

(No Model.)

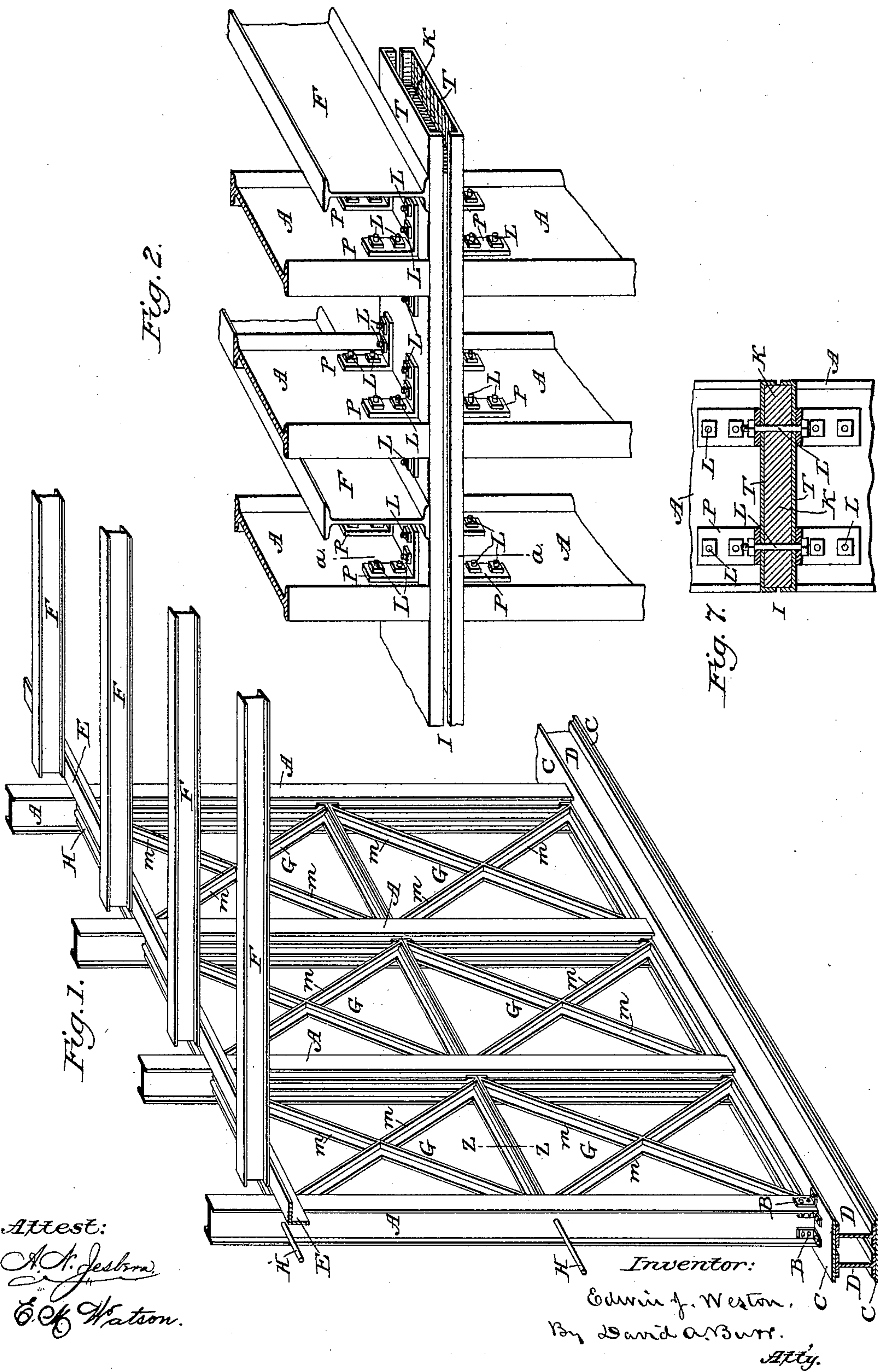
2 Sheets—Sheet 1.

E. J. WESTON.

CONSTRUCTION OF FIRE PROOF IRON BUILDINGS.

No. 390,732.

Patented Oct. 9, 1888.



Attest:

A. H. Johnson

E. H. Watson

Inventor:

Edwin J. Weston

By David A. Burr

Atty.

(No Model.)

2 Sheets.—Sheet 2.

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Fig. 3.

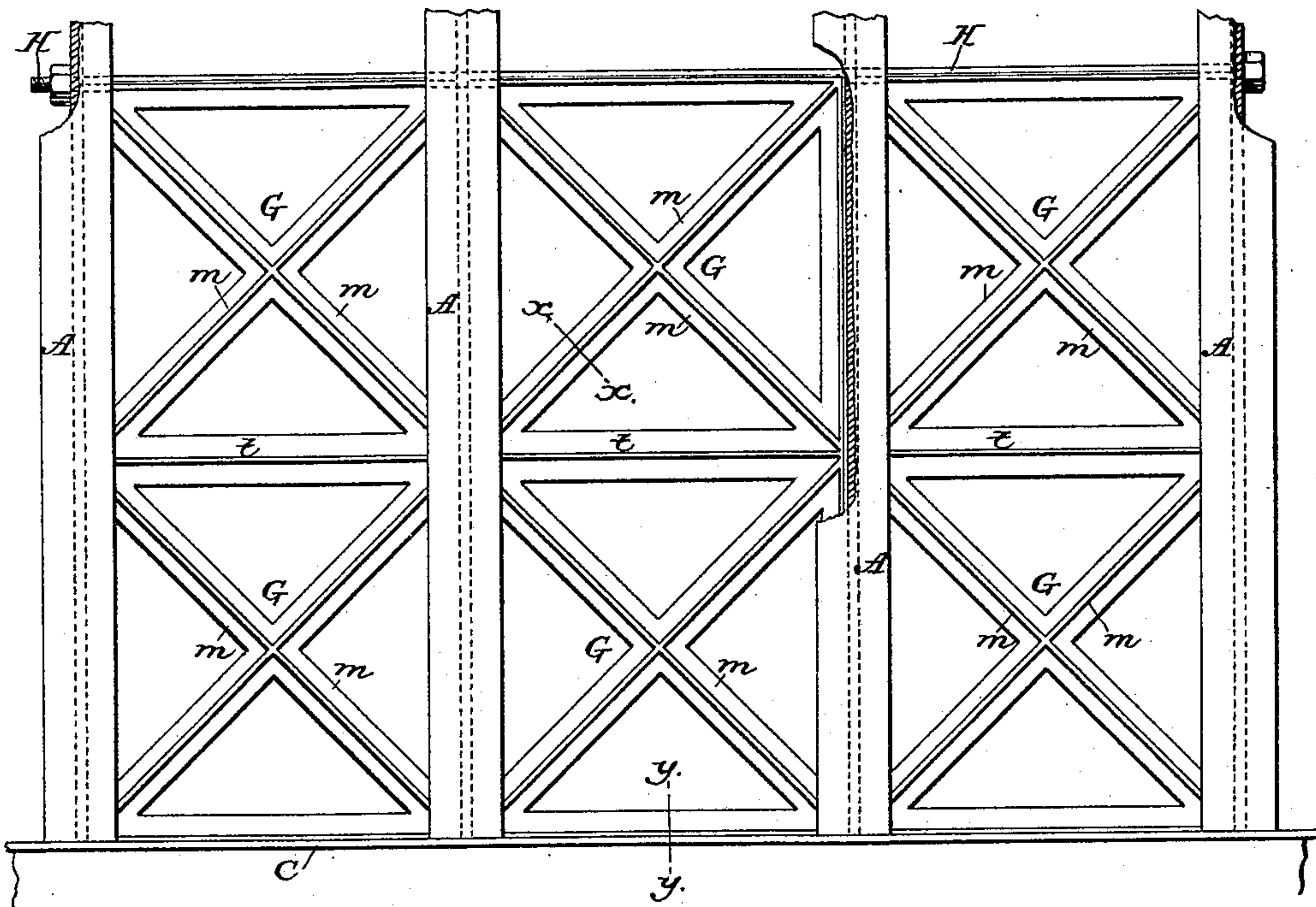


Fig. 4.

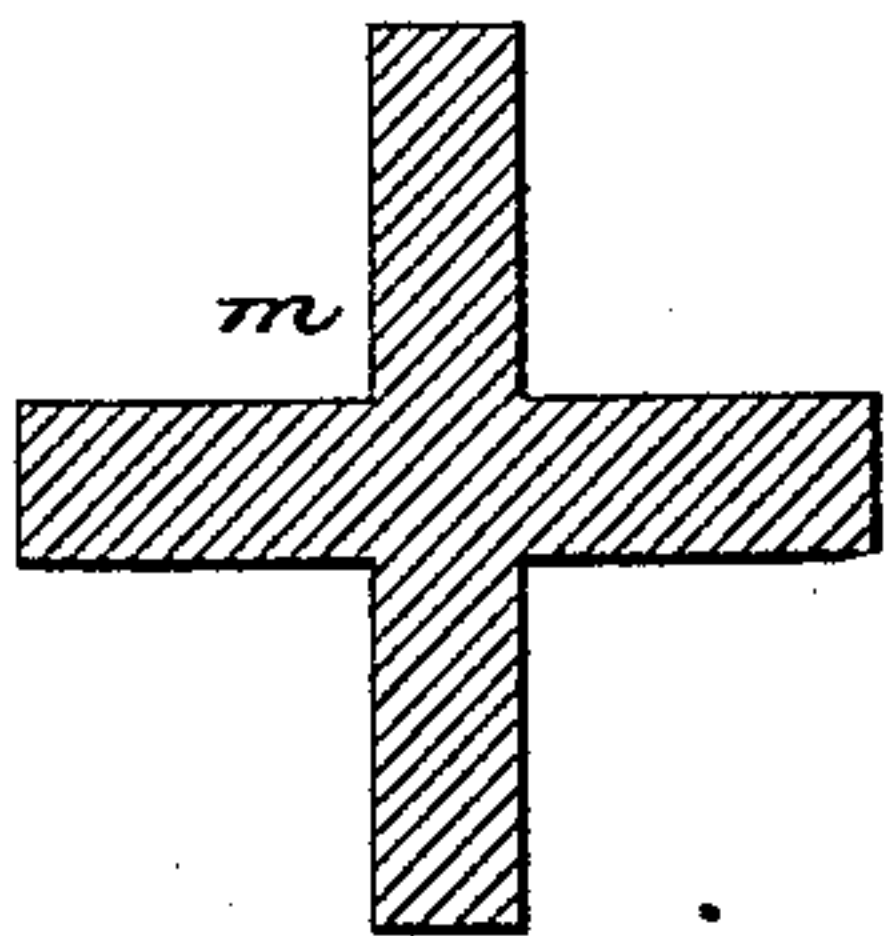


Fig. 5.

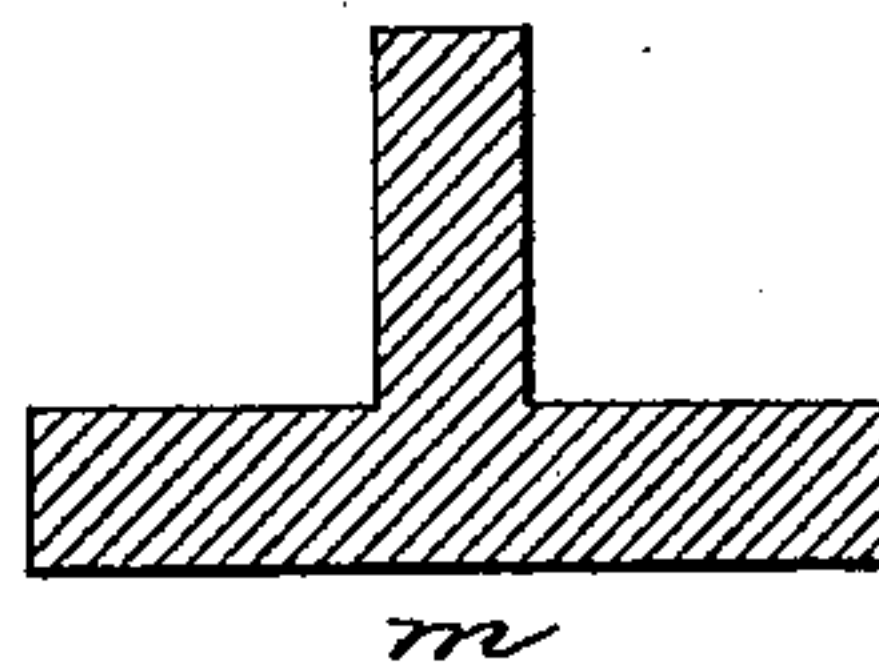
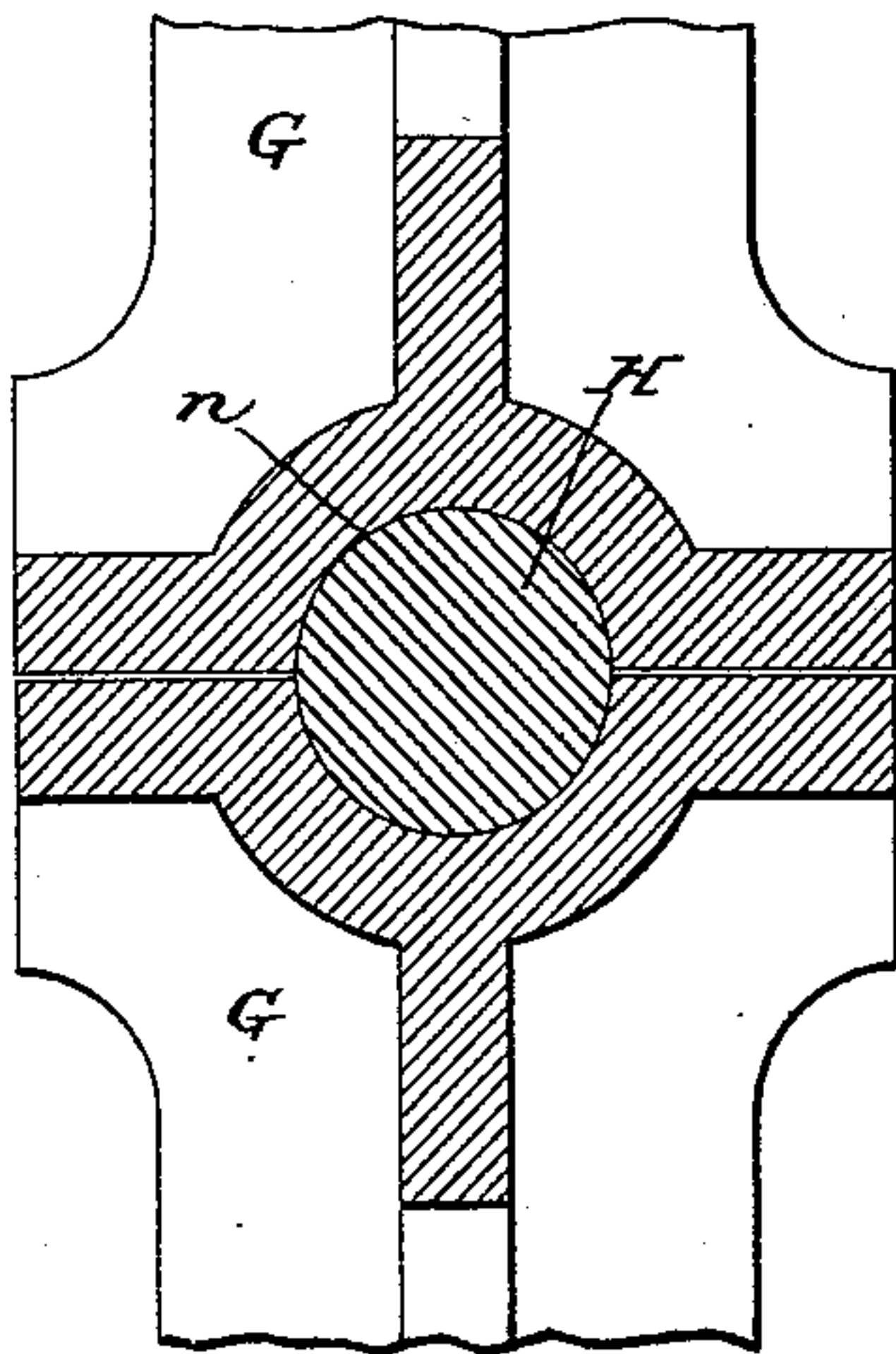


Fig. 6.



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UNITED STATES PATENT OFFICE.

EDWIN JOHN WESTON, OF SAN FRANCISCO, CALIFORNIA.

CONSTRUCTION OF FIRE-PROOF IRON BUILDINGS.

SPECIFICATION forming part of Letters Patent No. 390,732, dated October 9, 1888.

Application filed May 31, 1888. Serial No. 275,569. (No model.)

To all whom it may concern:

Be it known that I, EDWIN JOHN WESTON, of San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in the Construction of Iron Buildings; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification, in which—

Figure 1 is an elevation in perspective showing my invention as embodied in a portion of one side of a structure; Fig. 2, a view in perspective, on an enlarged scale, showing the combination of the vertical wrought-iron uprights of the structure with the horizontal plates for the support of the floor-beams and an improved construction of said plates; Fig. 3, a front elevation of a portion of one side of my improved structure, showing a modification in its re-enforcing frames or panels. Fig. 4 is a cross-section in line *xx*, and Fig. 5 a cross-section in line *yy*, of Fig. 3; Fig. 6, a cross-section in line *zz* of Fig. 1, and Fig. 7 a cross-section in line *aa* of Fig. 2.

My invention relates to a new and useful method of constructing a comparatively light fire proof frame-work for buildings, wherewith they may be safely erected to great heights without danger of the falling of the walls by reason of earthquakes or fire, and be built in locations where difficulty exists in finding a suitable foundation for heavy walls of masonry; and my invention is especially adapted to the construction of tall towers, chimneys, factories, and works of a similar character.

It consists in the combination, with uprights formed of I-beams of wrought-iron, of diagonally-braced frames or open panels of cast-iron, adapted to fit closely between the uprights and to be confined by the flanges thereof, and also in the combination, with said wrought-iron uprights and intermediate cast-iron frames, of compound horizontal plates constructed, as hereinafter described, each of two channel-beams inclosing a longitudinal cast-iron re-enforcing plate.

In the accompanying drawings, A A A represent rolled wrought-iron I beams, mounted and secured by means of angle-irons B B, or other appropriate means, to a foundation-plate, C,

which may itself be supported upon a pair of I-beams, D D, horizontally disposed, as shown in Fig. 1. These wrought-iron uprights may be of a length to extend up for two or more stories, or may be made to reach merely to the height of a single story. Where they extend up unbroken beyond the first story, an angle or L-shaped beam, E, of wrought-iron, is bolted horizontally to and against the face of the uprights, to furnish a support for the floor-beams F F of the structure, whose ends, resting upon said horizontal beam, are properly secured thereto in the customary manner.

Thus far the structure, composed of wrought-iron beams, is of a character well known to the art.

The wrought-iron uprights, if their vertical position be positively maintained, may be safely loaded to from three to five tons weight for each square inch of their sectional area, and one object of my invention is to stay and brace these wrought-iron uprights in a simple, effective, and economical manner, so as to prevent any lateral motion or flexure thereof. To accomplish this end, I insert between the uprights A A frames or open panels G G, of cast-iron, formed with diagonal intersecting braces *mm*, and which are adapted to fit snugly between the uprights A A and be confined laterally between the flanges thereof, so that by contact with the web of the beams along their length they will re enforce them and afford a firm lateral support thereto.

The bars of the cast-iron frames are preferably all flanged, as shown in the cross sections thereof, Figs. 4, 5, and 6, and the upper and lower bars are preferably cast with a central half-circular longitudinal groove, *n*, therein, (see Fig. 6,) so that when two frames are brought together the opposite bars shall inclose between them a central longitudinal opening to receive a horizontal bolt or tie-rod, H, by which the adjacent uprights may be drawn together and firmly tied upon the frames, said bolt being passed through suitable apertures pierced in the web of the upright, as shown in Fig. 1.

In continuing the structure upward above the ends of a tier of uprights, A A, the upper ends of said uprights are connected and tied together horizontally by compound plates I I resting thereon, as shown in Fig. 2, and made

fast thereto by angle-irons or knees P P, bolted to the one and the other. The compound plates I I are constructed each of two channel-beams, T T, of wrought-iron, fitted together with their flanged edges facing inward, and inclosing between them a central bar or plate, K, of cast-iron, (see Figs. 2 and 7,) the whole being united by transverse bolts L L, which serve also to secure upon the outer face of the plate the angle-irons or knees P P. The floor-joists F F may consist of wrought-iron beams. The ends of these beams resting upon the plates I I may fit snugly between the knees or angle-irons P P, so as to be confined thereby against lateral movement, as shown in Fig. 2.

The cast-iron re-enforcing frames G G may be made single and more or less square in form, with but single intersecting braces m m, as shown in Fig. 1; or they may be extended to comprise two open-work panels separated by a central cross-bar, t, and each intersected by the diagonal braces, as shown in Fig. 3.

The composite frames thus constructed of wrought-iron I-beams A A, re-enforced and supported by interposed cast-iron flanged frames or panels G G, and united by transverse bolts H H, may be closed and made tight by means of metallic netting or lath-work secured upon one or both sides and plastered with mortar or cement, or by a lining or facing of sheet metal fastened thereon in the usual manner; or the framing may be incased in walls of cement, brick, or masonry, to which it will afford a firm support.

I claim as my invention—

1. The combination, in a metallic framing for elevated structures, of uprights formed of

flanged beams of wrought metal, with interposed diagonally-braced re-enforced frames or panels of cast metal and transverse tie-rods, substantially in the manner and for the purpose herein set forth.

2. The combination, in a metallic framing for buildings, of the uprights A A, consisting of flanged wrought-iron beams, the interposed re-enforcing panels consisting of diagonally-braced frames G G, of cast-iron, the transverse tie-rods H, and the horizontal plates I I, each consisting of a pair of channel-beams inclosing between their opposed flanges a longitudinal re-enforcing plate, K, of cast-iron, all substantially in the manner and for the purpose herein set forth.

3. The combination, in a metallic structure, of the wrought-iron flanged uprights A A, the united horizontal wrought-iron channel-beams I I, interposed between the ends of the vertical uprights, the cast-iron re-enforcing plate K, interposed between the channel-beams, the metallic knees or angle-irons P P, fitted in the angles formed by the uprights with the horizontal beams, and the vertical bolts passing through the angle-irons, channel-beams, and interposed re-enforcing plate, all substantially in the manner and for the purpose herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWIN JOHN WESTON.

Witnesses:

D. G. CHISHOLM,
GEO. H. PIPPY.