No. 626,560. Patented June 6, 1899.

M. J. O'MEARA & L. L. CALVERT.

FIREPROOF FLOOR AND CEILING.

(Application filed Nov. 16, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

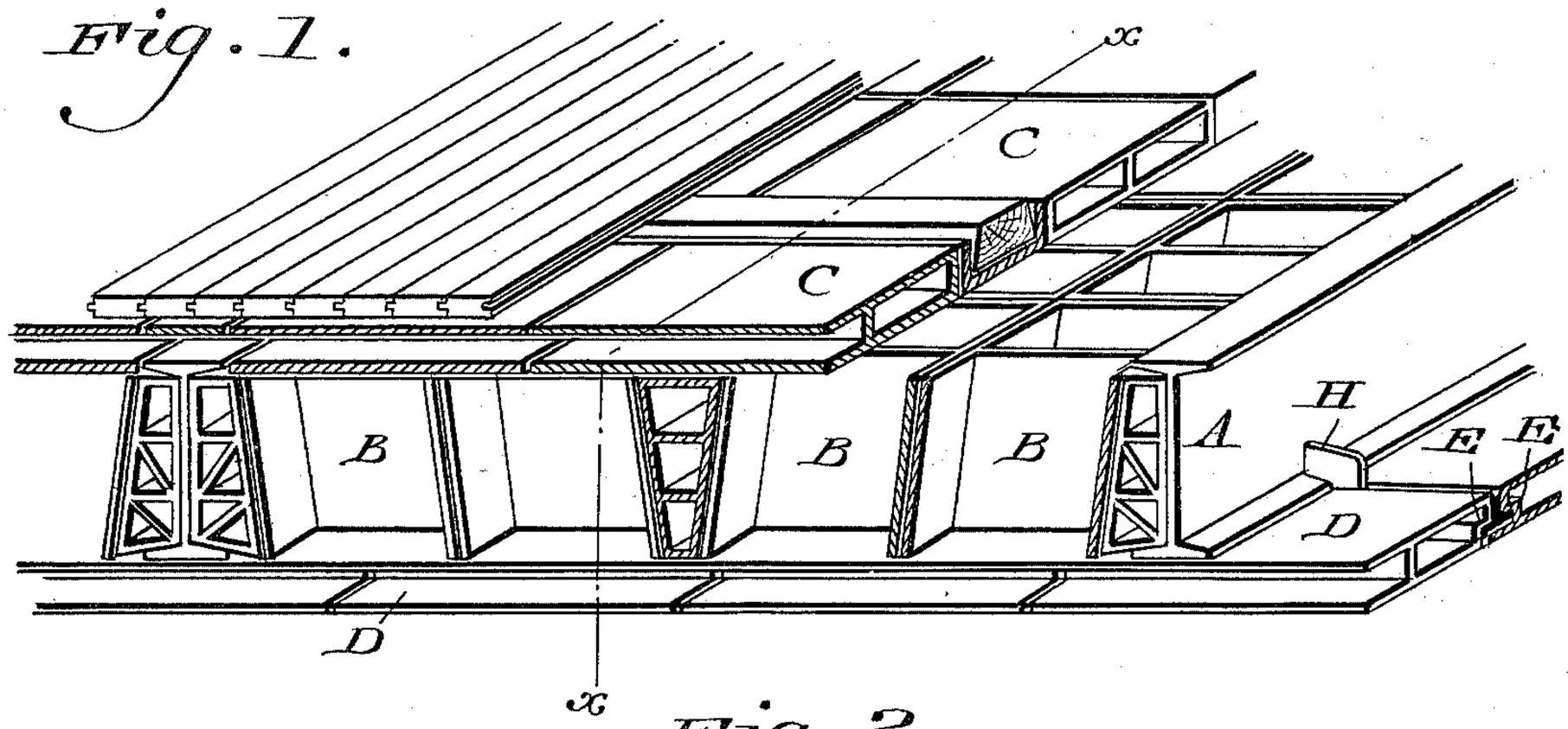


Fig. 2.

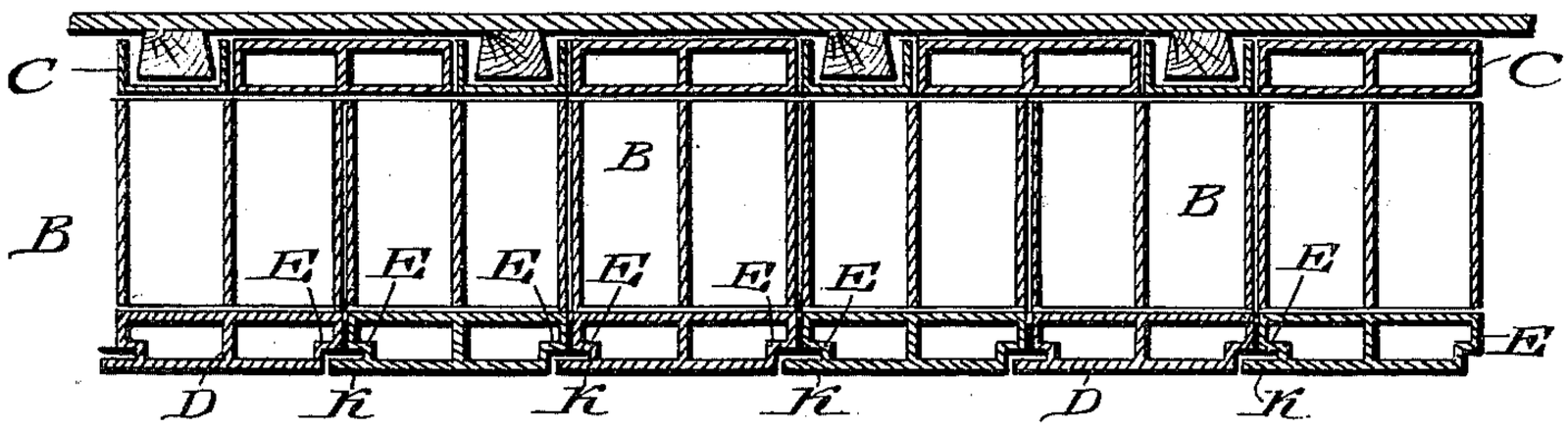
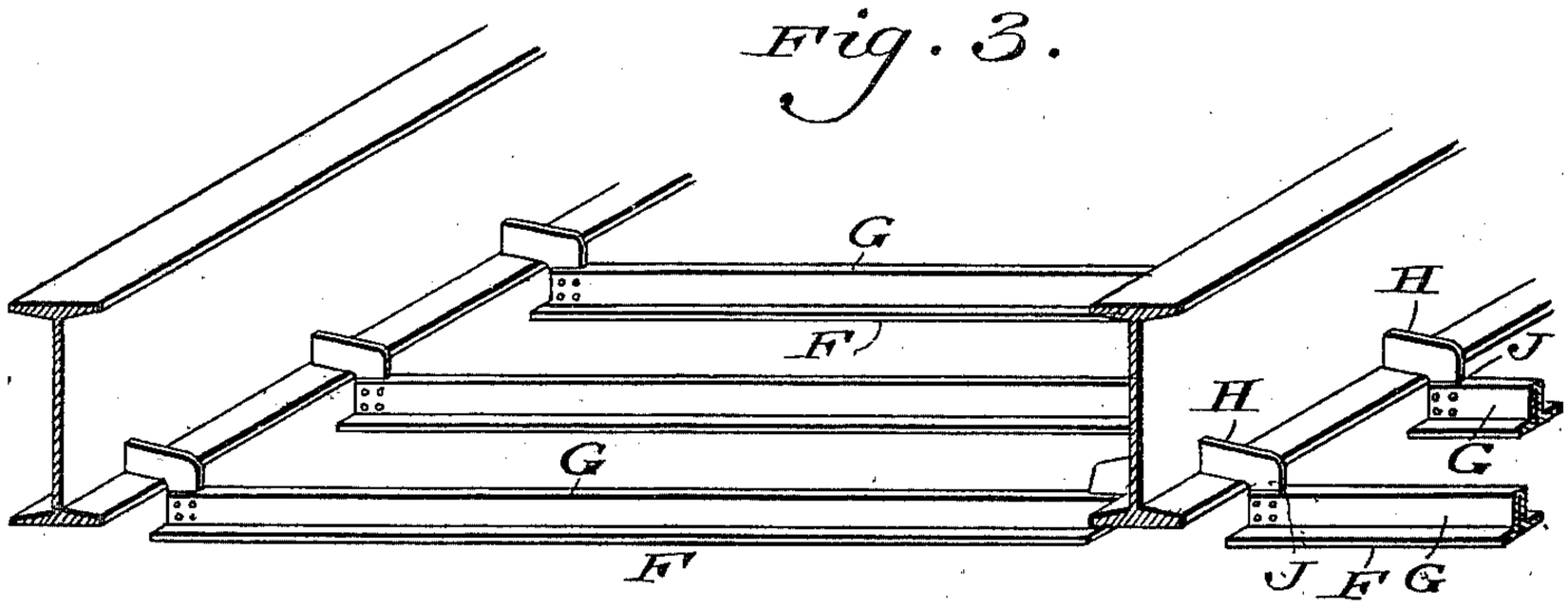


Fig. 3.



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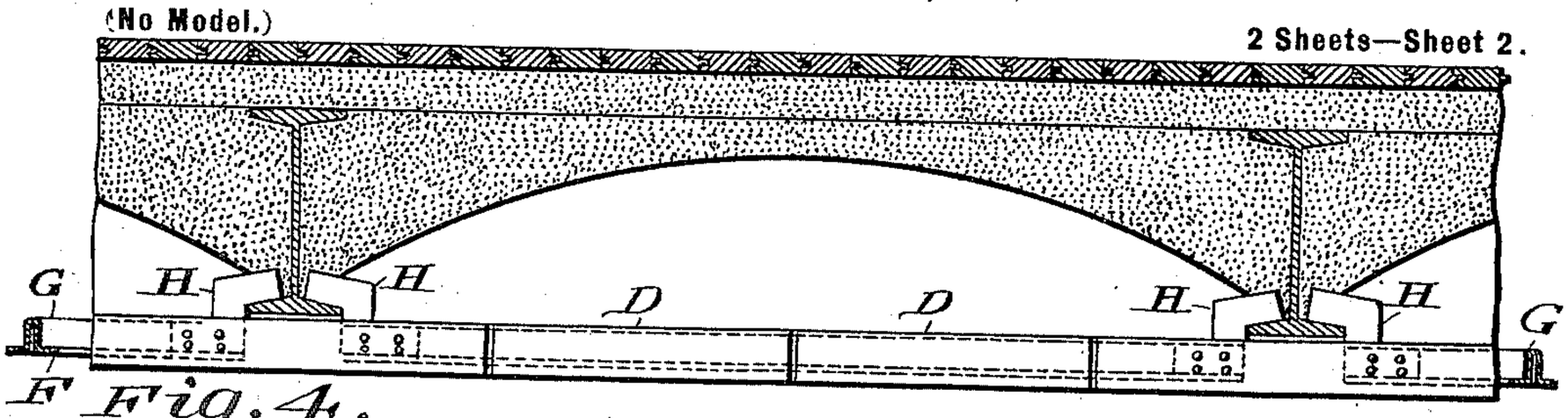


Fig. 4.

Fig. 5.

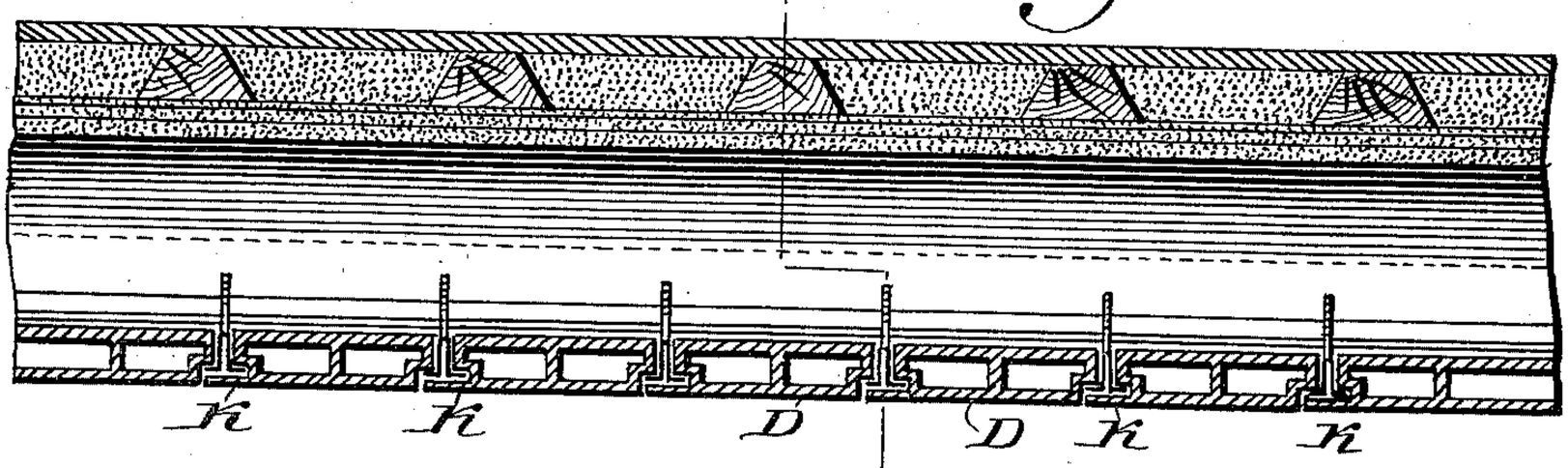


Fig. 6.

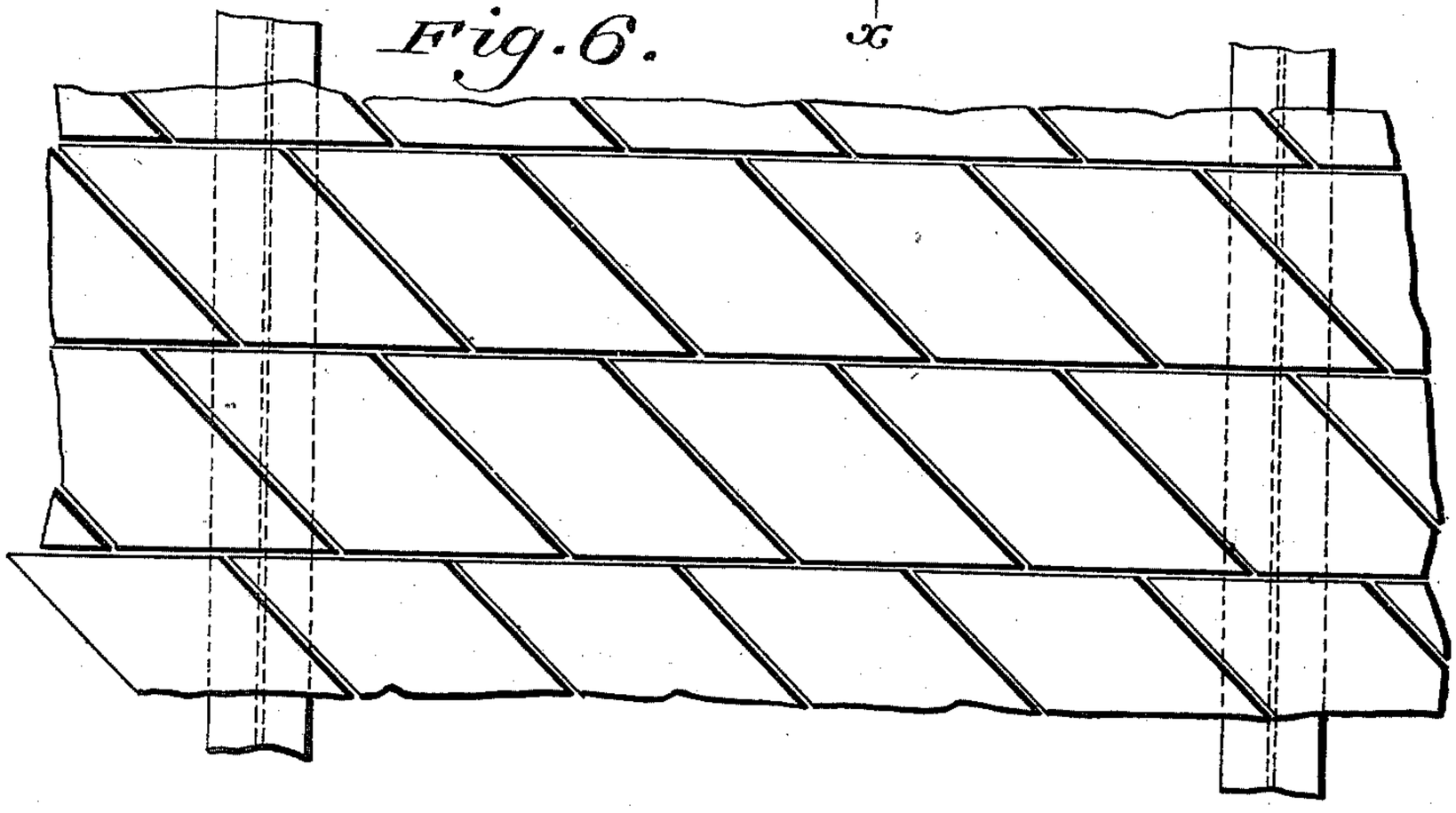
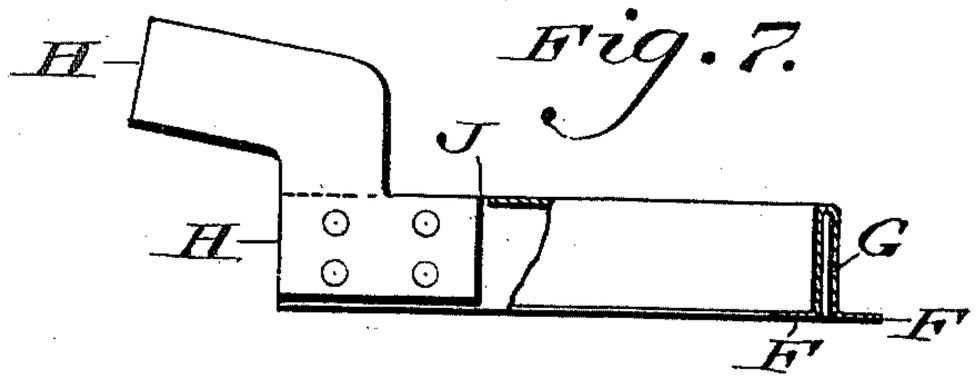


Fig. 7.



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UNITED STATES PATENT OFFICE.

MICHAEL J. O'MEARA AND LOUIS L. CALVERT, OF PHILADELPHIA, PENNSYLVANIA.

FIREPROOF FLOOR AND CEILING.

SPECIFICATION forming part of Letters Patent No. 626,560, dated June 6, 1899.

Application filed November 16, 1898. Serial No. 696,601. (No model.)

To all whom it may concern:

Be it known that we, MICHAEL J. O'MEARA and LOUIS L. CALVERT, citizens of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Fireproof Floors and Ceilings, which improvement is fully set forth in the following specification and accompanying drawings.

Our invention relates to a fireproof floor and ceiling; and it consists of a flat arch formed of hollow blocks having two vertical walls at a right angle to the support therefor and two vertical walls oblique to and parallel with said support, the hollow of said blocks extending in vertical direction.

It also consists of a block-supporting rib having a vertical web with a horizontal flange at the bottom thereof and a hanger having one limb adapted to be supported on a beam and another limb secured to said rib, the latter being adapted to support a ceiling-block.

It also consists of details of construction, as will be hereinafter set forth and claimed.

Figure 1 represents a view, partially perspective, of a fireproof floor and ceiling embodying our invention. Fig. 2 represents a vertical section thereof on line *x x*, Fig. 1. Fig. 3 represents a perspective view of a portion thereof. Fig. 4 represents a side elevation of another form of our invention. Fig. 5 represents a vertical section thereof on line *y y*, Fig. 4. Fig. 6 represents a bottom plan view of another part of our invention. Fig. 7 represents a side elevation of portion of the device employed for supporting the ceiling.

Similar letters of reference indicate corresponding parts in the figures.

Referring to the drawings, A designates metal beams between which are the blocks B for filling or closing the space between said beams, forming what is known as a "flat" arch, said blocks being formed of fireproof material made hollow in vertical direction, so as to be open at top and bottom. The blocks B have resting thereon the horizontal blocks C, of fireproof material, which are floored as usual.

D designates ceiling-blocks, which are formed of hollow fireproof material and having rabbets E, which rest on the flanges F of metal ribs G, which latter are sustained by means of the angular hangers H, one limb of each of which is supported on the base-flange of the adjacent beam, and the other limb is secured to the adjacent rib G, it being noticed that the latter-named limb enters an opening J in the channeled or bent web of the rib and is riveted or bolted to the sides of said web, as most plainly shown in Fig. 7. By these means the ceiling-blocks will be most firmly supported and the bottom of the blocks B reliably closed. The ceiling-blocks are also formed with lips K, which extend in horizontal direction laterally from the under sides of said block, so as to cover the ribs G from below, so that fire and heat are prevented from reaching said ribs. Existing spaces between said parts are adapted to receive plaster or mortar to close the same.

In Figs. 4 and 5 we show the ribs and hangers for supporting the ceiling-blocks D similar to those of Figs. 1 and 2, but the same as in Fig. 3, the blocks, Figs. 1 and 2, being omitted in Figs. 4 and 5 and the flooring structure being different.

It is apparent that the tops and bottoms of the blocks may be closed, preserving, however, the hollow nature of the blocks without departing from our invention.

It will be seen that the floor construction consists of flat arches comprised of hollow fireproof blocks, including skewbacks, lengtheners, and key-blocks. The lengtheners consist of rectangular boxes with or without intermediate webs and so arranged that the walls of the blocks lie in the planes of the joints of the arch and are parallel with both the longitudinal (vertical) and the transverse joints of the arch, the transverse joints being oblique, if desired, thus combining a series of webs running from beam to beam and presenting at the same time large faces for the imposition of a great area of mortar, cement, &c., on the blocks at said faces.

The ceiling construction has the feature of fireproofing the supports with two thicknesses of material and a large continuous air-space between, thereby allowing any concentrated heat which may enter said space to dissipate itself over the whole area; also, there is no mortar joint directly under and parallel with

the supports, as in other systems. It also embodies the feature of being replaceable in case of damage without in any way disturbing the floor construction above.

Our system combines the feature of continuous webs between beams accomplished by the "end construction" type of arch, with the feature of large surfaces for mortar joints, and the ability to break joints longitudinally accomplished by the "side construction" type. It also enables the whole depth of the arch to act effectually, as no part of it comes below the bottom of the supports, thus also avoiding the great weakness of the skewbacks in other systems.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A flat arch formed of hollow blocks, having two vertical walls at a right angle to the support therefor, and two vertical walls oblique to and parallel with said support, the hollow of said blocks extending in vertical direction.

2. A flat arch formed of hollow blocks, having two vertical walls at a right angle to the support therefor, and two vertical walls oblique to and parallel with said support, the hollow of said blocks extending in vertical direction and being open at top and bottom.

3. A block-supporting rib having a vertical web with a horizontal flange at the bottom thereof, and a hanger having one limb adapted to be supported on a beam and another limb secured to said rib, in combination with a hollow ceiling-block resting on said rib.

4. A block-supporting rib of channeled form having an opening in the top of the web thereof, and a hanger having one limb adapted to be supported on a beam, and another limb entering said opening and secured to said web.

5. A flat arch formed of hollow blocks, which are set with their sides in the plane of the joints of the arch, flooring-blocks on said blocks, ceiling-blocks below the same, ribs for supporting said ceiling-blocks and means for sustaining said ribs and covering them from below.

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