

(No Model.)

4 Sheets—Sheet 1.

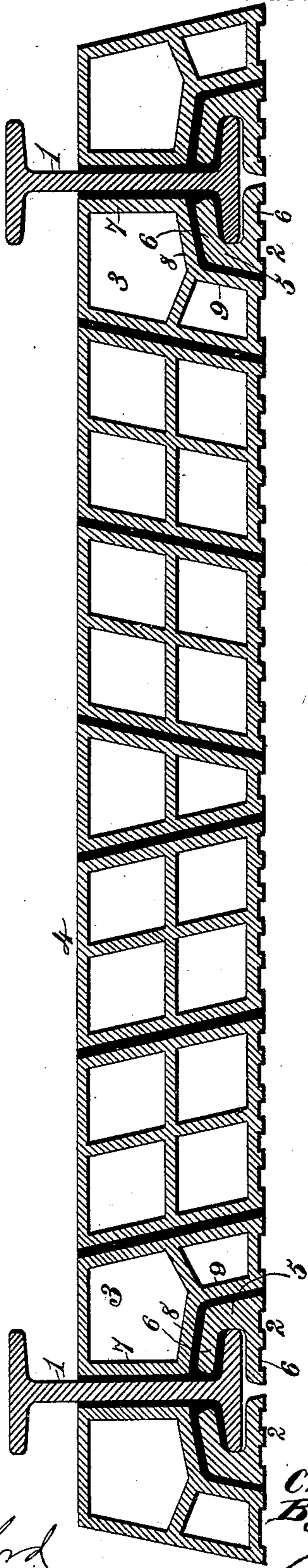
W. B. & C. H. HAYDEN.

FIRE PROOF FLOOR.

No. 316,361.

Patented Apr. 21, 1885.

Fig. 1.



Witnesses.

Robert Everett.

J. A. Ruthenford.

Inventors.

William B. Hayden.
Charles H. Hayden.

By James L. Norris.
Atty.

(No Model.)

4 Sheets—Sheet 2.

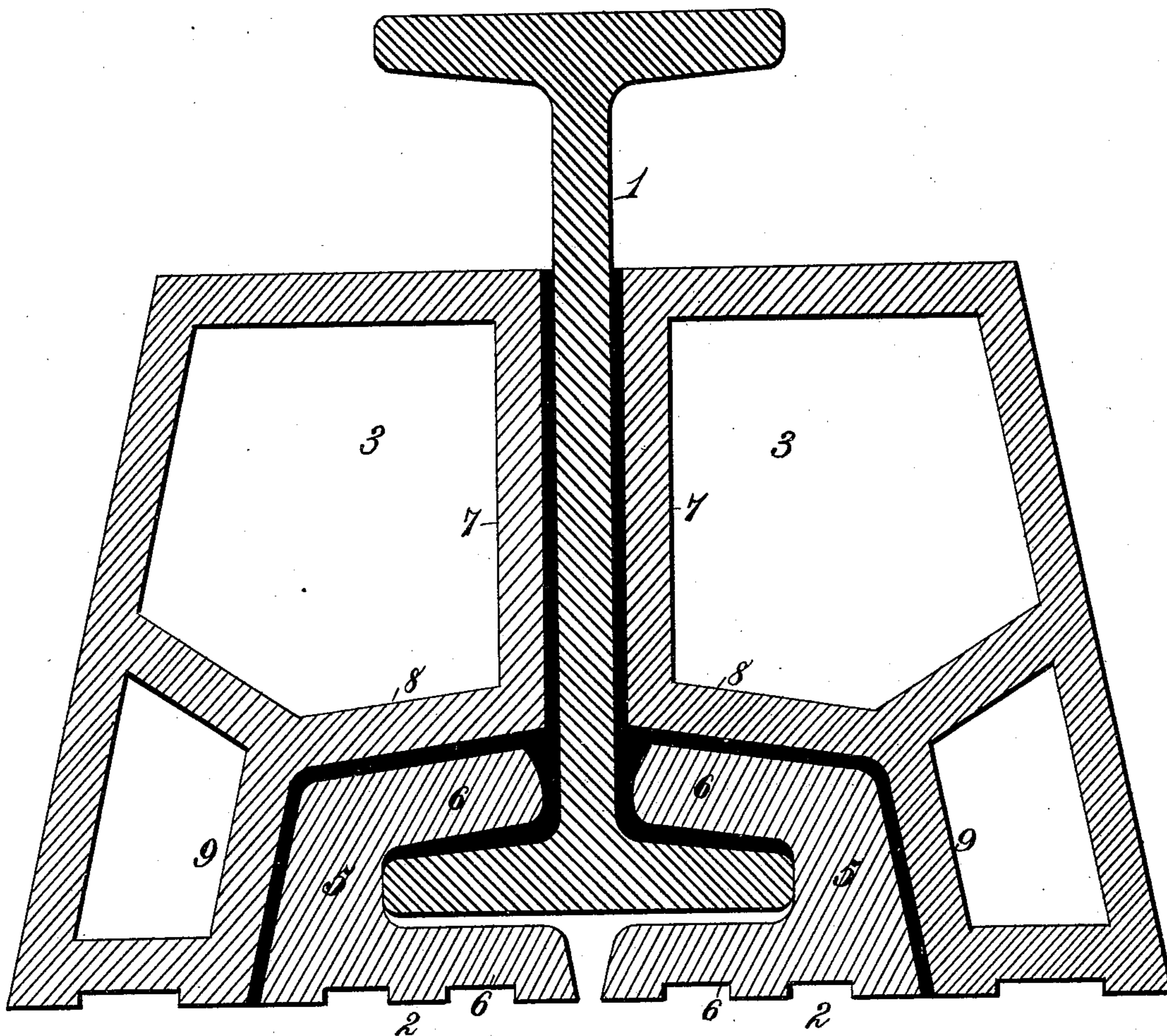
W. B. & C. H. HAYDEN.

FIRE PROOF FLOOR.

No. 316,361.

Patented Apr. 21, 1885.

Fig. 2.



Witnesses.
Robert Everett.

J. A. Rutherford

Inventors.
William B. Hayden
Charles H. Hayden.

By James L. Norris.
Atty.

(No Model.)

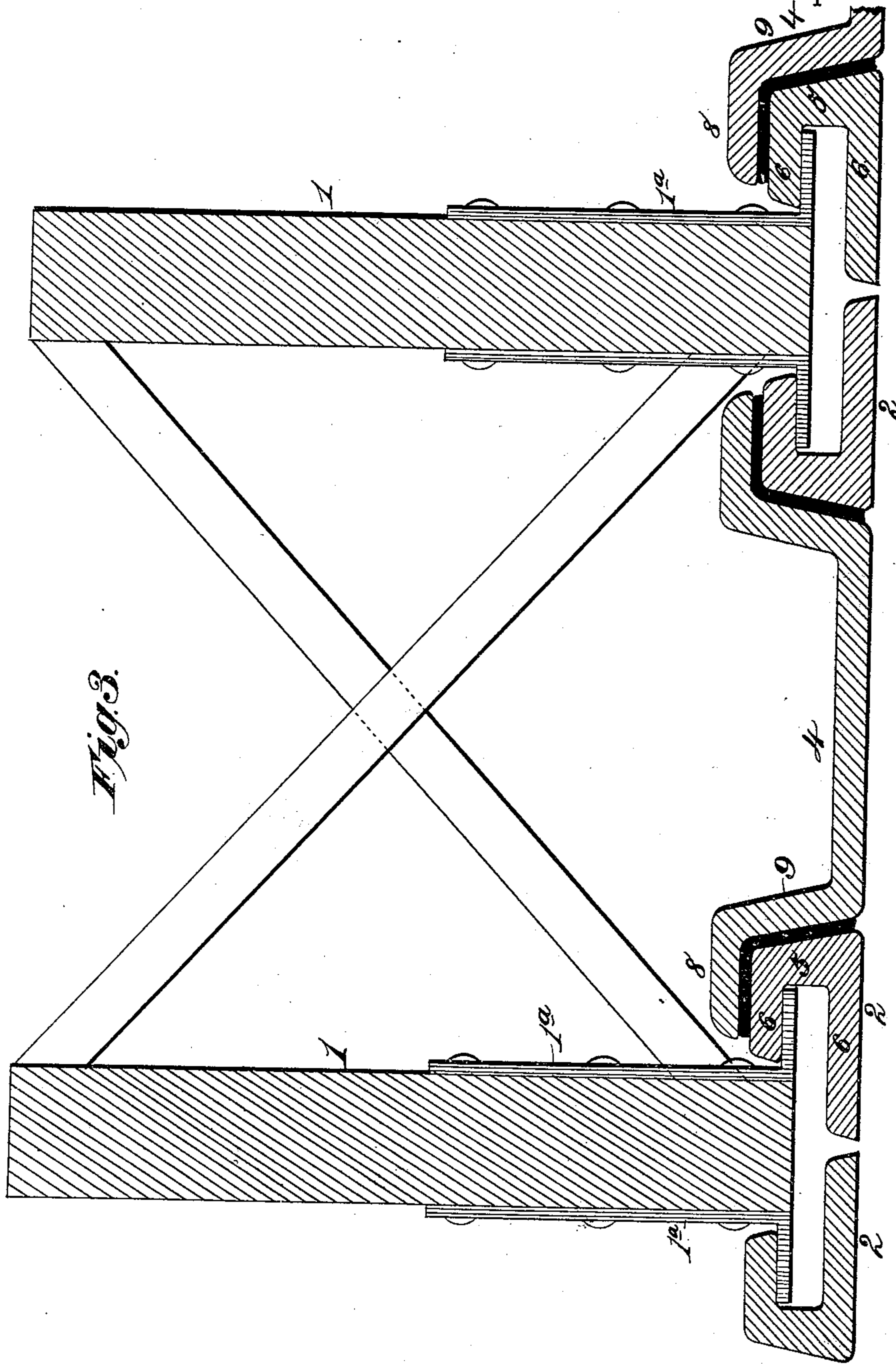
W. B. & C. H. HAYDEN.

4 Sheets—Sheet 3.

FIRE PROOF FLOOR.

No. 316,361.

Patented Apr. 21, 1885.



Witnesses.

Robert Everett,

J. A. Rutherford,

Inventors.

William B. Hayden

By Charles H. Hayden,

James L. Norris,

Atty.

(No Model.)

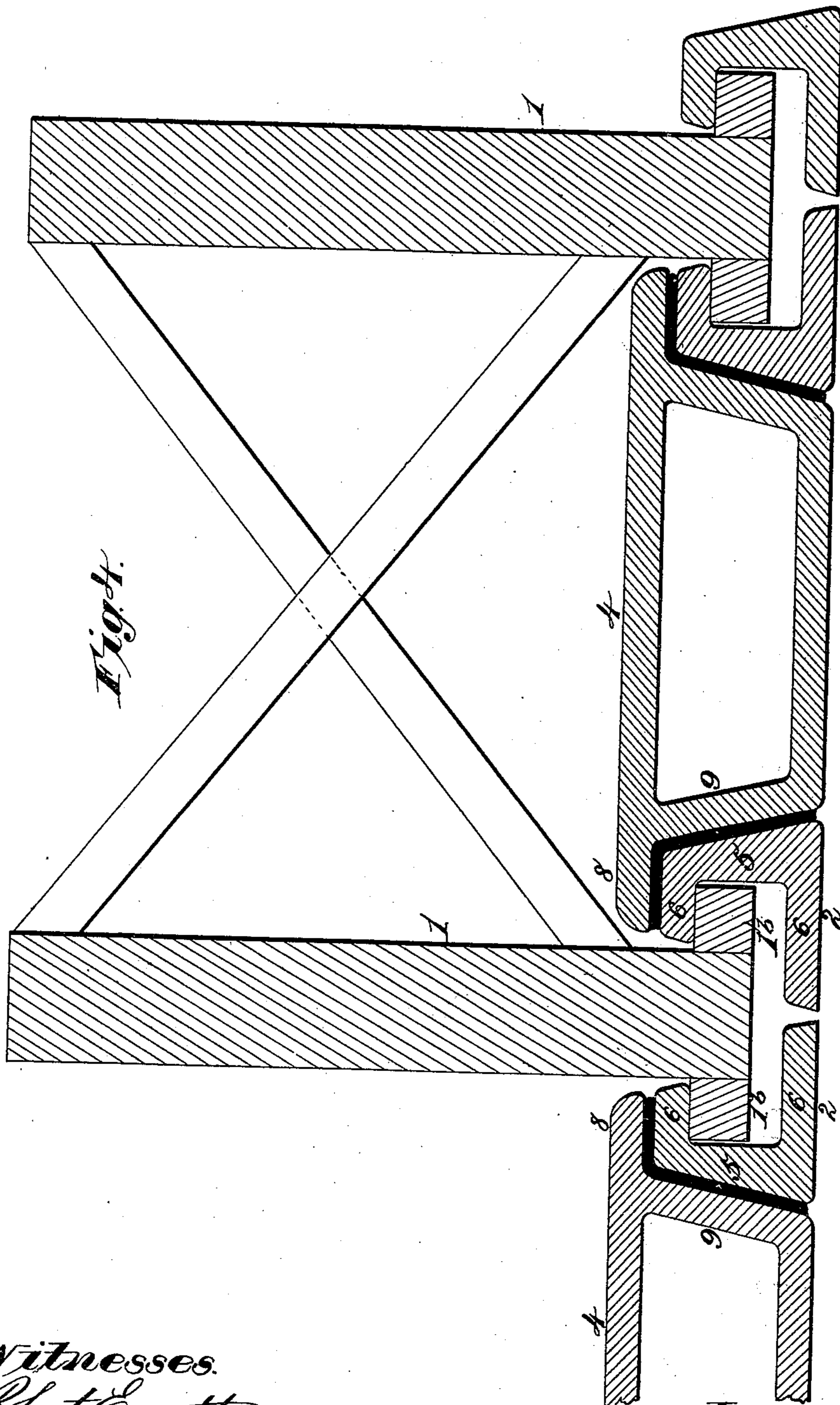
W. B. & C. H. HAYDEN.

4 Sheets—Sheet 4.

FIRE PROOF FLOOR.

No. 316,361.

Patented Apr. 21, 1885.



Witnesses.

Robert Everett,

J. A. Rutherford,

Inventors,

William B. Hayden,

By Charles H. Hayden,

James L. Norris,
Atty.

UNITED STATES PATENT OFFICE.

WILLIAM B. HAYDEN AND CHARLES H. HAYDEN, OF COLUMBUS, OHIO.

FIRE-PROOF FLOOR.

SPECIFICATION forming part of Letters Patent No. 316,361, dated April 21, 1885.

Application filed November 13, 1884. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM B. HAYDEN and CHARLES H. HAYDEN, citizens of the United States, residing at Columbus, Franklin county, Ohio, have invented new and useful Improvements in Fire-Proof Floors, of which the following is a specification.

In fire-proof floors for buildings various constructions have heretofore been employed for protecting the iron beams or girders and supporting the skewbacks which sustain the arch or sectional tile. It is desirable to so construct the tile that when in position between the beams or girders flat upper and lower surfaces will be provided, and this has been accomplished by hollow tiles having flat upper and lower surfaces and end recesses, by which they are strung upon the flanges of the I-beams—as, for example, in Letters Patent No. 12,642 and No. 57,450. In this construction the tiles, being in one piece from end to end, are open to some objection in that they do not readily accommodate themselves to deflections of the walls or ceilings. This has, however, been overcome by the use of sectional hollow tiles between the skewbacks, the middle section constituting a key or wedge to the arch or span, as in English Patent No. 1,292, A. D. 1858.

The objects of our invention are to improve the construction of the fire-proof floors above alluded to, and provide a novel construction and combination of devices, whereby the flanges of the I-beams are covered and protected by refractory covers, and the skewbacks are supported upon the covers which overhang the flanges of the I-beams, the whole constituting an efficient, substantial, and economical floor, with the arches between the beams provided with a flat intrados and a flat extrados.

To such ends our invention consists in the combination of a flanged beam or joist of iron or wood, covers of refractory material for the beam-flanges, each cover having an upper flange overhanging the beam-flange and a lower flange underlying the said beam-flange, with a skewback or a tile having a lateral shoulder supported upon the overhanging flange of the cover, and a downward-projecting shoulder bearing against the outer edge

or wall of the cover, the construction being such that the flange-covers are suspended by their overhanging flanges from the beam-flanges, and the skewback or the tile then adjusted to position against the girder and the flange-cover, the underlying flanges of two of the covers on one beam-flange covering and protecting the latter, and also preserving the continuity of the arch for facility in plastering the ceiling.

The invention is illustrated by the accompanying drawings, in which Figure 1 is a transverse sectional view taken through two of the girders or beams, showing a section of the flat arch. Fig. 2 is a detail sectional view, on an enlarged scale, taken transversely through one of the beams, the flange-covers and the skewbacks therefor; Fig. 3, a transverse sectional view showing the invention applied to a wooden beam or joist having flanges formed by attached angle-irons, and Fig. 4 a transverse sectional view showing the invention applied to a wooden beam or joist having flanges formed by attached wooden cleats or strips.

In order to enable those skilled in the art to make and use our invention, it will now be described in detail, reference being first made to Figs. 1 and 2 of the drawings, where the number 1 indicates the usual I-beams; 2, the flange-covers; 3, the skewbacks, and 4 the hollow tiles composing the arch between the beams, this arch having flat extrados and intrados, with the lower surface of each tile grooved or otherwise constructed to retain the plaster.

There are two independently-constructed flange-covers 2 for the lower flange of each girder, and each flange-cover is formed with an outer wall or edge, 5, and two flanges, 6, projecting therefrom, the whole comprising a cover U-shaped in cross-section, which is so applied that the upper flange overhangs one of the girder-flanges, and the lower flange underlies one-half, or approximately so, of the girder-flange. The hollow skewback 3 is formed with a vertical face, 7, resting against the web of the girder, a central shoulder, 8, supported upon the overhanging flange of the flange-cover, and with a downward-projecting shoulder, 9, seating against the outer wall or edge,

5, of the flange-cover. The adjacent surfaces of the skewback and the flange-cover are inclined downward in a direction away from the girder to facilitate the setting of the arch. 5 The underlying bottom flanges of the flange-covers extend toward each other, so that their longitudinal edges are adjacent to each other, thereby constituting a covering and protecting medium for the flange of the girder, and 10 the flat arch, composed of the hollow tiles 4, is sprung from one skewback to the other between two adjacent girders. The arch thus formed is furnished with flat extrados and intrados, and is technically termed a "flat arch," 15 and the continuity of such arch under the girders is preserved by the flange-covers for facilitating plastering, such construction avoiding the necessity of filling the space between two adjacent flat arches with mortar or cement 20 where no covering is used to the girder-flange.

In setting the flange-covers, skewbacks, and tiles the joints are properly luted with suitable material, as ordinarily practiced in the construction of hollow-tile floors, for the 25 purpose of making the structure air-tight, and the flange-covers, skewbacks, and tiles are composed of fire-clay or other refractory material to render the flooring non-combustible and fire-proof.

30 In the modification shown in Fig. 3 a wooden beam, 1, is employed, and its flanges are composed of attached angle-irons 1^a, while a single tile, 4, is used to fill the space between the flange-covers of two adjacent beams. This 35 tile at its ends is furnished with lateral shoulders 8, supported upon the overhanging flanges of the covers 2, and with downward-projecting shoulders 9, seating against the outer walls or edges, 5, of the covers. The adjacent surfaces of the walls 5 of the covers 2 and the 40 downward-projecting shoulders 9 of the tile are inclined in an outward direction away from the beam or joist to facilitate setting the tile flooring, and also to serve the purpose of 45 crowding the covers laterally upon the flanges of the beams.

In the modification shown in Fig. 4 the construction of the parts is the same as that in Fig. 3, except that the beam-flanges are formed 50 by attached wooden cleats or strips 1^b.

The construction of parts described avoids the necessity of relying on dovetailed joints to support a tile covering at the under sides of the beam-flanges, as has heretofore been practiced. 55

Having thus described our invention, what we claim is—

1. The combination of the flanged beam, the fire-proof flange-covers, of refractory material, each comprising an outer wall and two flanges, 60 respectively overlying and underlying the beam-flange, and a tile or skewback constructed with a lateral shoulder resting upon and covering the overhanging flange of one of the covers, and with a downward-projecting shoulder 65 resting against the outer wall of said cover, said tile or skewback having its lower surface flush, or approximately so, with the underlying flange of the cover, substantially as described. 70

2. The combination of a flanged beam and the separate flange-covers, each comprising two flanges, the upper one overhanging the beam-flange and the lower one underlying the said beam-flange, with the skewback having 75 a lateral shoulder supported upon the overhanging flange of the cover, and a downward-projecting shoulder resting against the outer wall or edge of the cover, substantially as described. 80

3. The combination of the flanged girders, the separate flange-covers, each comprising two flanges, respectively overhanging and underlying the girder-flanges, and the skewbacks having lateral shoulders supported upon 85 the overhanging flanges of the covers, and downward-projecting shoulders resting against the outer walls of the flange-covers, with the sectional tile arch springing from one skewback to the other, substantially as described. 90

4. The combination of a flanged girder and a flange-cover, comprising two flanges, respectively overhanging and underlying the girder-flange, with the skewback having a 95 lateral shoulder supported upon the overhanging flange of the cover, and a downward-projecting shoulder resting against the outer wall or edge of the cover, the said cover and the skewbacks having their adjoining surfaces inclined downward in a direction away from the 100 girder, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

WM. B. HAYDEN.
CHAS. H. HAYDEN.

Witnesses:

E. K. HUNT,
HENRY M. BUTLER.