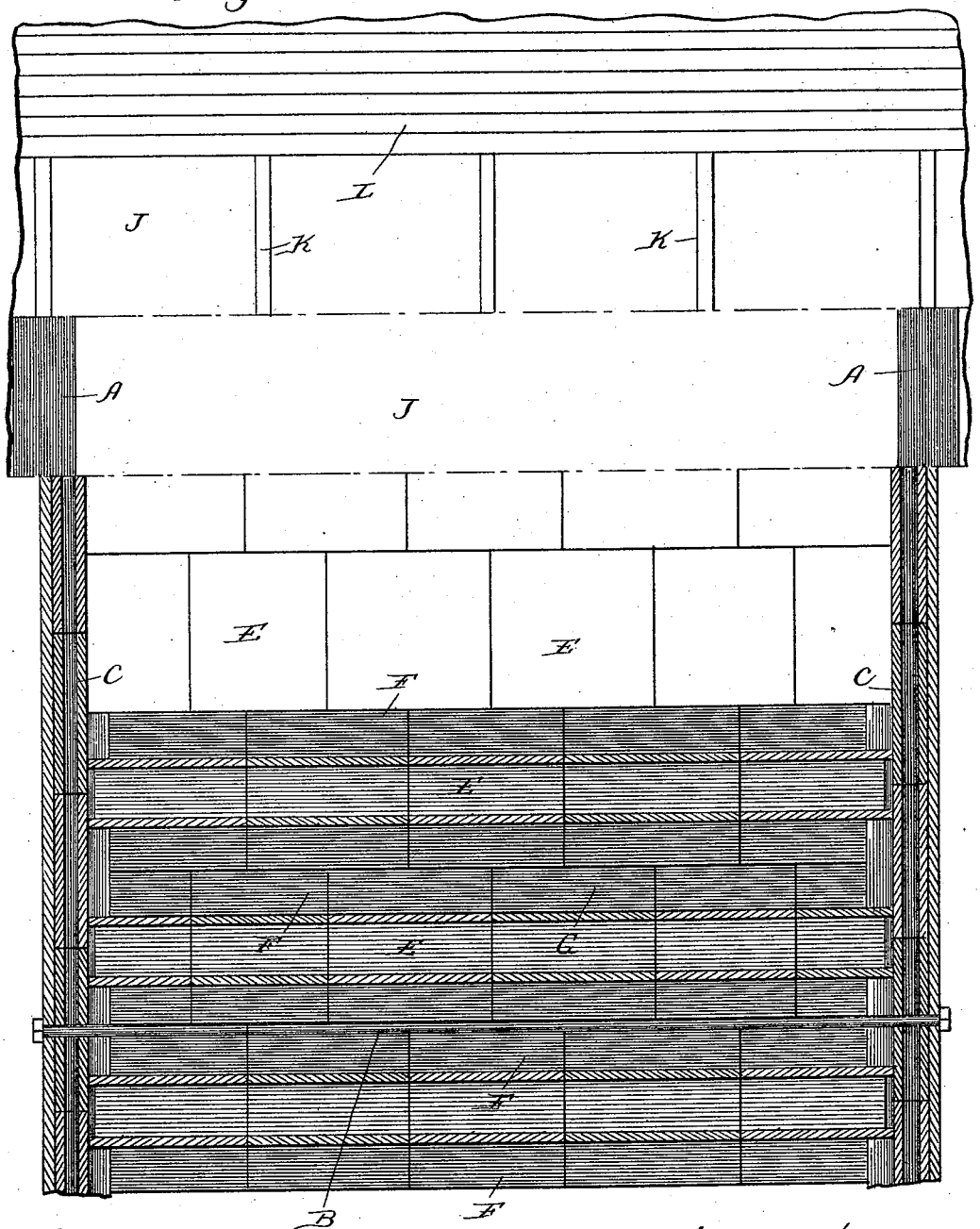
(No Model.) 2 Sheets—Sheet 1.

E. V. JOHNSON.

CONSTRUCTION OF BUILDINGS.

No. 456,309. Patented July 21, 1891.

Fig 1



Witnesses:
Lew. C. Curtis
Emma Heck

Inventor.
Ernest V. Johnson
By Munday Evarts & Adcock
His Attorneys.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

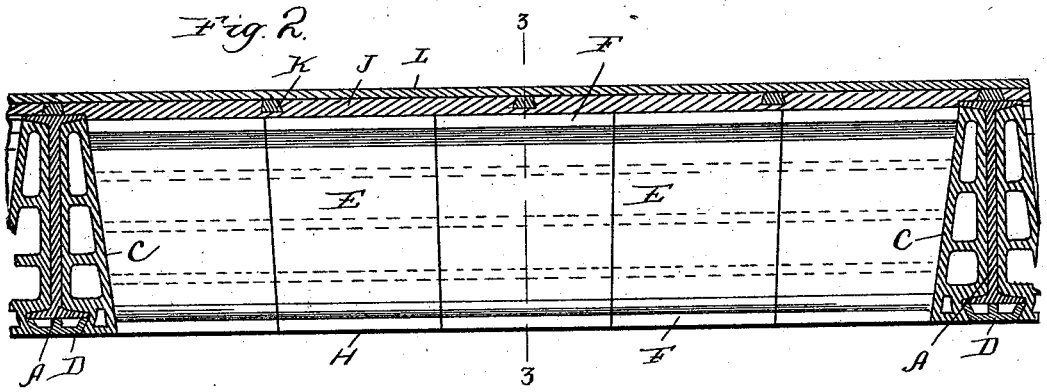
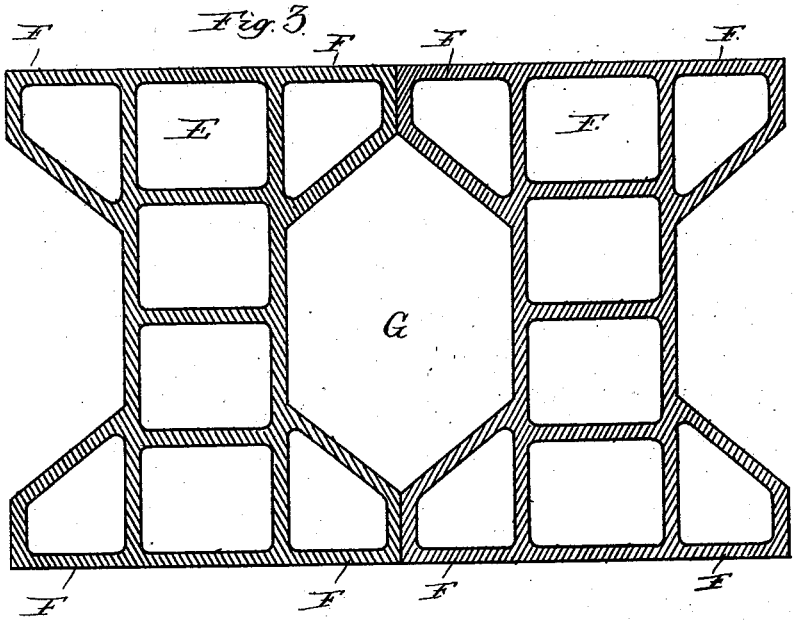


Fig. 3.



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UNITED STATES PATENT OFFICE.

ERNEST V. JOHNSON, OF CHICAGO, ILLINOIS.

CONSTRUCTION OF BUILDINGS.

SPECIFICATION forming part of Letters Patent No. 456,309, dated July 21, 1891.

Application filed January 12, 1891. Serial No. 377,424. (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 Construction of Buildings, of which the following is a specification.

In the construction of modern fire-proof buildings the materials of which are largely tiles and iron, a highly important consideration is the combining of sufficient strength with lightness of structure. Lessening the weight of the building material employed not only economizes in material itself, but diminishes the cost of the necessary foundations and of every supporting member throughout. In the present invention I present an improved construction of hollow-tile fire-proof flooring, the object of which is to secure the full strength of the ordinary hollow-tile flooring with a diminished weight of material, while at the same time a plane upper and lower surface for the reception of the ceiling and floor covering may be afforded. This object I accomplish by making the floor construction of a flat arch composed of the ordinary metallic **I**-beams, between which the flat arch is constructed by means of hollow-tile girders composed of hollow tiles of peculiar construction in cross-section, and placed in contact side by side and end to end so as to fill the entire space. These hollow tile are formed of a central body provided at the upper or lower, or both, surfaces with laterally-extended wings or flanges, so that when the tile are laid together in parallel courses there shall be a hollow space within each tile and also a hollow space between each pair of adjacent tiles, and this without the necessity of employing intervening bridge-pieces.

In the accompanying drawings, which form a part of this specification, and in which similar letters of reference indicate like parts, Figure 1 is a plan view of my improved flooring construction, shown cut away at different levels in horizontal section. Fig. 2 is a vertical section of the flooring from metallic **I**-beam to metallic **I**-beam, and Fig. 3 is a vertical section on a larger scale taken on the line 3 3 of Fig. 2.

In said drawings, A A represent the common iron or steel **I**-beams employed in fire-proof constructions tied together at intervals by tie-rods B.

C C are abutment-tiles formed to fit the **I**-beams at one side and inclined at the other side to receive the thrust of the flat-arch construction. These abutment-tiles are made with their hollows and partitions running in the direction of the **I**-beams.

D D are beam-tiles supported by shoulders on the abutment-tiles and serving to cover and inclose the bottom of the **I**-beams.

E E are the beam or arch tiles, made with their hollows and partitions running from abutment to abutment. These tiles E are made of a central body, itself made hollow, and of the lateral wings or extensions F. I prefer that the tile should be provided with the extensions both at top and bottom, as in such case a plane surface is afforded both for the ceiling and flooring; but it will be understood that some of the advantages may be obtained if the tile-body be provided with extensions only above or only below or only at one side—that is to say, the body may have extensions F at one point or more. The tile are laid in courses from beam to beam, the courses being in contact side by side, the lateral contact being between the extension or extensions F of one tile and its neighbor, and the lateral bracing and support necessary to strengthen the structure are thus obtained. A vacant space G, running from abutment to abutment, is thus left and the whole structure thereby lightened without actually or materially lessening its strength. Such tile are as easily handled and laid as the ordinary hollow tile.

H represents the plaster of the ceiling; J, the ordinary cement layer placed on the upper surface of the tile; K, the wooden flooring-strips embedded in the cement, and L the surface of the wooden flooring laid over all. The structure thus composed is strong, durable, braced at all sides, and materially lighter than the ordinary hollow-tile flooring. The tile are preferably made of burned fire-clay or porous terra-cotta, but may be made of any other suitable material.

I claim—

1. The hollow-tile flooring construction consisting of a flat arch composed of parallel courses, each course consisting of several hol-

low tiles having their hollows and partitions running from abutment to abutment, the tiles of each course having lateral extensions top and bottom and being set close together to form hollow empty chambers between the courses, extending from abutment to abutment, providing a strong light structure, substantially as specified.

2. The hollow-tile flooring construction consisting of a flat arch composed of parallel courses, each course consisting of several hollow tiles having their hollows and partitions running from abutment to abutment, the tiles of each course having lateral extensions top and bottom, and being set close together to form hollow empty chambers between the courses, extending from abutment to abutment, in combination with the skewback or abutment tiles and beam-protectors, the hollows of said first-mentioned tile running at right angles to the abutment-tile, substantially as specified.

ERNEST V. JOHNSON.

Witnesses:
EMMA HACK,
LEWIS E. CURTIS.