No. 625,930. Patented May 30, 1899.

E. V. JOHNSON.

FIREPROOF BUILDING CONSTRUCTION.

(Application filed Dec. 29, 1898.)

(No Model.) 2 Sheets—Sheet 1.

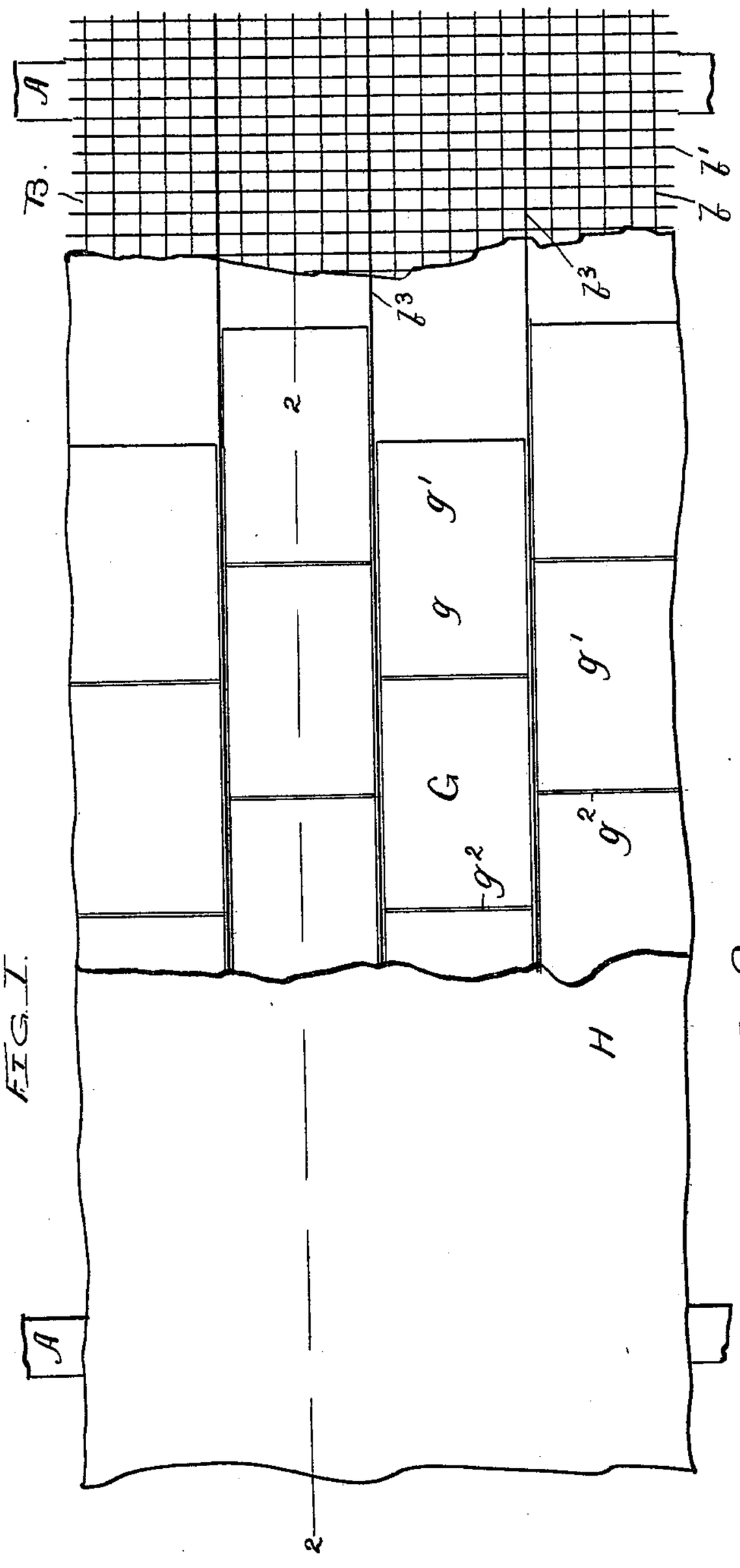

FIG. 1.

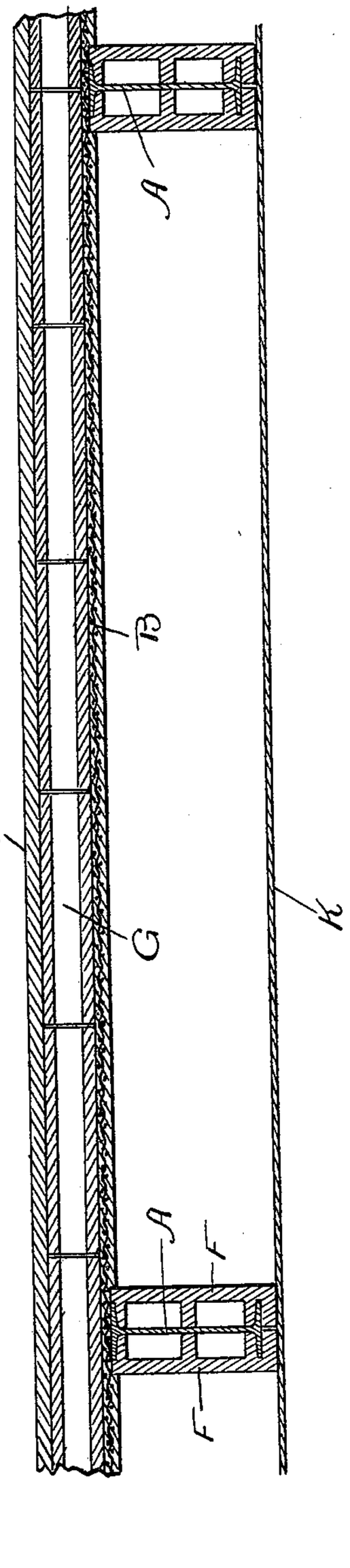

FIG 2

WITNESSES:
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INVENTOR:
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FIG. 3.

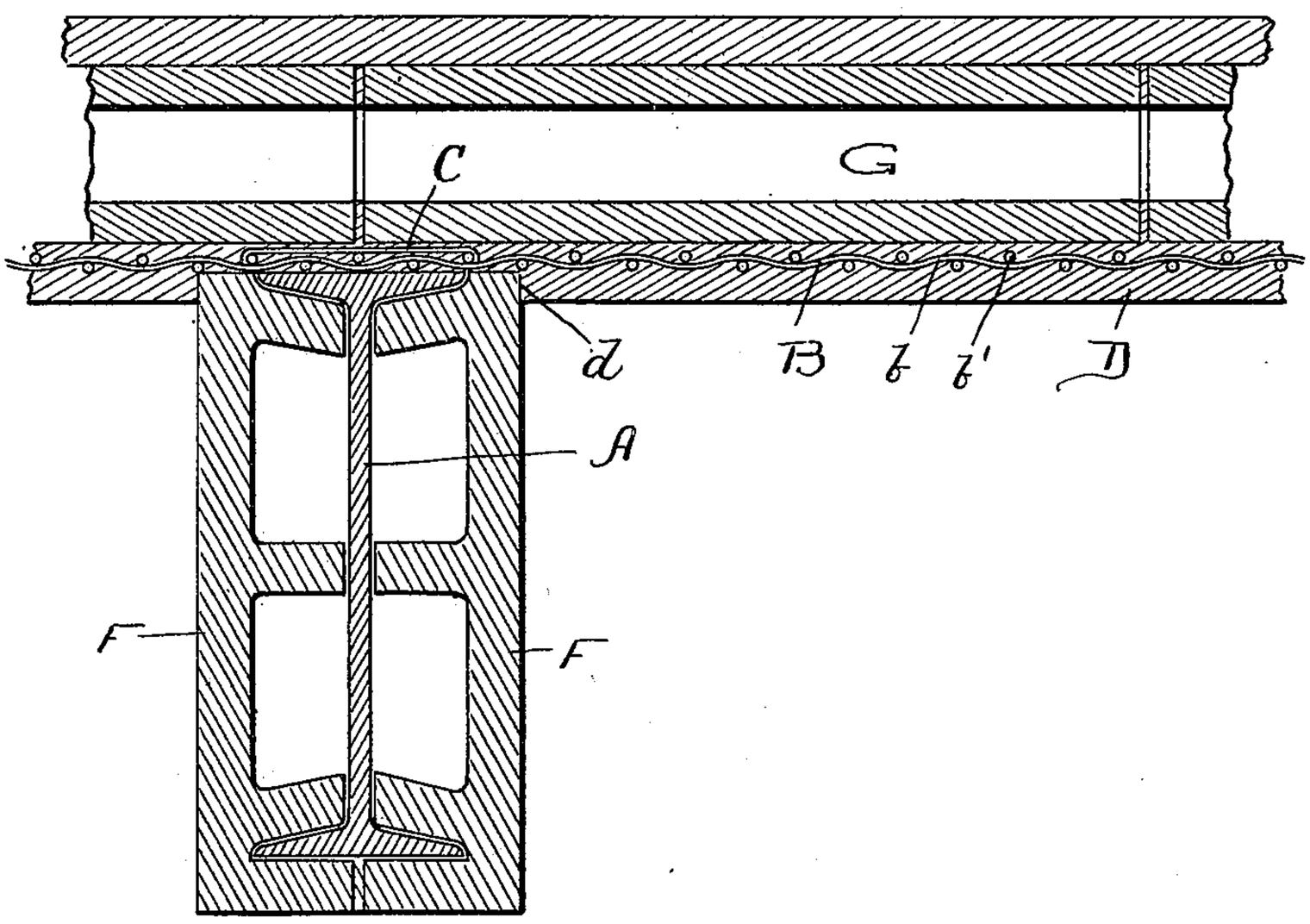


FIG. 4.

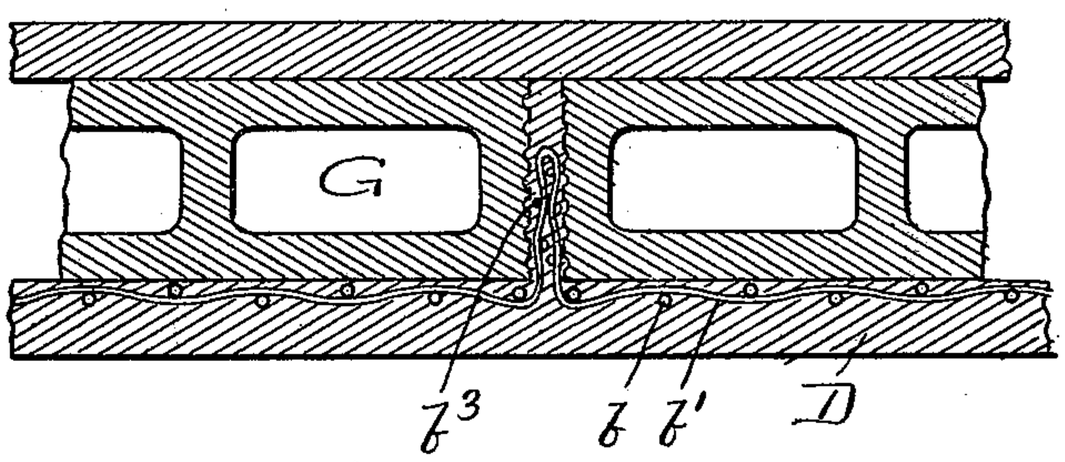
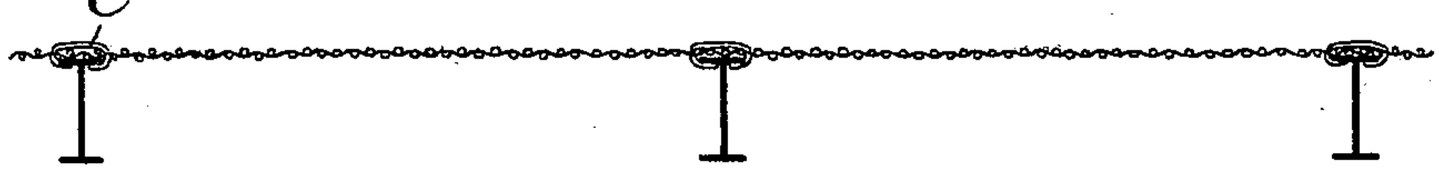


FIG. 5.



WITNESSES:
Sew. E. Curtis
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INVENTOR:
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UNITED STATES PATENT OFFICE.

ERNEST V. JOHNSON, OF CHICAGO, ILLINOIS.

FIREPROOF-BUILDING CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 625,930, dated May 30, 1899.

Application filed December 29, 1898. Serial No. 700,576. (No model.)

To all whom it may concern:

Be it known that I, ERNEST V. JOHNSON, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Fireproof-Building Construction, of which the following is a specification.

My invention relates to improvements in the construction of fireproof buildings.

The object of my invention is to provide a fireproof building of a simple, efficient, strong, and durable construction and capable of being rapidly and cheaply constructed.

Heretofore in fireproof-building constructions composed of a steel frame and tilework it has been customary to lay the tilework in the form of a series of separate flat arches springing from and extending between the webs of the parallel steel beams of the framework, thus involving a good deal of time and labor in the construction and the necessity of cutting the tile or making specially-formed tile to fit against the webs of the steel beams. I have discovered and demonstrated by my experiments that an entirely practical and exceedingly strong, efficient, and durable tilework floor or partition construction may be made in connection with the steel beams of the framework without the necessity of making a series of separate arches springing from and abutting against the webs of the steel beams, as heretofore, by simply laying or stretching a tensilely-acting metal fabric member on top of the steel beams of the framework and embedding the same in a layer of concrete or cement work and applying the tilework on top of the tensile-acting metal member, the tilework thus extending continuously over the steel beams of the framework without any abutment against the same; and my invention consists in the combination, with the steel beams of the framework, of a tensile-acting metal member, preferably wire fabric—such, for example, as is used for woven-wire fencing, with the large wires extending longitudinally of the fabric—that is to say, across the beams of the framework—and a tilework partition or floor construction laid on top of said tensile-acting metal member, the same being of course laid in cement or other suitable mortar, and the tensile-acting metal member being also embedded in the cement or cemented to the tilework, so as to form one integral whole therewith throughout. The metal beams of the framework below the floor or tilework-partition are protected from fire and heat by tile surrounding the same. Where my improved construction is employed for a floor or horizontal partition, the ordinary construction of suspended ceiling may be applied to the lower edge of the steel beams of the framework, thus leaving a large air-space between the ceiling and the floor. Where my improved construction is employed for roofs, the steel beams of the framework may be left projecting below the tilework roof or partition construction; but they should be protected from fire and heat by tile surrounding the same. A layer of cement or concrete is spread over the upper surface of the tilework, so that the tilework is inclosed or covered on both its upper and lower sides with a layer of concrete or cement, the tensile-acting lower member being embedded in the lower layer of cement or concrete.

In the accompanying drawings, forming a part of this specification, Figure 1 is a plan view of a tilework floor or partition construction embodying my invention and showing the same in part at different levels or stages of completion. Fig. 2 is a vertical section on line 2 2 of Fig. 1. Fig. 3 is an enlarged detail vertical section. Fig. 4 is an enlarged detail vertical section at right angles to Fig. 3, and Fig. 5 is a detail section showing simply the steel beams of the framework and the tensile-acting metal member before the tilework and concrete or cement constructions are applied thereto.

In the drawings, A A represent the steel beams of the framework of a fireproof building.

B represents a tensile-acting metal member extending over the metal beams of the framework and preferably in one continuous piece from outside beam to outside beam of the building. This tensile-acting metal member may be of any suitable form or construction; but I preferably employ a metal fabric and preferably a metal fabric of wire—such, for example, as that ordinarily employed in woven or stay wire fences. The longitudinal wire strands *b* are preferably comparatively large wires—such, for example, as that em-

ployed for the longitudinal wires of a wire fence—say, for example, No. 10 or No. 12 wire gage. The cross-wires b' of the fabric may be of smaller size, if desired. The wires of the fabric may be placed any desired distance apart, but preferably about three or four inches. Upright folds or flanges b^3 may be formed in the metal member or fabric to fit between the joints of the tilework in one direction—the direction in which the courses of tile are laid. The tensile-acting metal member B is preferably anchored or secured to the outside beams A A of the framework by clips or other fastenings C. This, however, is not essential to the strength of the structure as a whole, as the layer D of cement, concrete, or other plastic material in which the tensile-acting metal member is embedded acts as a continuous anchor for the metal member.

F F are the protecting-tile surrounding and protecting the metal beams A A of the framework. The cement or concrete layer D preferably projects slightly below the upper edge of the protecting-tile F F, thus forming shoulders d in the cement layer D against said protecting-tile.

G is the tilework laid upon the tensile-acting metal member B and embedded in the cement or concrete layer D, and thus rigidly united thereto. The tilework G is composed of a series of hollow tiles g, laid in courses g' across the frame-beams A A, the joints g^2 in one course breaking joints with those in another, as will be readily understood from Fig. 1 of the drawings.

H is a layer of cement, concrete, or other plastic material on top of the tilework G. All the joints of the tilework are of course made with cement, mortar, or other plastic material. If this construction is employed for a floor, the upper finish of the floor, whether of wood or of marble, tile, or other blocks, is of course laid on top of the cement or concrete layer H in the usual manner. If the construction is employed for a roof, the slate or other finish of the roof is likewise applied to the upper layer H of cement, concrete, or other plastic material.

If it is desired that the frame-beams shall not be left projecting below the general surface of the structure, a suspended ceiling K may be applied in the usual manner to the metal beams A A at their lower edges.

I claim—

1. A fireproof-building construction, comprising in combination metal framework-beams, a tensile-acting metal member extending over and across the beams, hollow tilework above said tensile-acting metal member, and a layer of cement, concrete or plastic material uniting the tensile-acting metal member with the tilework, substantially as specified.

2. A fireproof-building construction, comprising in combination metal framework-beams, a tensile-acting metal member extending over and across the beams, hollow tile above said tensile-acting metal member, a layer of cement, concrete or plastic material uniting the tensile-acting metal member with the tilework, and a layer of cement, concrete or plastic material above the tilework, substantially as specified.

3. A fireproof-building construction, comprising in combination metal framework-beams, a tensile-acting metal member extending over and across the beams, hollow tile above said tensile-acting metal member, a layer of cement, concrete or plastic material uniting the tensile-acting metal member with the tilework, a layer of cement, concrete or plastic material above the tilework, said tensile-acting metal member being anchored to the framework-beams, substantially as specified.

4. A fireproof-building construction, comprising in combination metal framework-beams, a tensile-acting metal member extending over and across the beams, hollow tile above said tensile-acting metal member, a layer of cement, concrete or plastic material uniting the tensile-acting metal member with the tilework, and a layer of cement, concrete or plastic material above the tilework, said tensile-acting metal member having upright folds or flanges fitting in the course-joints of the tilework, substantially as specified.

5. A fireproof-building construction, comprising in combination metal framework-beams, a tensile-acting metal member extending over and across the beams, hollow tile above said tensile-acting metal member, a layer of cement, concrete or plastic material uniting the tensile-acting metal member with the tilework, a layer of cement, concrete or plastic material above the tilework, and protecting-tile covering or inclosing the framework-beams, substantially as specified.

ERNEST V. JOHNSON.

Witnesses:
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H. M. MUNDAY.