

No. 646,504.

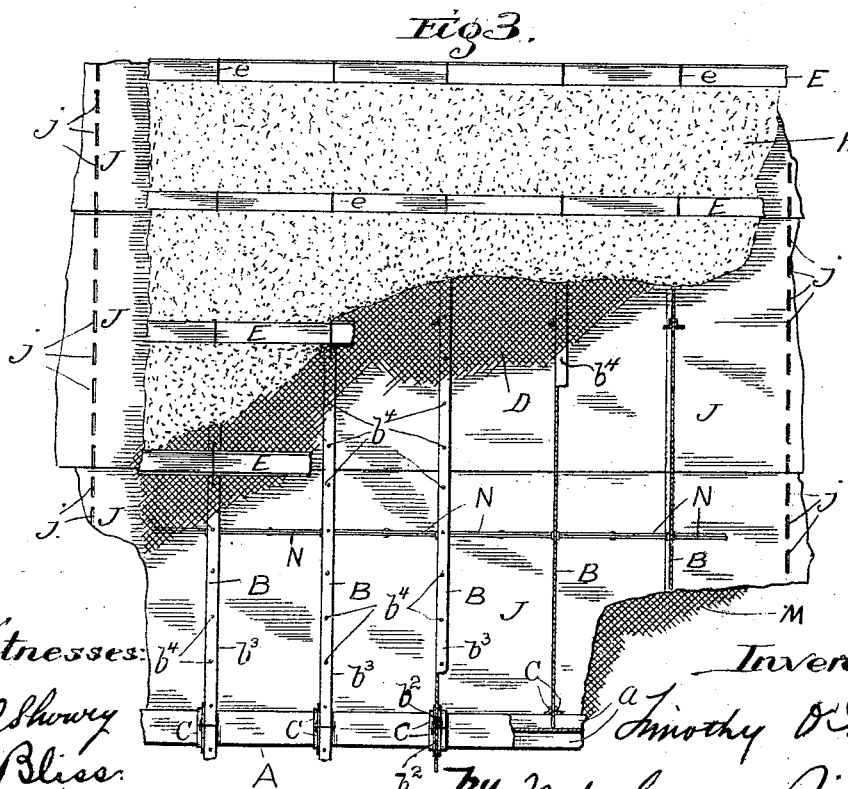
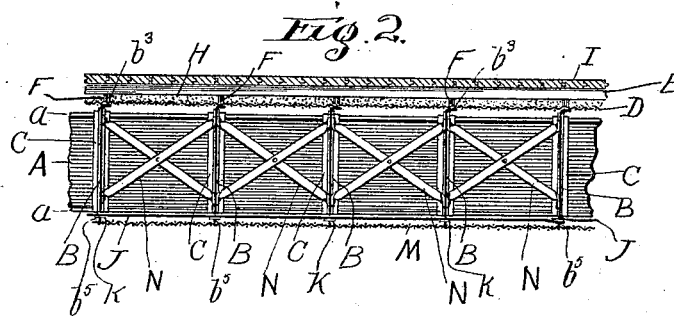
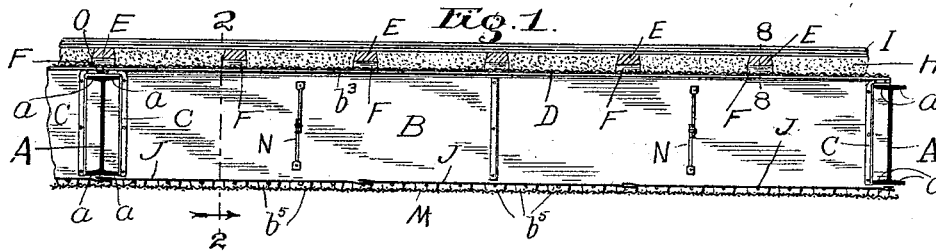
Patented Apr. 3, 1900.

T. O'SHEA.  
FLOOR AND CEILING CONSTRUCTION.

(No Model.)

(Application filed Jan. 4, 1900.)

2 Sheets—Sheet 1.



Witnesses:  
Chas. Sherry  
B. Bliss.

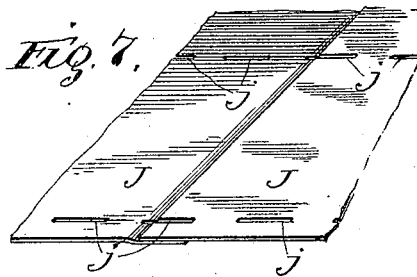
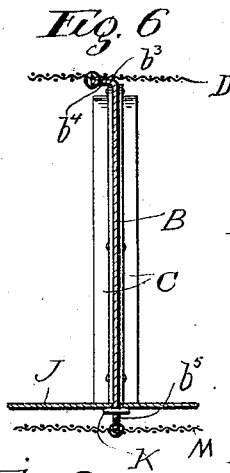
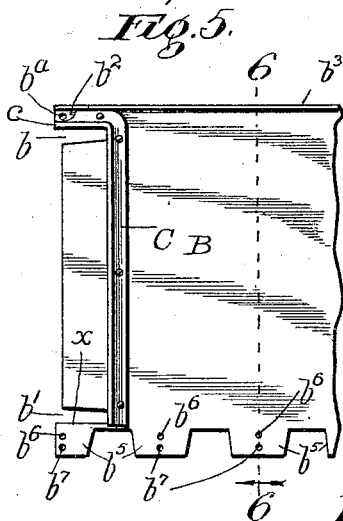
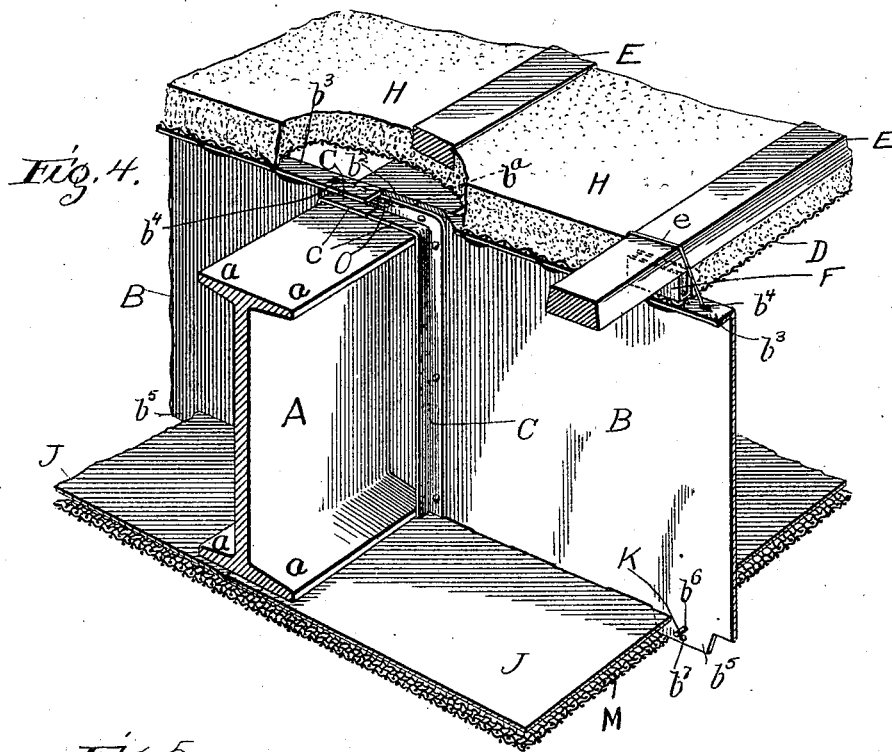
Inventor:  
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T. O'SHEA.  
FLOOR AND CEILING CONSTRUCTION.

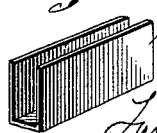
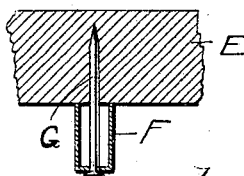
(Application filed Jan. 4, 1900.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses:  
Chas. O. Sherway.  
S. Bliss.



Inventor:

Timothy O'Shea

by Wilbur & Bitner  
Attys.

# UNITED STATES PATENT OFFICE.

TIMOTHY O'SHEA, OF CHICAGO, ILLINOIS.

## FLOOR AND CEILING CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 646,504, dated April 3, 1900.

Application filed January 4, 1900. Serial No. 306. (No model.)

*To all whom it may concern:*

Be it known that I, TIMOTHY O'SHEA, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Floor and Ceiling Constructions, of which the following is a specification.

My invention relates to certain improvements in floor and ceiling constructions which aim at providing an absolute wind-brace, a complete series of fire-stops, and greater cheapness, combined with lightness, strength, and rigidity.

To such ends the invention consists in certain characteristics of construction and arrangement hereinafter fully described and claimed.

In the drawings, Figure 1 is a vertical transverse section including two adjacent stringers and illustrating the preferred form of my improved construction. Fig. 2 is a longitudinal vertical section showing five of the transverse webs between the stringers. Fig. 3 is a broken plan. Fig. 4 is a perspective view to show the construction at the intersection of one of the stringers and one of the transverse webs. Fig. 5 is a detail side elevation of the end of one of the webs. Fig. 6 is a transverse vertical section in line 6 6 of Fig. 5. Fig. 7 is a perspective of a joint between two of the ceiling-plates. Fig. 8 is a detail vertical section in plane 8 8 of Fig. 1, and Fig. 9 is a perspective of a block or clip used for supporting the furring-strips.

Referring to the figures by reference-letters, A is one of the longitudinal stringers commonly used in floor and ceiling constructions, the ordinary form of which is that of an I-beam having horizontal flanges  $a$  extending in opposite directions at both top and bottom. Fig. 1 shows two of these longitudinal stringers and presents in side elevation one of the transverse webs B, a series of which I arrange at convenient distances and support at their ends upon the I-beams by notching said ends at  $b b'$ , (see Fig. 5,) leaving a tongue  $b^2$ , adapted to rest upon the top of the I-beam. I prefer to strengthen this tongue and to also stiffen the web by means of an L-shaped plate C, preferably of ordinary angle-iron, presenting a horizontal flange  $c$  to rest upon the top of the I-beam. The tongue  $b^2$  is perforated at

$b^a$  to receive connecting-wires O, (see Fig. 4,) which tie together the contiguous ends of two adjacent webs.

To stiffen the tops of the webs horizontally, I form a flange  $b^3$  by bending the upper edge at right angles, and I perforate this flange at suitable intervals (see  $b^4$ ) to provide means for fastening the parts above. Upon the top of these horizontal flanges I first place a concrete support, shown as ordinary wire mesh D, and wire said mesh to the transverse webs through the holes  $b^4$ . The furring-strips to which the floor is secured are shown at E and are provided with blocks F, (see Fig. 9,) preferably perforated, as seen in Fig. 8, and secured to the strips by means of the nails G. These blocks are spaced at such distances as to rest upon the tops of the webs B, and I prefer to wire the strip to the web, as seen at  $e$ , Fig. 4. Concrete or other suitable material H is placed upon the wire mesh and beneath the furring-strips, and the floor I (see Fig. 2) is laid in the ordinary manner upon the furring-strips.

To provide for the convenient support of a ceiling, I form upon the lower edges of the webs B downwardly-projecting tongues  $b^5$ , each containing an upper perforation  $b^6$  and a lower perforation  $b^7$ . A series of metal sheets J (see Fig. 7) are slotted at  $j$ , preferably in transverse lines, to receive the tongues of the webs, and they are preferably crowded upward upon said tongues to the bases of the latter and there held by means of pins K, (see Fig. 6,) said pins being thrust through the upper perforations of the tongues. The plates are preferably lapped, as shown in Fig. 7, to make a comparatively-tight joint. To support the ordinary plaster ceiling, I prefer to secure the ordinary wire-mesh lathing M by wiring it to the bottoms of the tongues  $b^5$ , the wires passing through the lower perforations  $b^7$ .

The webs B are braced at suitable intervals, as seen in Fig. 2, by bridging N, so as to prevent any buckling and insure the maximum of stiffness to be obtained from the broad and comparatively-thin webs.

The construction thus described has many important advantages. It is exceedingly light and yet wonderfully strong against any of the strains put on constructions of this sort.

The upper sheet-metal ceiling J, bound together, as it is, by the tongues  $b^5$  of the webs B, forms an absolute wind-brace for the building. The solid webs B act as fire-stops without confining the air between them sufficiently to prevent satisfactory ventilation, as the tongues  $b^2$  and the corresponding tongues  $a$  at the top and bottom of the ends of the webs remove the ceiling and floor sufficiently from the I-beams to provide for necessary ventilation past the I-beams without furnishing sufficient opening to cause a draft in case of fire.

Considerable variation is possible in many of the details of the invention without departing from the essential characteristics thereof, and I therefore do not limit myself to the specific construction herein shown and described.

I claim as new and desire to secure by Letters Patent—

1. In a construction of the class described, the combination with a series of longitudinal stringers, of a series of transverse webs having depending tongues and a ceiling perforated to receive said tongues and suspended thereon; substantially as described.

2. In a construction of the class described, the combination with horizontally-flanged longitudinal members, A, of the transverse comparatively-thin webs, B, notched at  $b, b'$ , to receive the horizontal flanges of the longitudinal members and strengthened by the L-shaped plates, C, having the horizontal portions,  $c$ , adapted to rest upon the upper flanges of the members, A; substantially as described.

3. In a construction of the class described, the combination with the webs, B, having the depending tongues,  $b^5$ , of a series of metal plates, J, perforated to receive said tongues and supported upon the same; substantially as described.

4. In a construction of the class described,

the combination with the vertical webs, B, having depending tongues, of a series of perforated metal sheets, supported upon said tongues, the edges of said sheets overlapping at the perforations, whereby the same are fastened together into a practically-solid sheet to support the building against wind-pressure and other extraordinary strains; substantially as described.

5. In a construction of the class described, the combination with the vertical webs, B, having the depending tongues,  $b^5$ , of a series of metal plates supported upon said tongues and a ceiling supported upon the tongues below the metal plates; substantially as described.

6. In a construction of the class described, the combination of the vertical webs, B, having the depending tongues,  $b^5$ , containing upper and lower perforations, a series of metal plates perforated to receive said tongues and supported upon the latter by means of pins passed through the upper perforations and a ceiling tied to the lower perforations; substantially as described.

7. In a construction of the class described, the combination with the vertical webs, B, having the horizontal flanges,  $b^3$ , at the top, of a concrete support, D, tied to said flanges, a series of blocks, F, resting upon the concrete support, furring-strips, E, resting upon the blocks and tied to the webs and concrete, H, resting upon the support, D; substantially as described.

In witness whereof I have hereunto set my hand, at Chicago, in the county of Cook and State of Illinois, this 30th day of December, A. D. 1899.

TIMOTHY O'SHEA.

Witnesses:

CHAS. O. SHERVEY,  
S. BLISS.