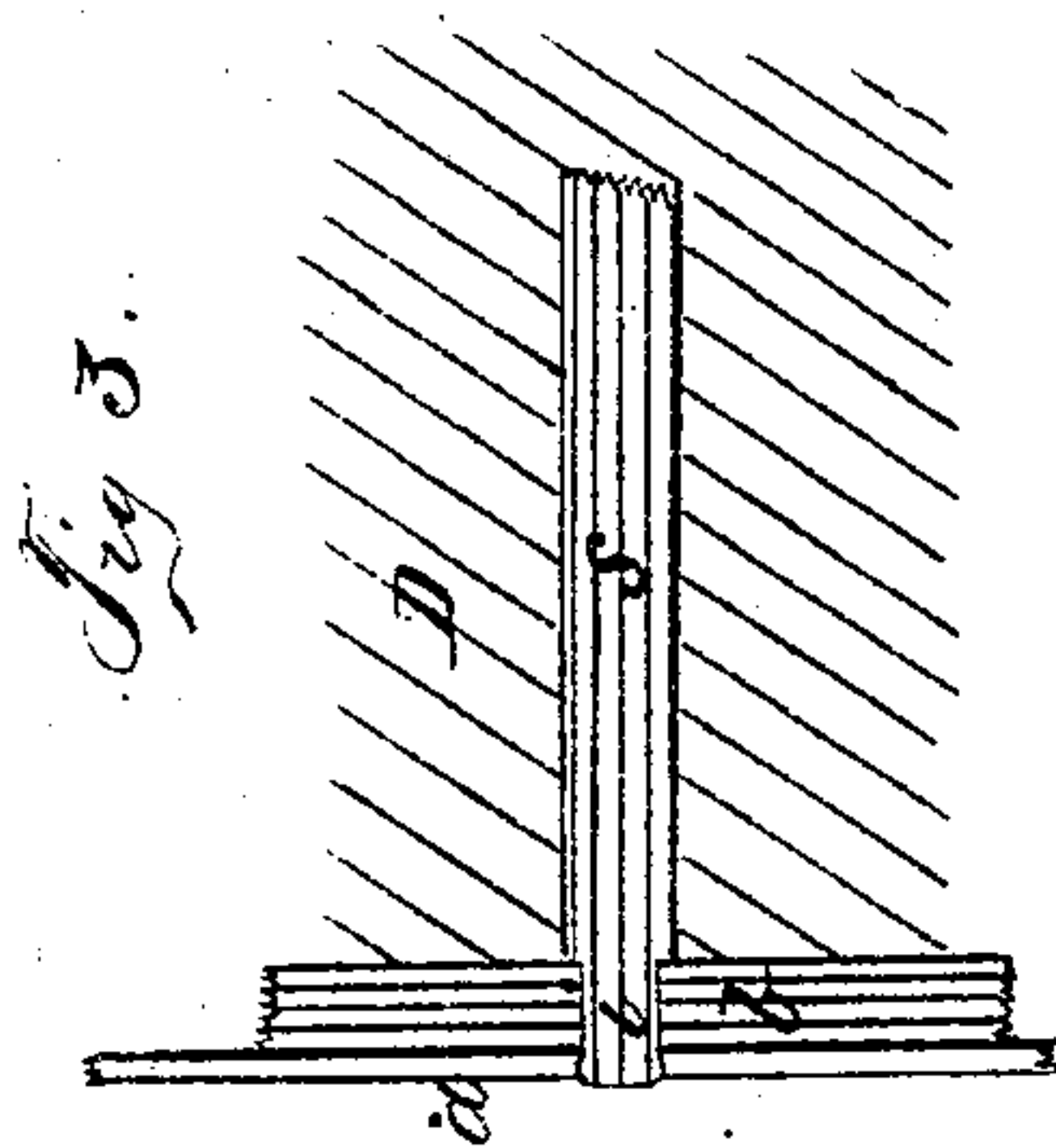
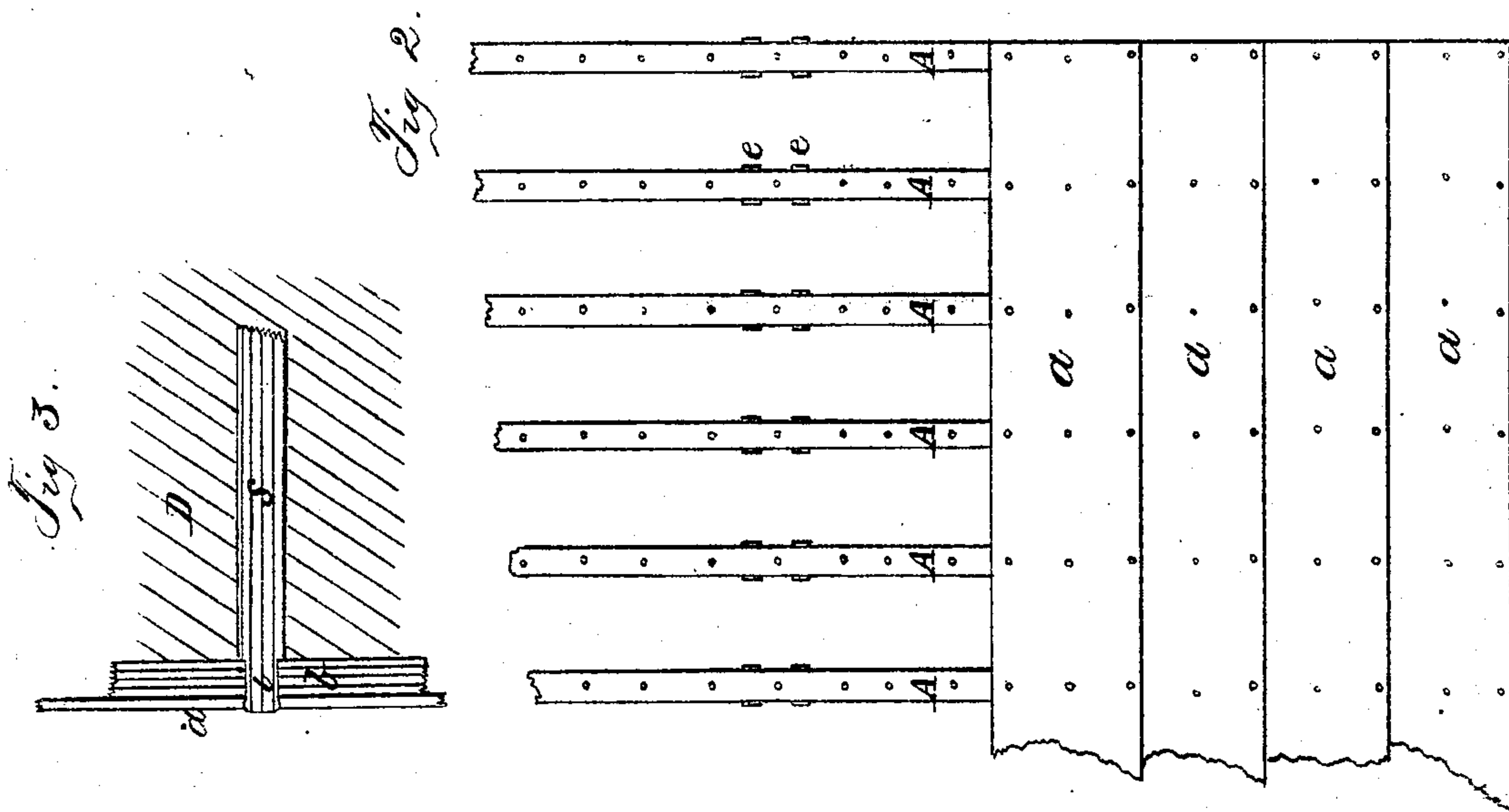
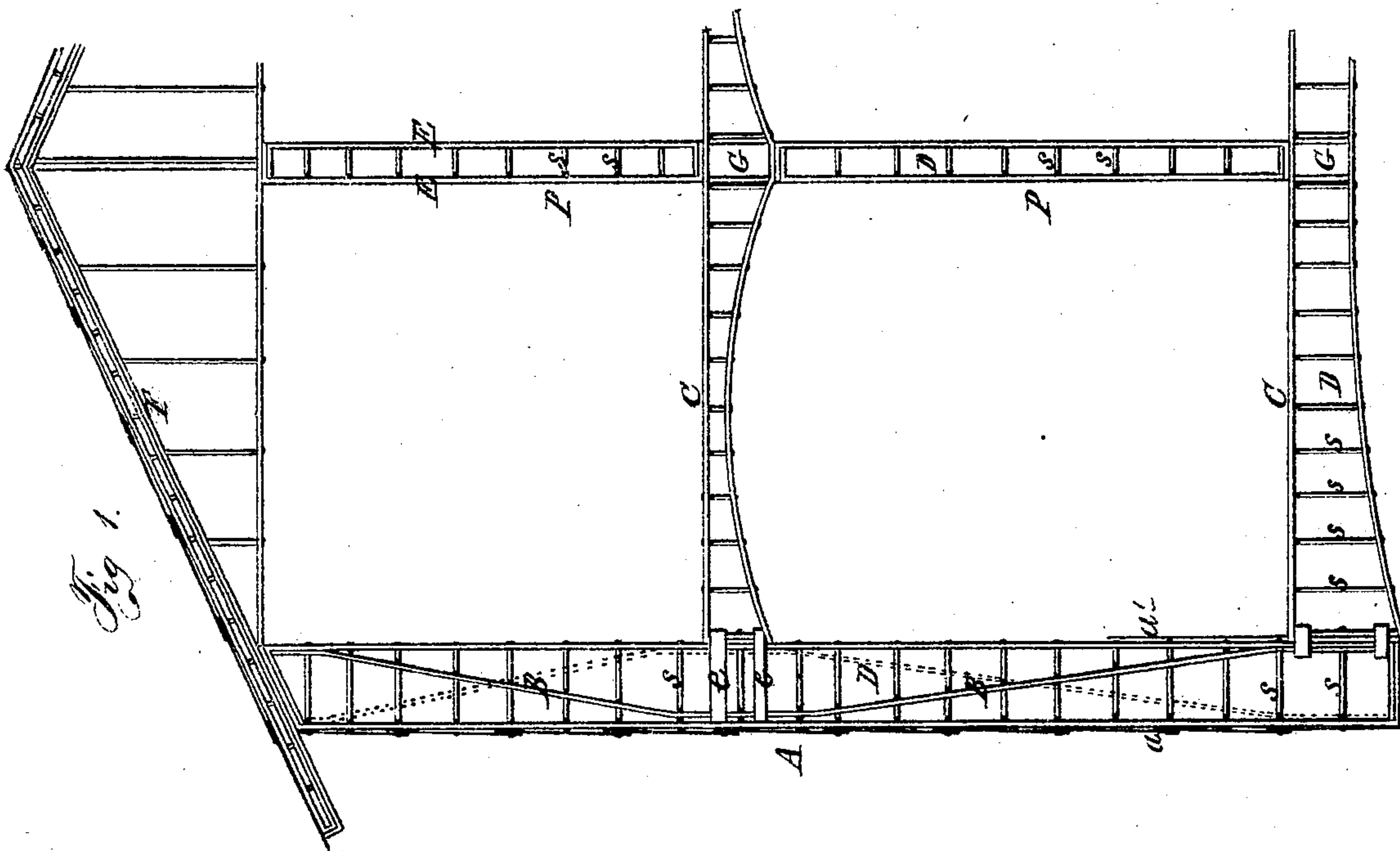


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Improvement in Fire Proof Buildings.

No. 124,453.

Patented March 12, 1872.



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SAMUEL W. SISSON AND W. CHAUNCEY WETMORE, OF PULASKI, MICH.

IMPROVEMENT IN FIRE-PROOF BUILDINGS.

Specification forming part of Letters Patent No. 124,453, dated March 12, 1872.

Specification describing certain Improvements in the Construction of Fire-Proof Buildings, invented, jointly, by SAMUEL W. SISSON and W. CHAUNCEY WETMORE, both of Pulaski, in the county of Jackson and State of Michigan.

The first part of our invention relates to a combination of trussed and untrussed frames of light bar-iron to form skeleton wall-posts, girders, &c., connected together by girder-bands to constitute bents; said frames being stayed by numerous stay-bolts, the tenons of which project for riveting on sheet-metal covering to form the faces of the walls, ceilings, and, in some cases, the floors and roof also. Furthermore, in combining with such hollow walls and their interior frames and girders a filling of béton or other suitable concrete, to be poured in in a state more or less liquid as fast as the cribs for its reception are formed by the riveted covering, so as to finally embed all the stayed or stayed and trussed iron frames therein inclosed. Our object is to have the béton and iron frames furnish mutual support and protection to each other, the former consolidating the latter, and solidifying them at the points of connection, protecting them at the same time from the action of fire, while the latter stiffens the former against deflection and disintegration. The second part of our invention relates to a combination of sheet-iron plating with stays and with an internal filling of concrete, to be employed in the construction of interior walls, roofs, casings, shutters, doors, &c., and render them fire-proof; all of which will be hereinafter more fully explained.

In the accompanying drawing representing my invention, Figure 1 is a broken front elevation of the iron framing. Fig. 2 is a broken side elevation of the same with sections of covering-plate riveted on over a part of the framing. Fig. 3 is a vertical broken section through one of the stays.

A represents the wall-posts, of lightish bar-iron, *b*, bent at the corners, and riveted together to form frames of a length equal to the height of the wall, and of a width (from side to side) nearly equal to the wall's desired thickness, said frames being braced by the diagonal truss-bars B. C represents the joist-frames of the building. They are made of light bar-iron, the under sides being curved so as to

form arched ceilings, and their inner ends are riveted or bolted to the sides of longitudinal girders or girder-frames, one end of which is shown at G, the outer ends being secured to the post-frames by means of the girder-bands *e e* passing around the truss-bars and by riveting the ends of the shouldered stay-tenons, and also by ordinary rivets through the bands and frames. The stay-bolts are indicated in part by the letters *s s s*, &c., their office being to stay the frames and truss-irons, and furnish the means of connecting the covering-sheathing, to be presently described, and for this double purpose the stays have round tenons *i* formed on each end a little smaller than the body of the stay-rod, and of such length that, when inserted in holes punched through the frames and covering-sheets, their ends will project just sufficiently beyond to form a rivet-head to rivet the covering to the frame-bars and the bars tightly to the shoulders. The covering is designed to be of sheet-iron, the edges of which may overlap like weatherboarding, as shown, or may form butt-joints, especially on the inner wall faces, ceilings, &c. The outer and inner covering are shown, respectively, at *a* and *a'*.

In the erection of a building of this class the wall-post frames A, joist-frames C, rafter-bars or frames F may be connected, as described, in a horizontal position on the stone or brick foundation, and elevated successively to place, temporary props sustaining all the overhang until the girders are erected and the joist-frames permanently secured thereto. When the bents are placed in exact position they are temporarily stayed to place, and the sheet metal, being punched with holes to match the projecting stay-tenons, is put in place and riveted on inside and out in sheet-courses all around the building, so as to form permanent cribs for the reception of the béton-filling D, which is poured in a state sufficiently liquid to flow and fill up all the space between. When one course is thus filled, another is riveted on and filled, and so on until all the iron framework in the wall is fairly embedded in the concrete. The sheet metal is now riveted onto the under sides of the joist-frames by means of the projecting stay-tenons to form the ceilings of the vaults, cellars, and rooms, and make a tight bed for receiving the concrete,

which is then poured in to fill all up to the floor level, said floors being of brick, tiling, or even of wood, if suitable nailing-strips have been previously laid. The door and window jambs and frames will be secured in any of the ways common to iron buildings, and are not shown, because the rest of the construction does not require any special devices for securing them. For additional stories the truss-bars will be bent edgewise and cross each other, as seen in dotted lines in Fig. 1. The inner partitions P and roof exhibit the mode in which we propose to construct, with suitable modifications, the window and door jambs and frame, outer doors, and shutters, besides other exterior appendages or parts. Sheets of iron, E E, or other metal are riveted against the shoulders of stay-bolts *s* by hammering the ends of the stay-tenons, as heretofore described, to form a head; and plates of sufficient thickness may have the tenon-holes countersunk for flush work. The space between the plates is then filled with the concrete D, a casing being formed for its reception by bending the edges of the plates, or by strips temporarily fastened on, to be removed when the concrete becomes hard. The metal sheets may be pressed into any desired forms of architectural decoration, and the stays need not be placed nearer to each other than barely sufficient to prevent the plates from bulging in the intervals by the pressure of the semi-liquid concrete, and this rule will equally apply in the construction of the walls exterior and the floors.

In constructing a row of our fire-proof buildings the tenons of the wall-stays may project to receive nuts for connecting the joist-frames of the adjoining building or buildings.

A building on our plan could not be destroyed by intense exterior heat; for if the exterior covering was burned off the concrete would protect the trussed iron frames, and they would maintain the integrity of the walls.

We claim as our invention—

1. The construction of the skeleton-frames A C of plates of bar-iron connected together by stays *s*, shouldered for the attachment of the covering or sheathing, and with or without truss-bars B, substantially as described.

2. The combination, with the iron-bar post and joist frames aforesaid, of the connecting girder-bands *e*, substantially as described.

3. The combination of an inner and outer sheet-metal casing, *a* and *a'*, shouldered stays *s*, and an interior filling of béton or other concrete, D, with the iron-bar frames A C, substantially in the manner and for the purposes set forth.

4. The combination of sheet-metal plates or casings E E, shouldered stays *s*, and béton or other concrete filling D, substantially as and for the uses specified.

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