No. 741,289. PATENTED OCT. 13, 1903.

F. L. UNION.

FLOORING AND METHOD OF CONSTRUCTING FLOORS.

APPLICATION FILED AUG. 9, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

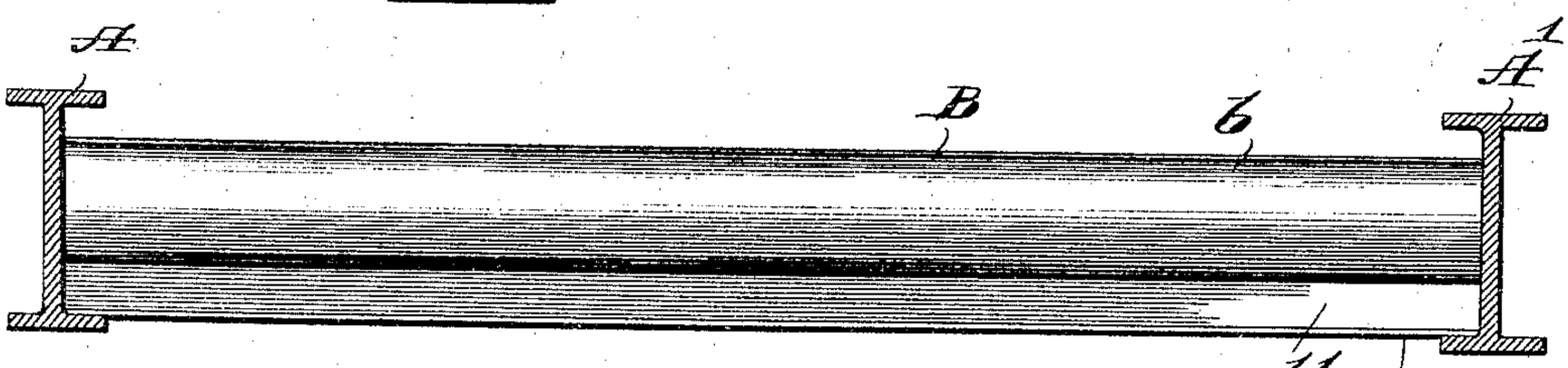


Fig. 2.

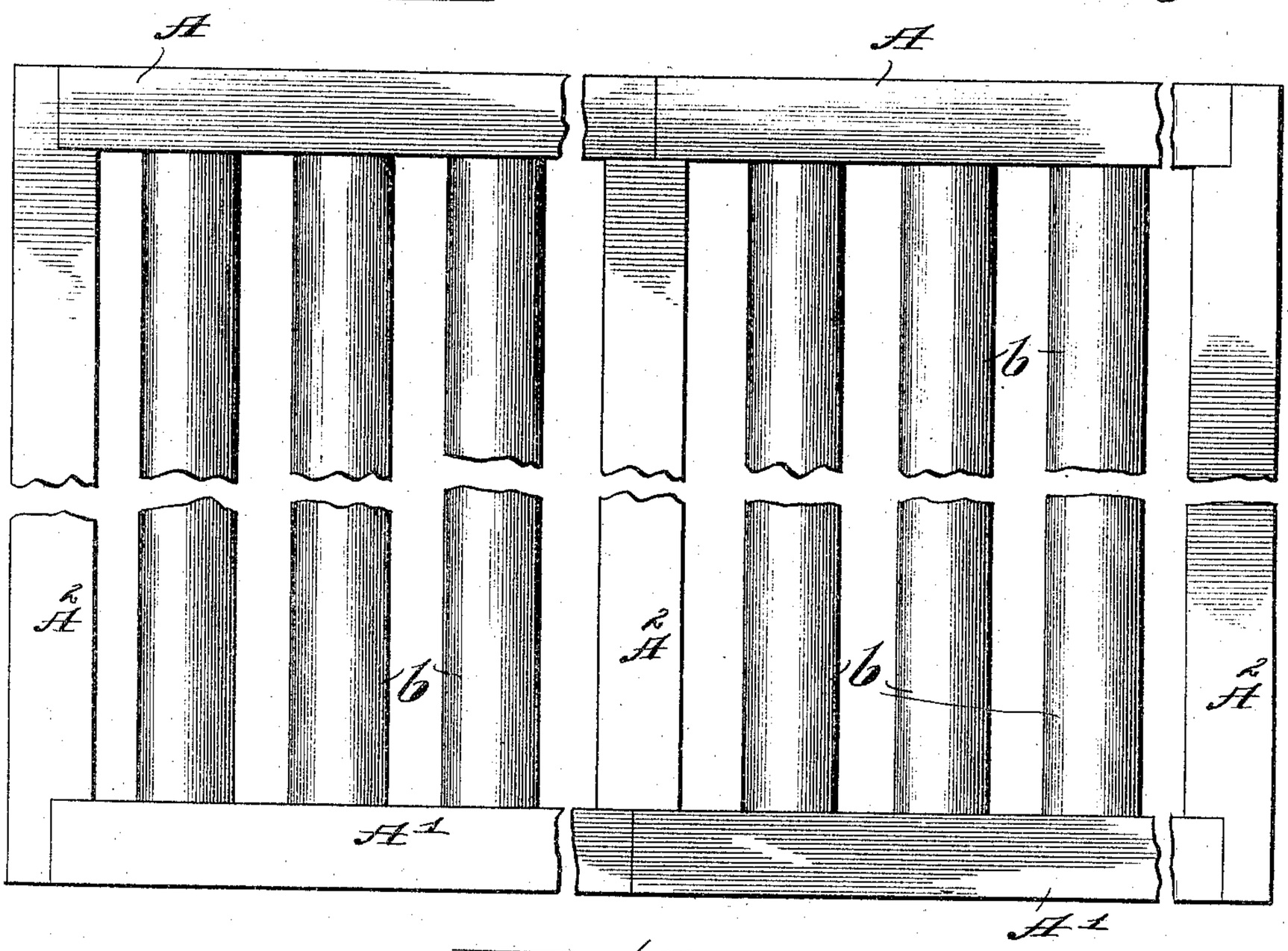
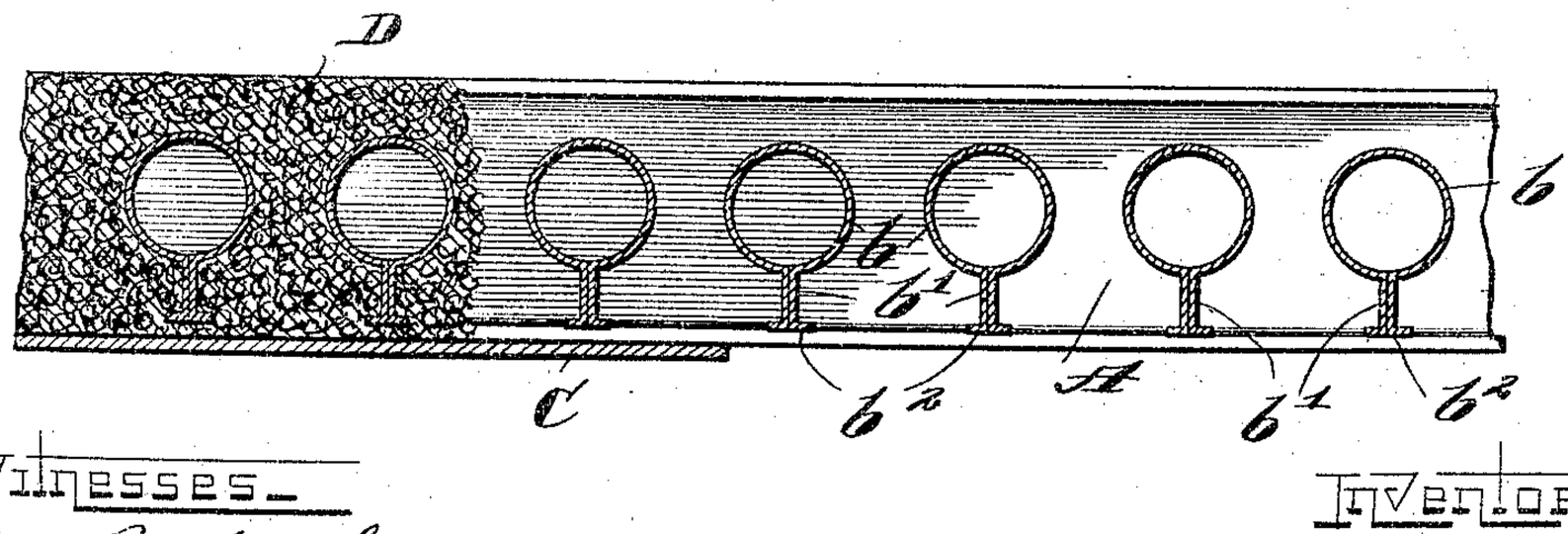


Fig. 3.



Witnesses—
G. A. Rauchenbacher
H. S. Michaelson.

Inventor—
Frank L. Union
By Parker & Burton
his Atty.

No. 741,289. PATENTED OCT. 13, 1903.

F. L. UNION.

FLOORING AND METHOD OF CONSTRUCTING FLOORS.

APPLICATION FILED AUG. 9, 1902.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 4.

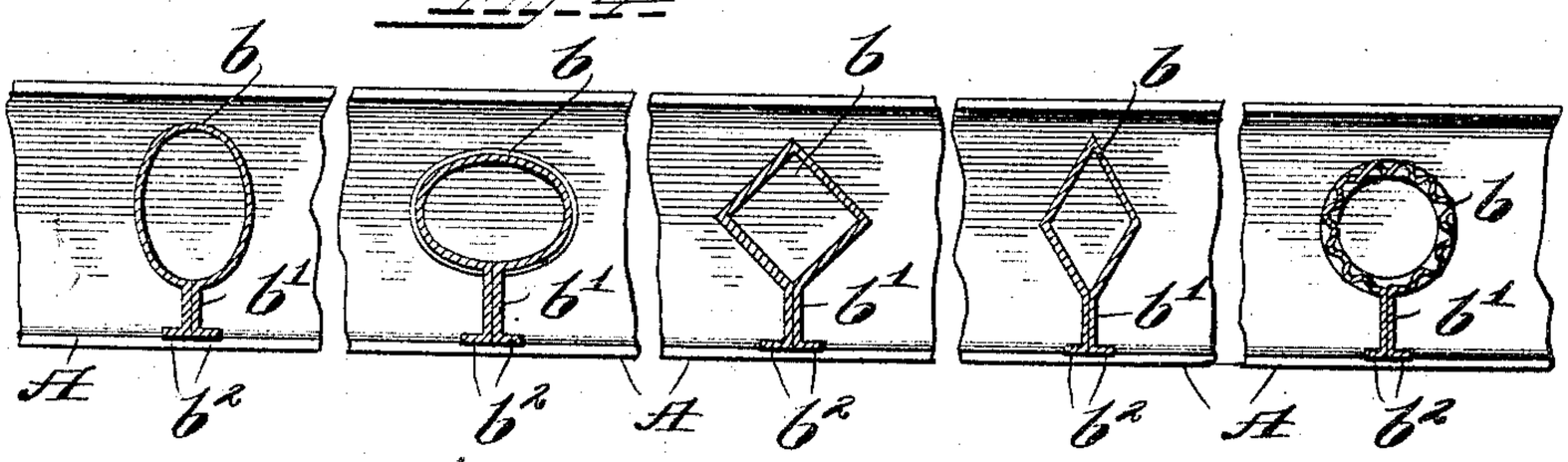


Fig. 5.

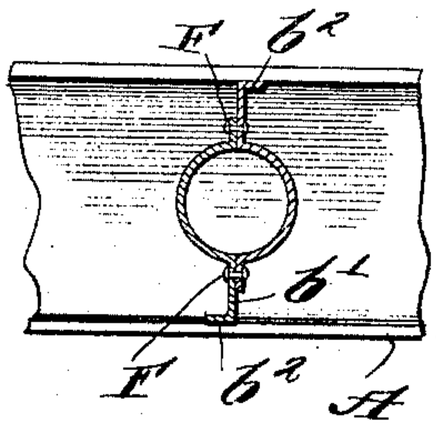


Fig. 6.

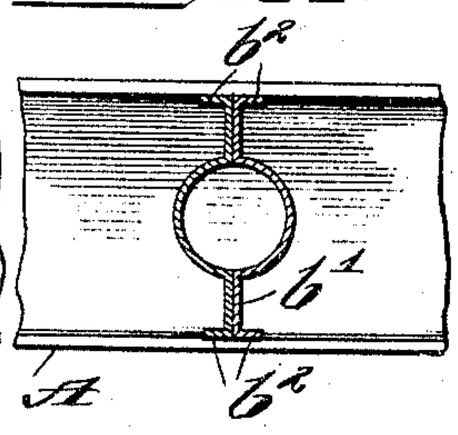


Fig. 7.

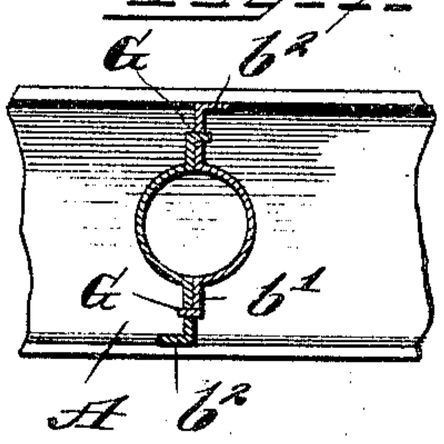


Fig. 8.

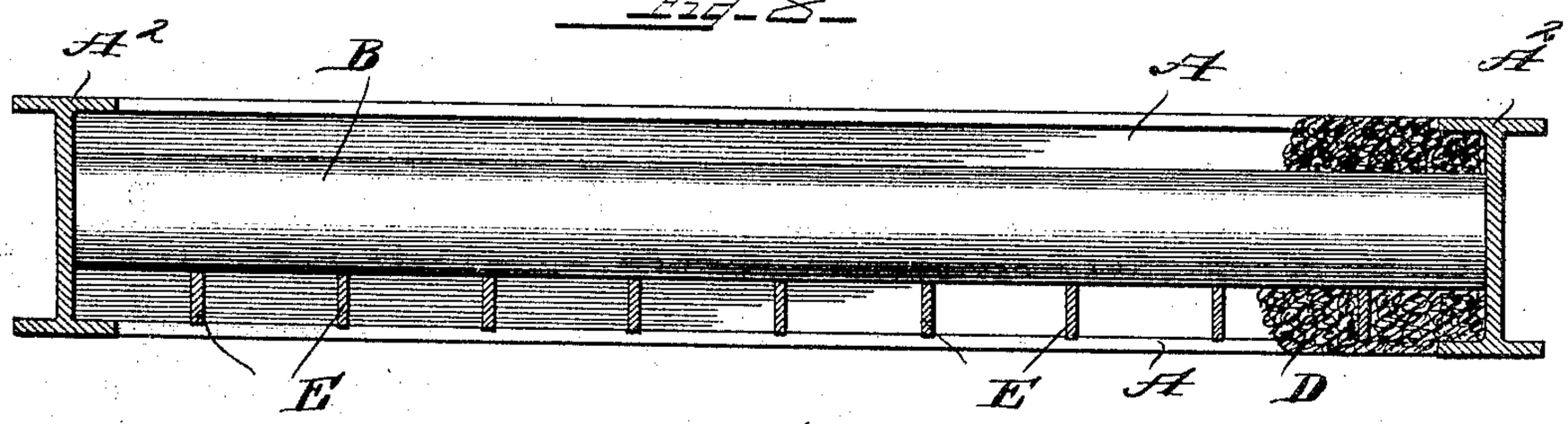
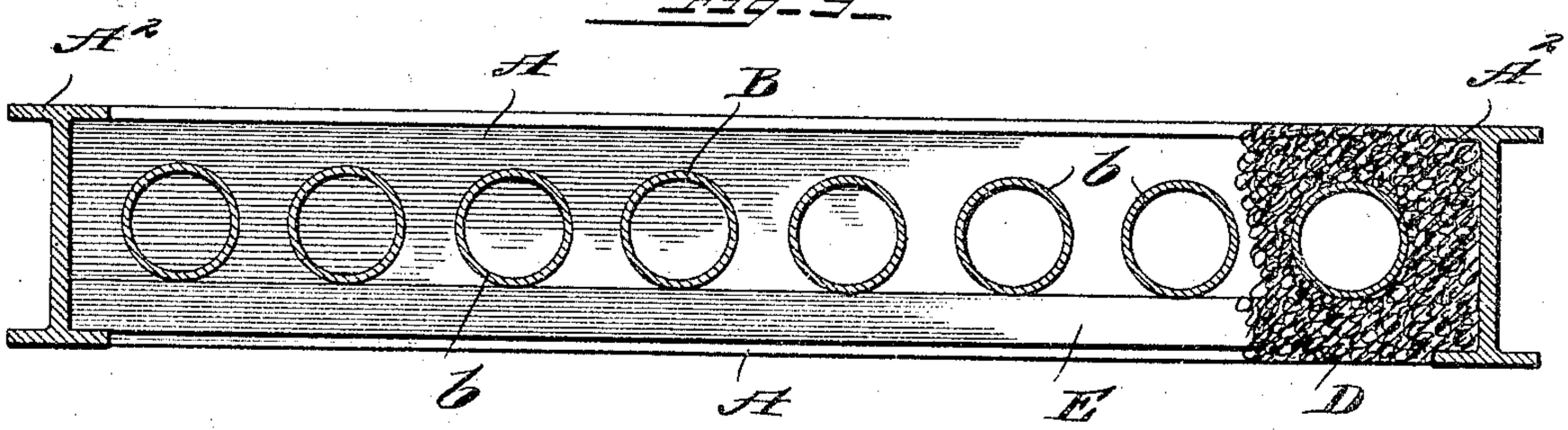


Fig. 9.



Witnesses.

G. A. Pauberschmidt

H. S. Michaelson.

Inventor.

Frank L. Union

By Louis S. Rice

Att'y.

No. 741,289. Patented October 13, 1903.

UNITED STATES PATENT OFFICE.

FRANK L. UNION, OF CHICAGO, ILLINOIS.

FLOORING AND METHOD OF CONSTRUCTING FLOORS.

SPECIFICATION forming part of Letters Patent No. 741,289, dated October 13, 1903.

Application filed August 9, 1902. Serial No. 119,082. (No model.)

To all whom it may concern:

Be it known that I, FRANK L. UNION, a citizen of the United States, residing in the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Flooring and Methods of Constructing Floors, of which the following is a specification.

My invention relates to flooring and to a method of constructing floors, while it particularly relates to so-called "fireproof" flooring and to the construction thereof. Its object is to provide effective, comparatively light-weight, and economical flooring of asphalt, of cement, or of substantially similar plastic composition which shall when set possess great vertical strength.

Referring to the accompanying drawings, wherein like reference-letters indicate the same or corresponding parts, Figures 1, 3, 4, 5, 6, 7, 8, and 9 are in part sectional views and in part elevations, and Fig. 2 is a broken plan view.

Heretofore in the construction of floors of cement, of asphalt, or of other composition a plank platform or "center" is erected or a swing suspended beneath the place to be filled in such manner as to close the lower end of the opening between the floor-beams, and upon it cement, asphalt, or other composition is deposited and tamped down until the space between the floor-beams is completely filled. When this filling has become set, the center is removed. Floors so constructed are objectionable, because of the excessive quantity of filling composition necessitated and the consequent cost and weight thereof. Owing to the weight of floors so constructed it has been necessary to secure the floor-beams one to another by tie-bolts or brace-beams at frequent intervals to prevent them from spreading and to relieve the walls of the building from the pressure occasioned by said weight.

By employing the device and method of construction of my invention a large saving in materials, cost, and weight is effected without impairing the vertical strength of the cement or other filling.

To these ends my invention consists in the features of construction and combination hereinafter more fully described, and pointed out in the claims hereto annexed.

Referring particularly to Figs. 1, 2, and 3 of the drawings, A, A′, and A^2 are I-beams, and B a piece or strip of any suitable material, but preferably of small-gage sheet-iron bent into the form shown, wherein *b* is a tube-like member, *b′* a web, and b^2 a flange or foot. In utilizing this form of my device the usual center may be employed upon which to deposit the floor-filling composition. Assuming said center (a portion C of which is shown in Fig. 3) to be in proper place, the hiatus-forming members B are inserted between the I-beams in such manner that the extremities of their flanges b^2 respectively rest upon the lower flanges of the I-beams A A′ and support the members B in upright position, as shown in Figs. 1 and 3, and lie substantially parallel to and separated a comparatively slight distance from each other, as shown in Fig. 2. The filling D is thereafter deposited between and tamped about the members B in such manner as to firmly embed them therein. When the filling has become sufficiently set, the center may be removed. Where the distance separating the I-beam A from the I-beam A′ is considerable—say ten feet—the members B should possess sufficient strength to sustain themselves and also to assist in sustaining the weight of the filling. This may be effected by forming said member of stiffer and stronger or of heavier material than where the distance separating said I-beams is, say, three or four feet or by suitably corrugating the tubular part *b*. Again, auxiliary supporting means may be employed—as, for example, the bars E (see Figs. 8 and 9)—preferably laid in a direction substantially at right angles to the longitudinal direction of the members B and supported at their extremities, respectively, by the lower flanges of the I-beams A^2.

In Fig. 4 I have illustrated the member B in five different forms. In the form shown at the extreme left of said figure the member *b* is elliptical in cross-section. In the form shown next to the right of the one last referred to the member *b* is also elliptical in cross-section and provided with peripheral

corrugations; but its major axis is horizontal, whereas in the form first referred to it is vertical. In the form shown in the center of the drawing the member *b* is substantially square in cross-section. In the form shown immediately to the right of the one last referred to the member *b* is of diamond form in cross-section, and in the form shown at the extreme right of the drawing the member *b'* is spirally corrugated.

In Fig. 5 the member B is shown formed of two pieces of sheet metal or other suitable material secured to each other by screws, bolts, or other suitable securing means F.

In Fig. 6 the member B is also shown formed of two pieces of sheet metal or other suitable material, which may or may not be secured the one to the other, as preferred.

In Fig. 7 the construction shown is substantially that illustrated in Fig. 5, the two pieces of metal or other suitable material, however, being secured together by means of flanges G of any suitable size, form, and number on the one piece, which enter suitable apertures or slots in the other piece.

In Figs. 8 and 9 the member B is not provided with a web and foot, but rests upon the bars E, as hereinbefore described.

It is obvious that the space between the beams A, A', and A^2 may be partially filled with cement, the member B be laid upon the top thereof, and thereafter the unoccupied space between the beams be filled to the desired level and tamped down into proper place, that the member B may be constructed in sections, and that the number, size, and form of the various parts of my device may be greatly varied without departing from the principle of the invention.

In the forms of the member B, which have a web *b'* and foot b^2, I have described them as being supported by the flanges of I-beams. It will be understood that these members, of whatsoever form they may be, may enter suitable apertures in the walls of a building or be otherwise suitably supported, while it will be further understood that, if desired, said members may be secured one to another, it being only essential that a space occur between them. The flanged foot-pieces b^2 serve as supports for the hollow members B by resting on the flanges of the I-beams or in the apertures in the walls of the buildings, so that said members will stand properly in place when the concrete or cement is being filled in between them, said flanged foot-pieces permitting the hollow members to be properly separated from each other, so that the concrete can be properly tamped about and beneath them, and thus form a cement ceiling to which plaster may readily be applied without requiring special plaster holding or attaching means. Again, it will be understood that the word "cement" wherever employed herein shall signify any suitable floor-filling composition, such as asphalt, concrete, cement, &c.

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

1. In the fireproof construction of floors, ceilings, &c., the combination with a cement or concrete filling, of a series of separated hollow members embedded in said filling and provided with flanged foot-pieces, as b^2, and suitable supports transverse to said hollow members on which said foot-pieces can rest while the cement or concrete is being filled in to form the body of the floor or ceiling.

2. In the fireproof construction of floors, ceilings, &c., the combination with a cement or concrete filling, of a series of separated hollow members embedded in said filling and provided with flanged foot-pieces, as b^2, and I-beams disposed transverse to said hollow members and against the flanges of which I-beams the said foot-pieces can rest while the cement or concrete is being filled in to form the body of the floor or ceiling.

FRANK L. UNION.

Witnesses:
CHARLES S. HILL,
H. Y. MICHAELSON.