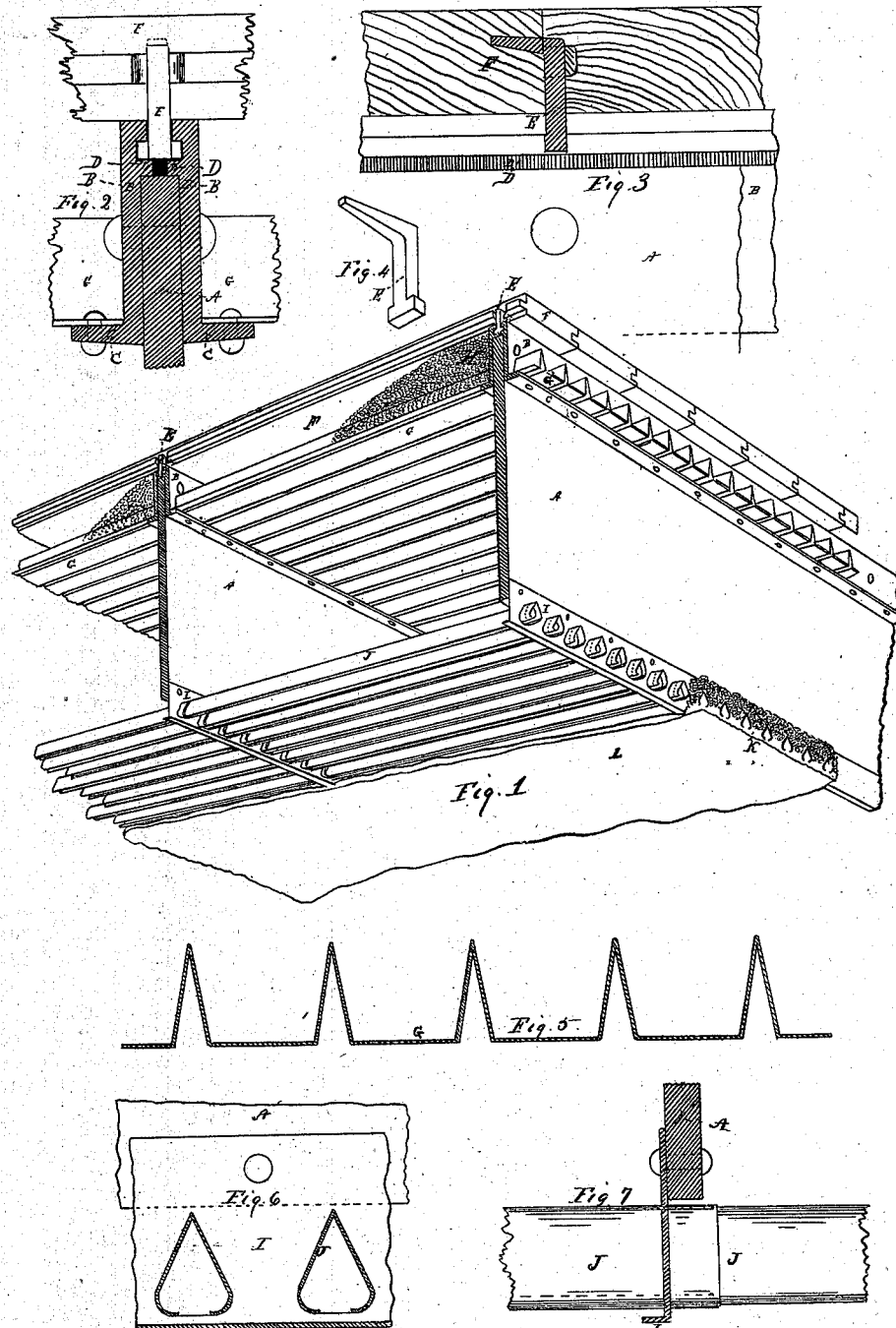


ISAAC HODGSON & WILLIAM H. BROWN.
 Improvement in Fire Proof Beams, Floors, and Ceilings.
 No. 115,472. Patented May 30, 1871.



Witnesses

E. J. Hodgson
 Chas. Davis

Inventor

I. Hodgson
 W. H. Brown

UNITED STATES PATENT OFFICE.

ISAAC HODGSON AND WILLIAM H. BROWN, OF INDIANAPOLIS, INDIANA.

IMPROVEMENT IN FIRE-PROOF BEAMS, FLOORS, AND CEILINGS.

Specification forming part of Letters Patent No. 115,472, dated May 30, 1871.

To all whom it may concern:

Be it known that we, ISAAC HODGSON and WILLIAM H. BROWN, of Indianapolis, in the county of Marion and State of Indiana, have jointly invented new and useful Improvements in the Construction of Fire-Proof Beams, Floors, and Ceilings; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon making part of this specification.

This invention relates to the arrangement of iron floor-beams in such manner that the floor may be secured to the upper edge and the plastering to the lower edge of the iron floor-beams direct without the interposition of any wood in the construction.

Figure 1 is a perspective view of our improvement, showing the arrangement of the several parts, arranged with reference to the application of our improvements. The drawing represents a portion of a completed floor and ceiling. Fig. 2 is a full-sized section through the upper edge of the floor-beam, showing the grooved plates between which the nail for securing the floor is held and slides, head down, with the flange for supporting the corrugated iron upon which the concrete rests; also the manner of securing the grooved plates to the iron beams. Fig. 3 is a longitudinal section through the said grooved plates, showing the nail in position and driven into the floor-board; showing also the flanges D resting upon the top of the beam A. Fig. 4 is a perspective view of the flooring-nail or dog used in the construction. Fig. 5 is a full section, showing the form of the corrugated iron, resting upon the flange rolled in connection with the grooved plates, and designed for the support of the concrete under the floor. Fig. 6 shows the iron strip or suspender riveted to the lower edge of the beam, and punched for the reception of the laths; also a section of the laths. Fig. 7 is a transverse section of the suspender, with a portion of the lower edge of the beam, showing the laths in position in the suspender, with the mode of joining the laths, by slipping one into the other.

Similar letters of reference indicate like parts in the several figures.

The following description will enable skilled artisans to make and use our invention.

A is the iron floor-beam, of such thickness and depth as circumstances may require, to the upper edge of which are riveted the iron grooved plates B, one upon each side, (shown in section at Fig. 2 and longitudinally at Fig. 3,) with their flanges C turned at right angles to the perpendicular section of the beam, the flanges D resting upon the top of the beam and taking the weight off the rivets. E is the nail or dog for securing the floor F to the iron grooved plates B direct, with the point turned at a slightly-obtuse angle to the shank, and the head standing at right angles with the point, the shank and head of the nail being of proper size to admit its being inserted in the groove at the top of the beam, with the point turned at right angles to the beam to insert it in the groove, and then turned to the proper position and slide freely. G is the corrugated iron (shown in section in Fig. 5 and longitudinally in Fig. 2) extending between the floor-beams, and resting upon and riveted to the flange C, Fig. 2, and designed for the support of the concrete H, its peculiar form exposing less surface of metal to the action of fire from above than any other. I represents the iron lath-suspender, (shown in section in Fig. 7 and longitudinally in Fig. 6,) the said suspender being riveted to the lower edge of the beam, and punched in the manner shown, and at convenient intervals, for the reception of the lath J. The edge of the suspender below the laths is turned at a right angle (see Fig. 7) for the purpose of giving lateral stiffness, and also to prevent the same from extending down through the plastering. J, Fig. 6, is a full section of the lath, shown as resting in and supported by the suspender I, the same being shown longitudinally in Fig. 7, and the manner of connecting the laths at the joints, by slipping one into the other, is there clearly shown.

It will be seen that this mode of constructing fire-proof floors and ceilings obviates the necessity for top and bottom flanges, as in the ordinary I-beam, the bottom flange in that case being required to carry the brick arch, and the top flange to resist compression and give lateral strength. It also obviates the necessity for brick arches, thereby materially

reducing the weight upon the walls of the building. It also dispenses with the use of any wood, except floor-boards, in the construction of either floor or ceiling.

The corrugated iron G, extending between the floor-beams throughout their entire length and being riveted to the flange C, gives great lateral strength, and effectually removes the possibility of buckling.

The space above the corrugated iron G is filled with the concrete H flush to the top of the grooves B. The floor F is then laid down and held in position by the nail or dog E, the upward inclination of the point of the said nail being intended by the act of driving to draw the floor F hard upon the iron grooved plate B and the concrete H.

The iron lath-suspender I is designed to be used in both iron and wooden construction, being riveted to the beam in one case, and nailed to the wooden joists in the other, the same to be used in connection with the iron laths.

The iron laths J, Fig. 6, being placed in position, the space above the same and between the beams is designed to be filled with coarse concrete, K, Fig. 1, to such depth as may be thought proper, the said concrete dropping down between the laths J and resting upon them, thus presenting a rough and jagged surface beneath, which, in connection with the hollow laths, so made to form the key of the plastering L, Fig. 1, securely holds the same in position, and thoroughly incorporates the plastering with the concrete above, which thus becomes, in effect, a solid mass of mortar, entirely surrounding the laths, effectually protecting the same from the action of fire, either from above or below, the peculiar form of the laths giving them great strength.

It will also be clearly seen that for warehouse construction, and for all cases where a plastered ceiling is unnecessary, this mode of fire-proofing can be appropriately used without ceiling, the bottom of the beam being ornamented with suitable galvanized-iron moldings or otherwise, the whole being well and tastefully painted.

The depth of the vertical ribs in the corru-

gated-iron sheets may be varied to suit circumstances, being increased as the space between beams is increased, and in proportion to the stiffness of floor required.

The iron laths are intended to be made in length about one inch greater than the distance between beam centers, and to project through the suspenders about one-half an inch, the next length of laths being pressed together with the hand, and forced into the last-mentioned lath a sufficient distance to clear the next suspender, and then drawn through the said suspender about one-half inch, as aforesaid, the whole ceiling being thus supported without nails.

We make no claim to the originality of the idea of using corrugated iron between beams; neither do we claim the idea of using iron beams or iron laths.

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

1. The plates B for securing the flooring to the beams, arranged as described, supported upon said beams by the flanges D, and having also flanges C for the support of the corrugated plates G of the flooring, as described.

2. The grooved plates B of the beams A, in combination with the dogs or nails E, constructed and applied to said plates and the flooring, as described, as a means for securing the flooring to said beams, as described.

3. The perforated lath-suspender I for securing and suspending the laths to the beam A, as described.

4. A metallic lath, hollow and heart-shaped in its cross-section, and open at the bottom, as and for the purpose described.

5. In a fire-proof flooring, the combination, with the beams A of the grooved flanged plates B, sliding knee-dogs E, the corrugated-metal plates G, hollow open laths J, and their perforated suspender I, the several parts being constructed and arranged essentially as described.

ISAAC HODGSON.

Witnesses: WILLIAM H. BROWN.

EDGAR J. HODGSON,

ARTHUR DAVIS.