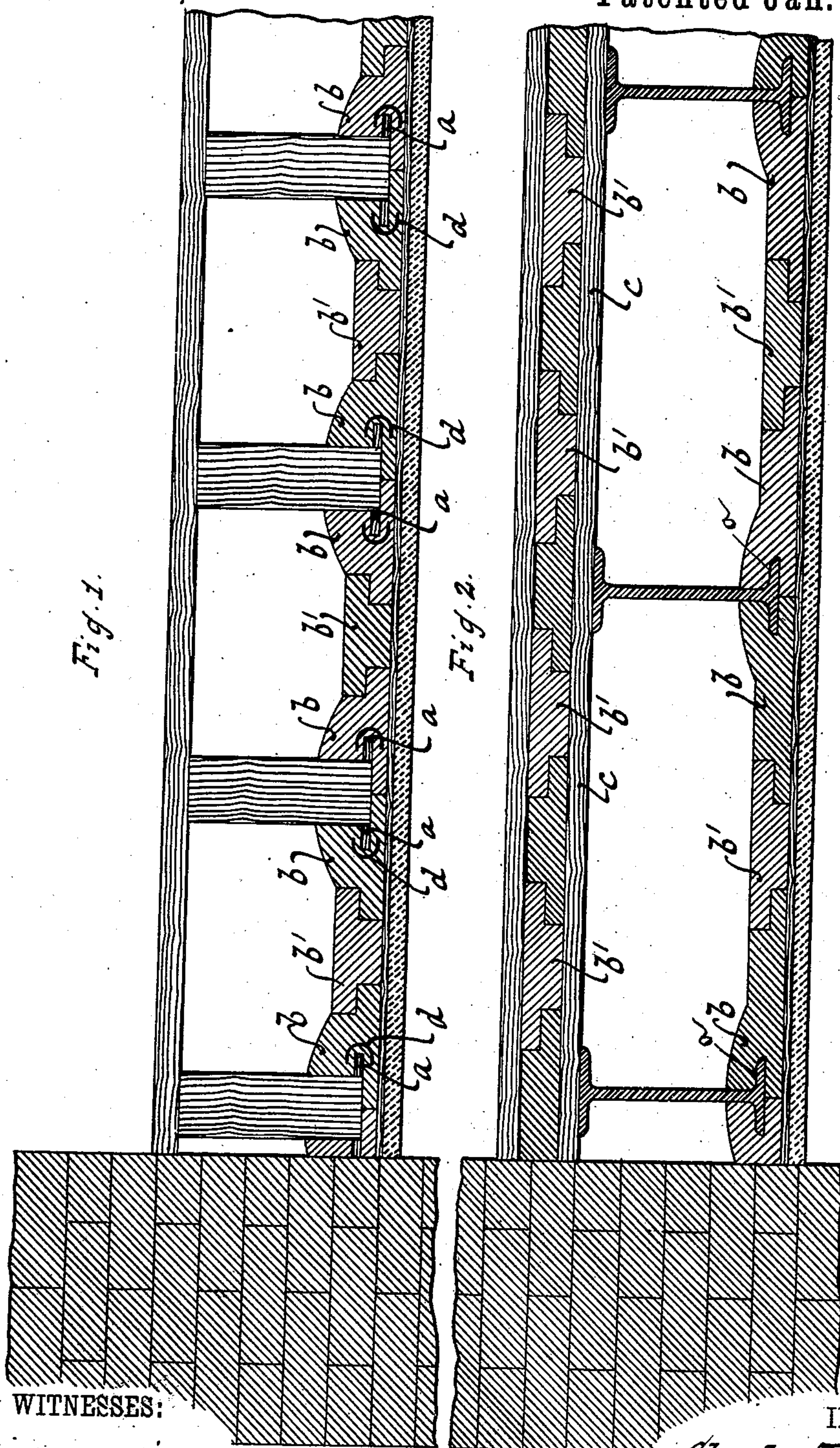


(No Model.)

C. TOOPE.
FIRE PROOF CEILING.

No. 334,996.

Patented Jan. 26, 1886.



WITNESSES:

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UNITED STATES PATENT OFFICE.

CHARLES TOOPE, OF LONDON, ENGLAND.

FIRE-PROOF CEILING.

SPECIFICATION forming part of Letters Patent No. 334,996, dated January 26, 1886.

Application filed May 28, 1885. Serial No. 166,963. (No model.) Patented in England May 6, 1884, No. 7,342.

To all whom it may concern:

Be it known that I, CHARLES TOOPE, formerly of New York, N. Y., a citizen of the United States, now residing at London, England, have invented new and useful Improvements in Fire-Proof Ceilings, (for which I have obtained patent in Great Britain, No. 7,342, May 6, 1884,) of which the following is a specification.

My invention relates to means for protecting the joists or timbers of buildings from fire; and it consists in the construction and combination of parts fully pointed out in the following specification and claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical cross-section of a floor and ceiling embodying my invention when applied to a floor built with the ordinary wooden floor-beams. Fig. 2 is a vertical cross-section showing the floor and ceiling, in the construction of which iron beams are employed.

Similar letters indicate corresponding parts.

In the drawings, referring for the present especially to Fig. 1, which shows a floor built with wooden joists or timbers, the letters *a a*, &c., designate fillets, which I nail along each side of the joists at the lower edge to support the blocks or slabs *b b*. These blocks or slabs *b* are molded in the forms shown, and of such width that three slabs—that is to say, the two slabs *b* and a central slab, *b'*—will bridge over the space between two joists and fit together, as shown. The slabs *b* adjacent to the joists are molded with a rabbeted grooved edge, to adapt them to fit on the fillets *a* of a wooden joist, or the lower flange, *a'*, of an iron girder or joist, Fig. 2, and extend under the same as far as the center line and rise up the side of the same above the fillet or flange, the thickness above and below being sufficient to support the weight of the slabs or blocks, and to protect the joist from fire, and afford nailhold for the lath and plaster. The outer edge and the edges of the central block or slab are preferably rabbeted, so as to form an indented joint, as shown; but the joint may be oblique, like that of an ordinary flat arch, if desired.

In order to strengthen the block or slab where it fits the fillet *a* or flange of the girder,

U-shaped pieces of metal, *d*, are embedded in the material at suitable distances apart at the time of molding, and the blocks or slabs next to the girders or joists are made of greater thickness than the center blocks or slabs, *b'*. The central slab is placed between the lateral ones after the latter have been placed in position on the joists or girders, and the joints between them, as well as the joints beneath the joists or girders, are cemented with a fire-proof cement composed of pipe-clay and silicate of soda, (mixed in suitable proportions to form a cement,) to make a tight joint and prevent the passage of heat and smoke. The slabs, which might conveniently be made in lengths of from one to three feet, simply butt joint, and are cemented with the same fire-proof cement. After the slabs are placed in position the lower side is, if required, lined or coated with asbestos sheeting, the said sheeting being cemented to the slabs with the above-described cement. The ordinary lathing may afterward be nailed to the slabs. The fire-proof slabs are applied in a similar way to rafters and to the studs of partition-walls.

In applying the slabs beneath the wooden flooring to protect the joists from burning downward, they may be jointed together in the same way, and are supported on planks *c*, resting on the joists or girders, as shown in Fig. 2; but in case of warehouses, &c., these fire-proof slabs or blocks may themselves constitute the floor or wearing-surface without the ordinary wood flooring.

The blocks or slabs may be made of any suitable fire-proof material; but by preference I manufacture the same from a mixture of silicate cotton or asbestos fiber, or fossil meal, (or a mixture of the three,) and a solution of silicate of soda and pipe-clay, in any suitable proportion.

In manufacturing the blocks I mix eight pounds of pipe-clay with about eight gallons of water, and add to this mixture about one gallon of silicate of soda, and then add silicate cotton or asbestos fiber (or a mixture of the two) to form a plastic mass. The whole is thoroughly incorporated in a pug-mill or otherwise. The material is then rammed into molds of the desired shape, and the blocks or

slabs turned out are baked in ovens at a temperature of about 175° Fahrenheit until they are thoroughly dry.

5 The blocks or slabs may be coated with asbestos sheeting or asbestos blocks or slabs to give them a smooth surface, which sheeting is cemented to the slabs by a cement composed of silicate of soda and pipe-clay.

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

1. In a fire-proof ceiling, the combination, with joists or girders having flanges or fillets, of solid coherent blocks or slabs of fire-proof material, rabbeted to engage with said fillets
15 or flanges and with one another, and the U-shaped metal strips *d*, embedded in said blocks, substantially as described.

2. A fire-proof block or slab composed of fibrous material, pipe-clay, and a solution of silicate of soda, substantially as described. 20

3. The combination, with fire-proof blocks or slabs, of asbestos sheeting secured thereto by cement, substantially as described.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscrib- 25
ing witnesses.

CHARLES TOOPE. [L. S.]

Witnesses:

H. H. NEWMAN,

J. B. WATT,

Consulate-General, U. S. A., London.