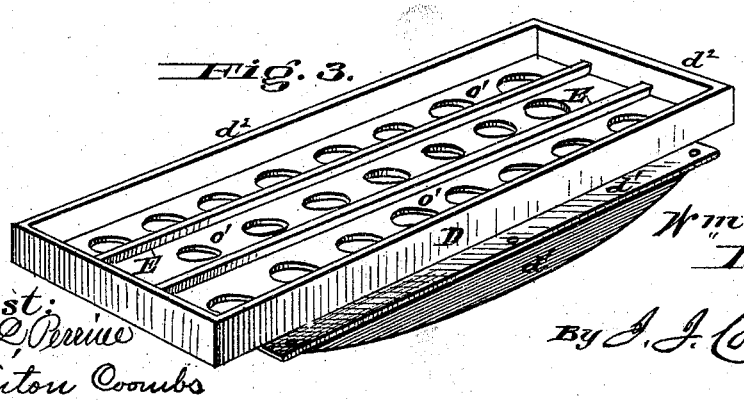


Fig. 3.



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2 Sheets—Sheet 2.

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Illuminating Tiles for Covering Vaults, &c.

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Fig. 4.

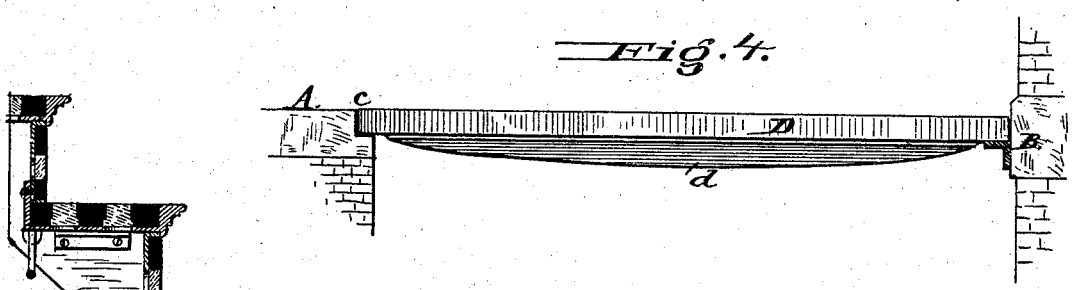


Fig. 5.

Fig. 6.

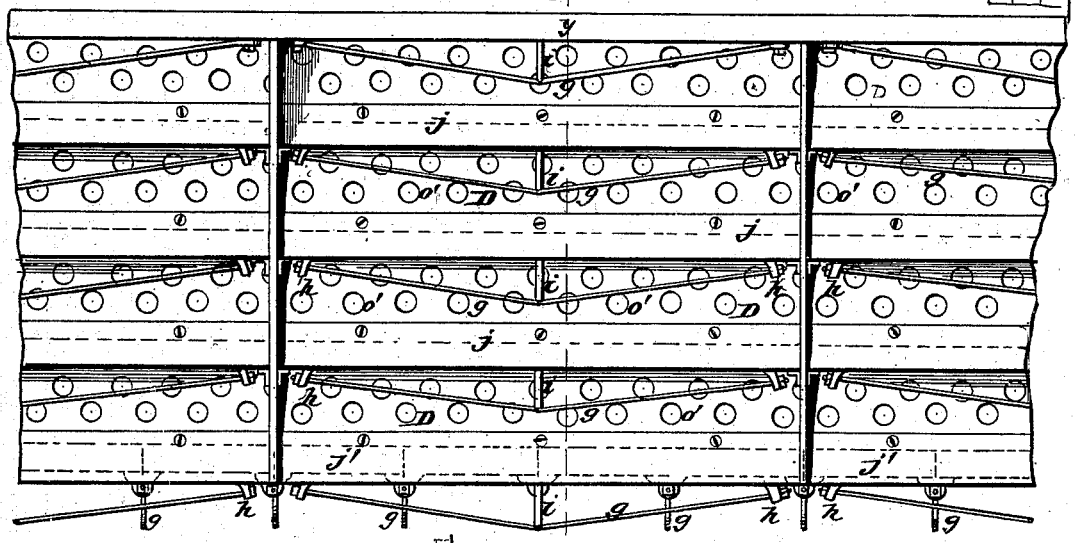


Fig. 7.

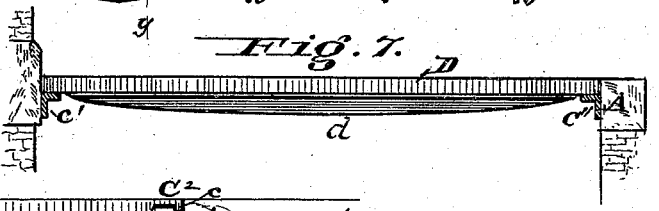
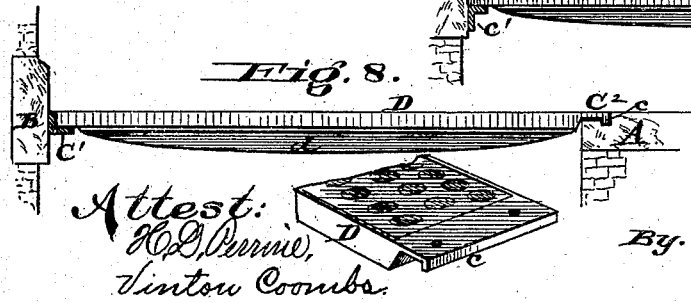


Fig. 8.



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UNITED STATES PATENT OFFICE.

WILLIAM DALE, OF NEW YORK, N. Y.

IMPROVEMENT IN ILLUMINATING-TILES FOR COVERING VAULTS, &c.

Specification forming part of Letters Patent No. **211,297**, dated January 14, 1879; application filed December 12, 1878.

To all whom it may concern:

Be it known that I, WILLIAM DALE, of the city, county, and State of New York, have invented certain new and useful Improvements in Illuminating-Tiles for Covering Vaults and Cellar-Areas, which are fully set forth in the following specification:

This invention is especially applicable to extension-areas, which require several sections of illuminating-tile to cover them.

Heretofore in constructing and applying illuminating-tiles to extension-areas, a cast-iron frame, with supporting-ribs or cross-bars at suitable intervals, has been fitted into the stone coping, and the illuminating tiles or plates, cast separately from said frame, have been bolted or screwed down upon said cross-bars.

My improvements consist, first, in casting each section of the illuminating-tile with a supporting-rib or cross-bar having an offset or shoulder, to receive and support the adjacent section, all in one piece, adapted to fit directly into the coping, without a surrounding metal frame, thus obviating the necessity of any such frame as has heretofore been used; secondly, in making the supporting-rib or cross-bar of each section so shallow that it will not obstruct the oblique rays of light passing through the glasses, and re-enforcing it by a tension-truss, as hereinafter more fully described.

In the accompanying drawings, Figure 1 is a plan view of an area-cover consisting of three sections of tile, fitted into a stone coping. Fig. 2 represents a vertical cross-section of the same, on the irregular line *x x*, Fig. 1. Fig. 3 is a perspective view of one of the sectional tiles. Fig. 4 is a side view of the same, showing one end fitted into the stone coping, and the other end resting upon an angle-iron attached to the wall of the building. Fig. 5 is a side sectional view of a series of risers and steps composed of illuminating-tiles, on line *y y*, Fig. 6. Fig. 6 is a rear view of the same. Fig. 7 is a side view of one sectional tile supported upon angle-irons attached to the coping as well as to the wall. Fig. 8 shows another way of supporting the tile upon the coping when the latter is too thin to bear rabbeting, as shown in Figs. 4 and 5.

In the drawings I have represented the illuminating-tiles as consisting of a cast-iron plate in disk form, having perforations in it covered by glass bull's-eyes, and the spaces around and between the bull's-eyes filled with cement, as shown and described in Letters Patent No. 156,412, granted to me November 3, 1874, and other Letters Patent previously granted to me. It will be obvious, however, that my improvements are equally applicable to tiles in which the glass bull's-eyes or panes are set into a metal grating, coming flush with the upper surface of the glasses.

A, Figs. 1, 4, 5, 7, and 8, shows the stone coping, and B, in same figures, (except 5,) shows the wall of the building. C, Figs. 1, 4, and 5, shows a rabbet cut in the stone coping, to receive and support the illuminating-tile. C′, Fig. 7, shows an angle-iron attached to the coping, for the same purpose, and in Figs. 7 and 8 a similar angle-iron attached to the wall of the building, to receive and support the inner ends of the sectional tiles. C^2, Fig. 8, shows a recess cut in the upper surface of the coping, to receive a projecting lip, *c*, extending from the tile over the inner upper corner of the coping. D, in all the figures, shows the sectional tiles. *o* shows the glass bull's-eyes, covering perforations *o′* in the iron plate which forms the bottom of the tile; and D′ represents the cement or concrete around and between the glasses, holding them firmly in position. E E, Fig. 3, shows two dovetailed webs cast on the upper surface of the bottom plate of the tile, which are to be entirely covered by the cement or concrete, and will serve to hold the same firmly down upon said plate.

When the stone coping is too thin to bear rabbeting, as shown in Figs. 4 and 5, I attach an angle-iron thereto, to support the tiles, as shown at C^1, Fig. 7; or a lip, *c*, may be cast upon the tile, to extend over the coping, and rest in a shallow recess cut therein, as shown at C^2, Fig. 7; or said lip may be made to rest directly upon brick-work.

Each sectional tile (except the one at the finishing end of the area-cover) has cast integrally with it a strengthening-rib or cross-bar, *d*, one-half of the width of which extends laterally beyond the edge of the tile upon which it

is cast, forming a rabbeted supporting-seat, d^1, for the adjacent edge of the next tile to rest upon, as is clearly shown in Fig. 2.

A little space should be left at *e* between the adjacent edges of the tiles, and also between the outer edges of the same and the stone coping, to be filled with cement. All around the periphery of each tile a flange or rim, d^2, rises vertically the thickness of the cement to be applied within the same, which flange need not be more than from an eighth to one-fourth of an inch in thickness.

The sectional tiles may be all completed at the shop by inserting the glasses and the cement, leaving, however, small spaces, as at *f f*, free from cement, for inserting screws, to be afterward filled with cement. The tiles thus prepared are laid down upon a thin bed of cement, and screwed or bolted to their seats and to each other where they overlap, and there the seams around and between them are filled with hot cement, making a thoroughly water-tight cover, without any surrounding metal frame and with very little metal exposed upon the surface.

When the strengthening-rib *d* is cast with a solid metal web on its lower side, as shown in Figs. 3, 4, 7, and 8, said web will, in some degree, obstruct the rays of light passing obliquely through the glasses. To obviate this I sometimes cast said rib shallow, or without the web, and re-enforce it by means of a truss, consisting of a tension-rod, *g*, connecting two lugs, *h h*, cast upon the rib and braced outward by a strut, *i*, at its center, as shown in Figs. 5 and 6.

When the tile is unusually long I employ two additional struts, placed intermediately between the center strut, *i*, and the lugs *h h*. The tension-rod is adjustable to any desired degree of tautness by means of screws and nuts, as shown at *h h*. I consider this truss as a re-enforce to illuminating-tiles, especially applicable to steps and risers.

I do not claim a sectional extension-area or vault cover composed of sectional tiles inserted in or supported by a metallic frame, whether cast entire or made in sections, as described and shown in Letters Patent granted to T. Hyatt, July 23, 1878; nor do I claim a sectional tile of any construction adapted or designed to be set into or supported by a metal frame cast entire or made in sections, as aforesaid; but

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

1. An extension-area or vault cover composed of sectional illuminating-tiles, each tile (save one) having cast integrally therewith at one edge a strengthening-rib, projecting laterally to form a seat for the next adjacent tile to rest upon, and all fitted directly into the stone coping without any surrounding or supporting metal frame, substantially as described.

2. The illuminating sectional tile D, having cast thereon at one edge a strengthening-rib, *d*, with a lateral projection, d^1, forming a seat for the next adjacent tile to rest upon, adapted to be laid in an extension-area or vault cover without any surrounding or supporting metal frame, substantially as described.

3. In combination with an illuminating-tile having a shallow strengthening-rib cast integrally therewith, as described, the lugs *h h*, adjustable tension-rod *g*, and strut *i*, forming a re-enforcing truss, substantially as and for the purpose described.

4. In combination with illuminating steps and risers, as described, a re-enforcing truss applied to said steps and risers, or either of them, consisting of the lugs *h h*, adjustable tension-rod *g*, and strut *i*, substantially as shown in Fig. 6 of the drawings.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of the subscribing witnesses.

WILLIAM DALE. [L. S.]

Witnesses:

WM. P. YOUNG,

VINTON COOMBS.