

(No Model.)

S. D. HATCH.
FIRE PROOF STRUCTURE.

No. 376,381.

Patented Jan. 10, 1888.

Fig. I.

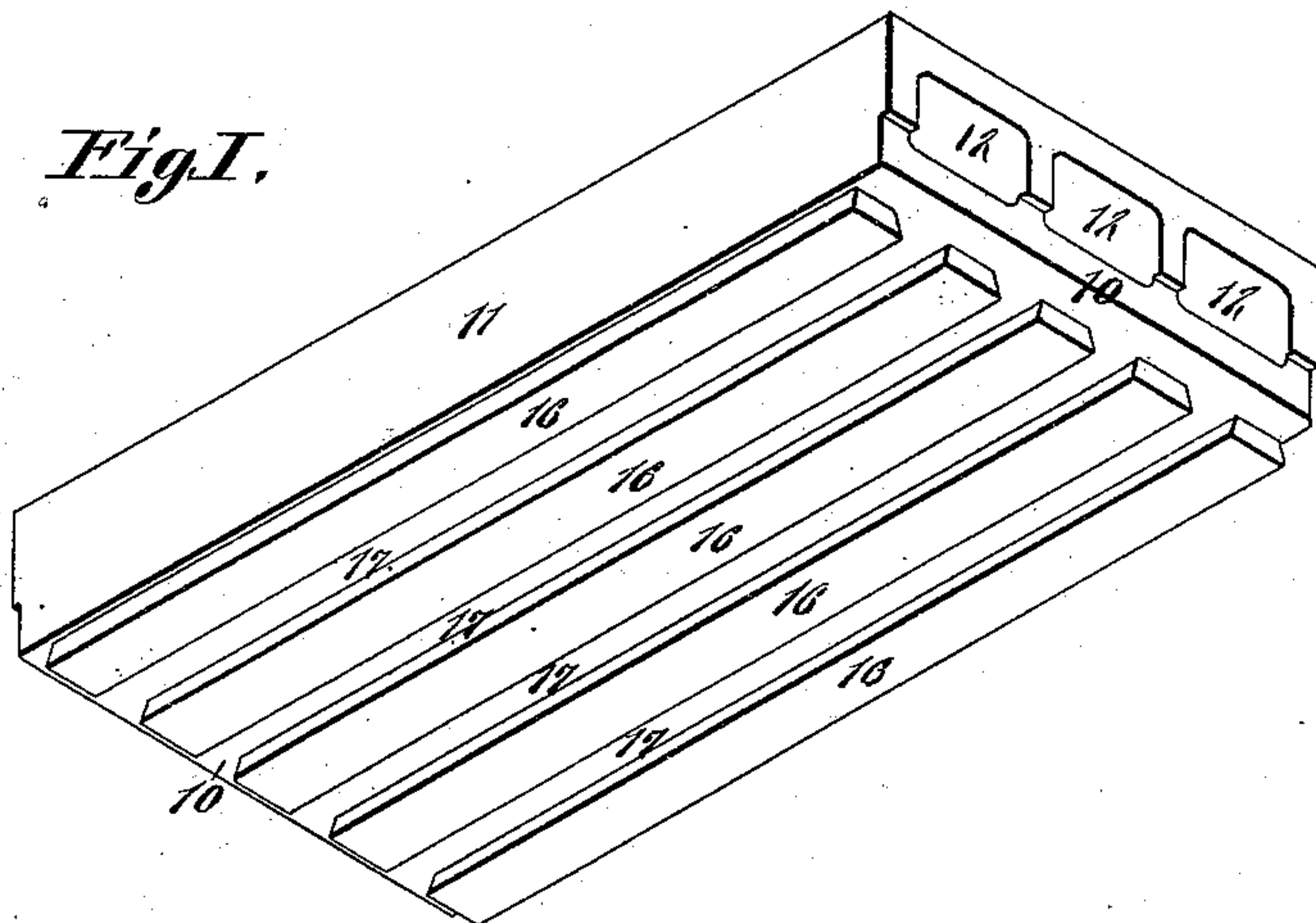


Fig. II.

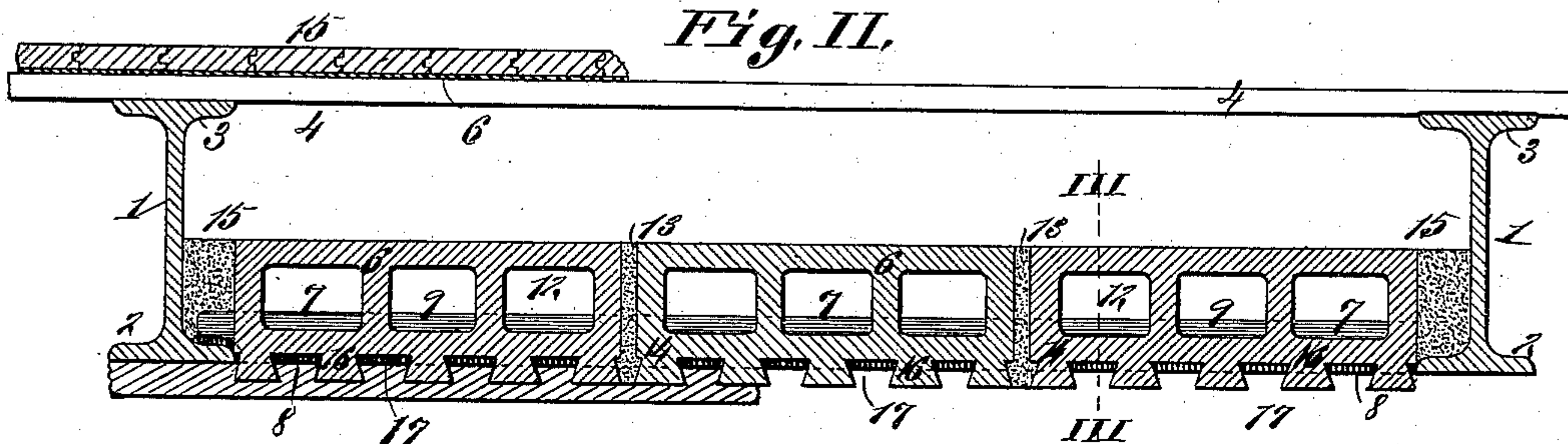
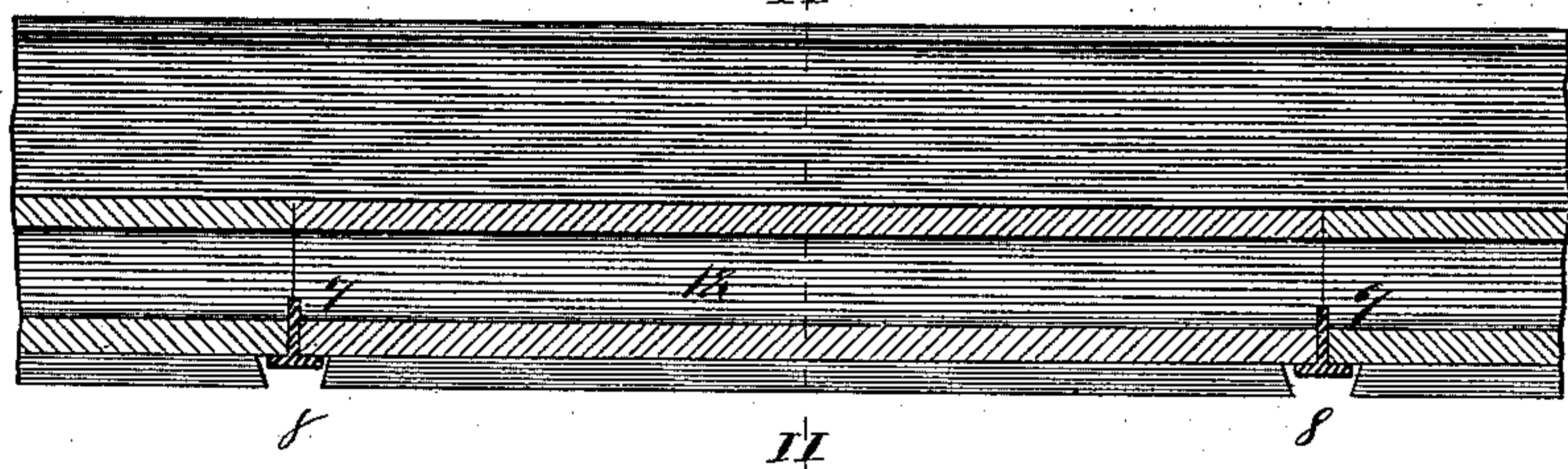


Fig. III.



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UNITED STATES PATENT OFFICE.

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FIRE-PROOF STRUCTURE.

SPECIFICATION forming part of Letters Patent No. 376,381, dated January 10, 1888.

Application filed June 6, 1887. Serial No. 240,360. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN D. HATCH, of the city of New York, in the county and State of New York, have invented a certain
5 new and useful Improvement in Fire-Proof Structures, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

10 Figure I is an under perspective view of one of the fire-proof blocks, showing the recesses on its ends for seating it on the inverted-T bearers, also the dovetail projections beneath the block, forming intervening bevel-
15 recesses to clinch the ceiling-plaster, and the air-cells within said block that act as non-conductors of heat in case of fire. Fig. II is a transverse vertical section taken on line II II, Fig. III, showing the I-beams, on the foot-
20 flanges of which the inverted-T bearers rest, which support the hollow fire-proof blocks, and shows the concreted spaces between blocks and between end blocks and I beams, and it shows a section of the ceiling with the plaster
25 clinched in the bevel-recesses between the dovetail projections from the blocks, and also the floor seated on the head-flanges of the I-beams, with an interlayer of asbestos cloth between the two layers of matched boards; and Fig. III is a longitudinal vertical section
30 taken on line III III, Fig. II, showing the inverted-T bearers in cross-section and the fire-proof blocks resting on them, with the floor above and the dead air space that intervenes
35 between the blocks and floor.

My invention relates to fire-proof devices and safeguards against the spread of fire from one part of the building to another; and the invention consists in features of novelty here-
40 inafter fully described, and pointed out in the claims.

Referring to the drawings, in which similar figures of reference indicate like parts in all the views, 1 represents the I beams, the foot-
45 flanges 2 of which rest on the columns or wall in the story beneath. The I-beams are also provided with head-flanges 3, on which rest the floor. The lower course of boards, 4, lies transversely across the head-flanges of the I-
50 beams, and the top course, 5, is laid transversely across the subordinate one. An inter-

layer of asbestos cloth, 6, is placed between the two sections of the floor, forming a fire-proof barrier between them.

7 represents the inverted-T bearers, which 55 are supported on the foot flanges of the I-beams, and are provided with flanges 8, on which and on the upper edges, 9, of said bearers the recessed ends 10 of the fire-proof hollow blocks 11 are seated. The blocks are pro- 60 vided with non-heat-conducting air-chambers 12. I prefer to mold these blocks of fire-clay, but do not confine myself to that material, for it is evident that concrete or any other suitable substance could be used without depart- 65 ing from the essential features of my invention.

The fire-proof section-blocks are placed on the inverted-T bearers, leaving narrow vertical interstices 13 between them, and near the 70 lower edges of the adjoining blocks (within said interstices) are corresponding bevel-notches formed by the bevel sides of the projecting dovetails on adjoining blocks, (whose use is hereinafter described.) The bevel- 75 notches form, in conjunction with the vertical aperture above, barbed or dovetail terminations 14 thereto. These interstices, as well as the spaces 15 between the end blocks and the I beams, are filled with cement, concrete, 80 or other suitable material, so as to compact the whole together, making conjointly with the fire-proof blocks substantially an integral barrier between story and story that is imper- 85 vious to the attacks of fire; and said dovetail or barbed cemented interspaces between the blocks make firm bevel-keys to hold them in their places, at the same time that they make an extra clinch for securing the ceiling-plaster; also, it will be seen that, as the united fire-proof 90 blocks and their bearers make a flat arch, there is no thrust to spread the walls, and as said blocks are firmly cemented together and to the I beams and T-bearers, the whole is very strongly braced and makes a firm sup- 95 port for the floor and its superincumbent weight. The under sides of the fire-proof blocks are provided with dovetail projections 16, the intervening bevel-spaces, 17, between which form seats for the clinches of the plaster 100 or cement that forms the ceiling.

It will be seen that the ceiling, being thus

cemented and held within the bevel, clinches to the fire-proof blocks themselves, leaves no intervening space for air or fire (in case of accident) to penetrate, and, if possible, still
 5 further re-enforces the fire-proof barrier between the floors. Again, it will be seen that all air-vent is completely stopped, making the division between floor and floor entirely air-proof, water-proof, and fire-proof, for
 10 where air cannot enter neither can fire. Knowing, then, that the greatest desideratum in the construction of fire-proof buildings is to provide air-tight divisions between the floors, I completely seal the space from wall to wall
 15 by means that make it not only fire-proof, but also air-proof, and in consequence water-proof, so that if a fire should occur it is limited from encroachment beyond the floor where it originates, and also all suction-draft that
 20 would otherwise be engendered by the heated rarified air is prevented from intercommunication between floor and floor, and thus fanning the fire. Also, as the floors or compartments of the buildings where these devices
 25 are used are not only fire-proof, but also water-proof, it is evident that, should a fire start on one of the floors, not only will the fire be limited to that floor, but the water that is there discharged to combat with the fire will not run
 30 as freely from its work to other floors, to the destruction of property by water that the fire has never reached.

When my fire-proof device above described is used, much labor and expense in scaffolding
 35 will be dispensed with, as the same can be constructed and laid down as the building progresses floor by floor and utilized in the place of scaffolds.

To recapitulate, among the advantages of the
 40 invention are—

First. Its being an air and water as well as a fire seal between ceiling and floor, for it is a well-known fact that where air cannot penetrate neither can water; that air is as necessary
 45 to the progress of combustion as it is to animal and vegetable life.

Second. The strength of the floor-bearings and the stiffening-brace it provides to the whole building, there being no thrust in its
 50 flat arch, but a series of substantial ties from wall to wall throughout the whole building.

Third. The ease and quickness of its construction.

Fourth. The material used in its construction being neither subject to combustion nor
 55 decay.

Fifth. Its availability to be laid floor by floor as the building progresses.

Sixth. Its use for scaffold purposes as the building goes up. 60

Seventh. The increased safety from accident that the secure floors give, especially in the construction of high buildings.

Eighth. Not only limiting the fire to the floor on which it starts, but also confining the
 65 water, as much as can be, to the same limits, to combat with the fire instead of running from its work to the destruction of property not attacked by the flames.

I claim as my invention— 70

1. In fire-proof structures, the combination, with **I**-beams having suitable support, of inverted-**T** beams resting on the lower flanges of said **I**-beams, fire-proof blocks cemented together and resting on the flanges of the **T**-
 75 beams, and flooring consisting of boards placed transversely of the **I**-beams and resting on top thereof, boards transverse of aforesaid boards, and a layer of asbestos placed between the layers of boards, substantially as and for the
 80 purpose set forth.

2. In fire-proof structures, a flooring consisting of a layer of boards, another layer of boards transverse thereof, and a layer of asbestos placed between the layers of boards,
 85 substantially as set forth.

3. In fire-proof structures, the combination of the **I**-beams, inverted-**T** beams resting on the lower flanges of the **I** beams, hollow fire-proof blocks resting on the flanges of the **T**-
 90 beams and having interstices between them, pendent dovetail projections on the blocks, and bevel-notches formed by the bevel sides of the dovetails on adjoining blocks, said notches forming, in conjunction with the in-
 95 terstices above, keys to hold the blocks in their places when cement is placed therein, substantially as set forth.

STEPHEN D. HATCH.

In presence of—

WILLIAM HENRY WILLIS,
 W. H. BUTTERWORTH.