

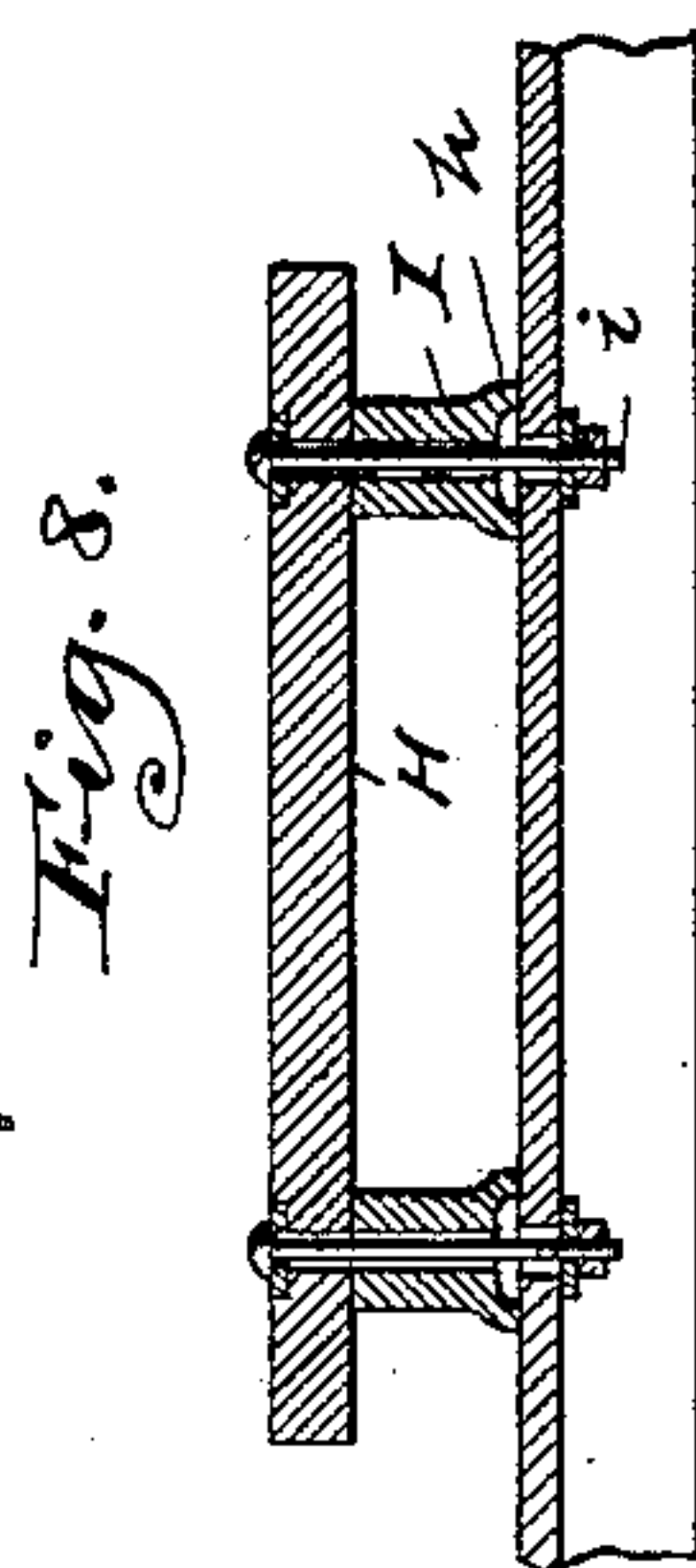
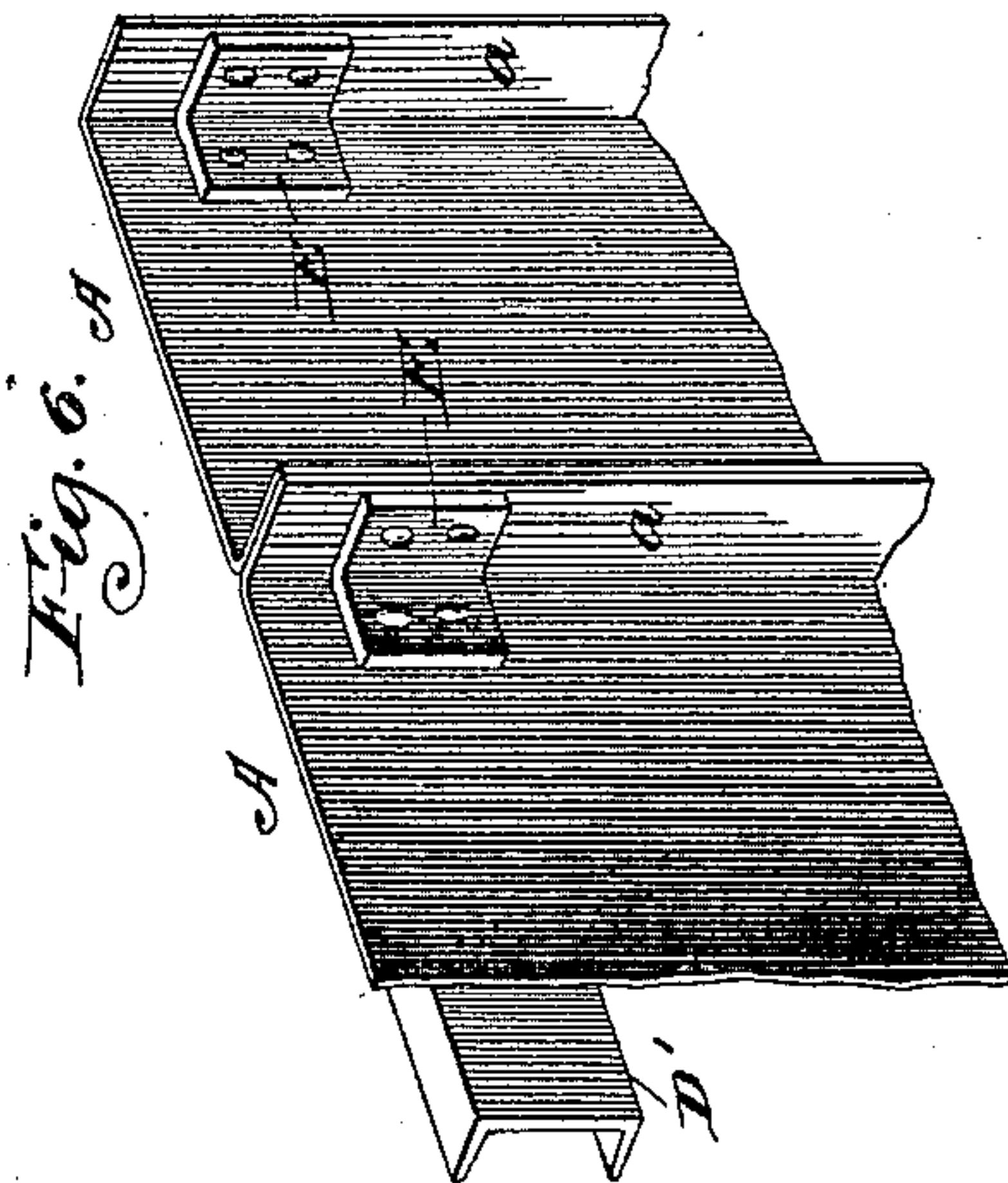
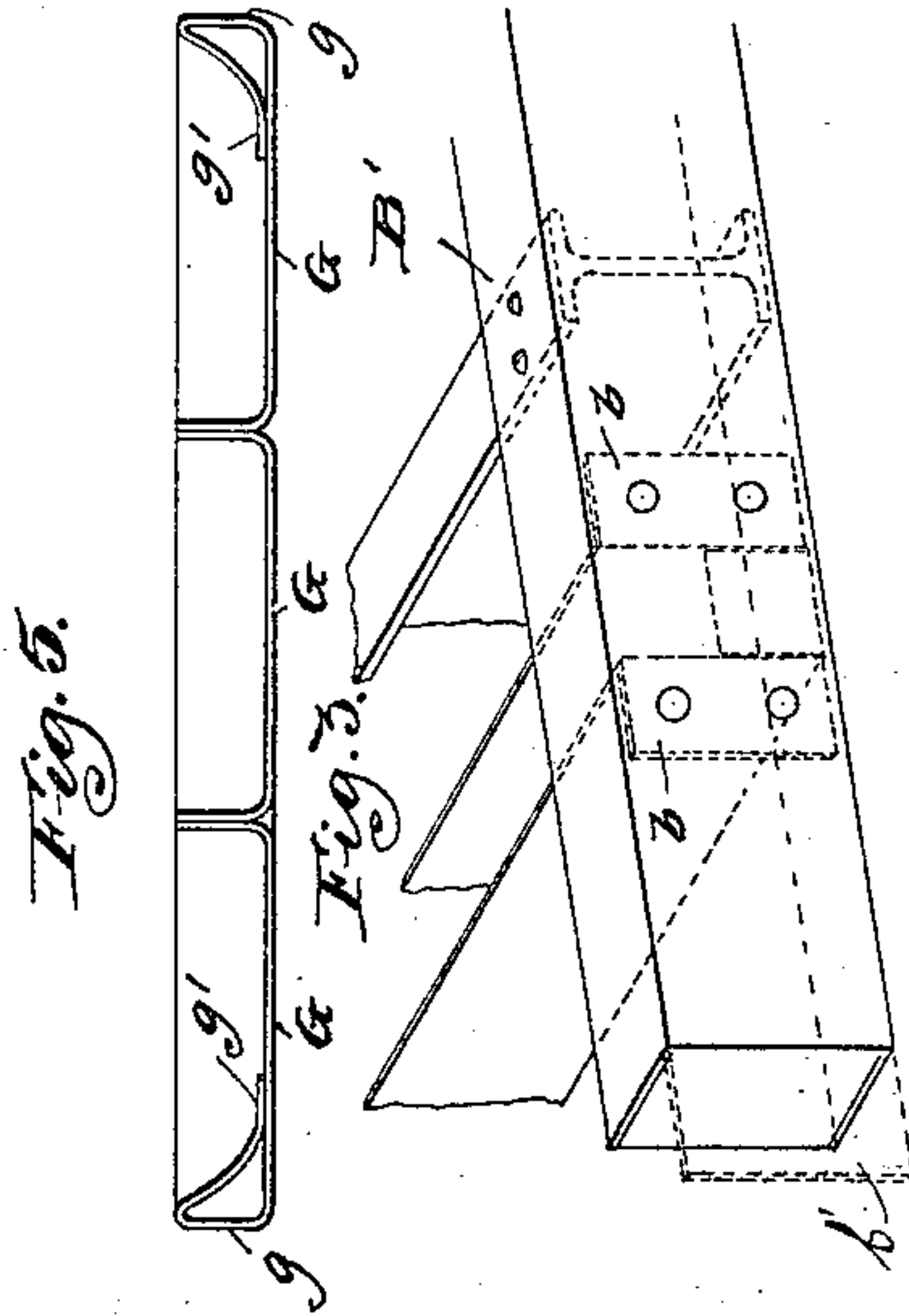
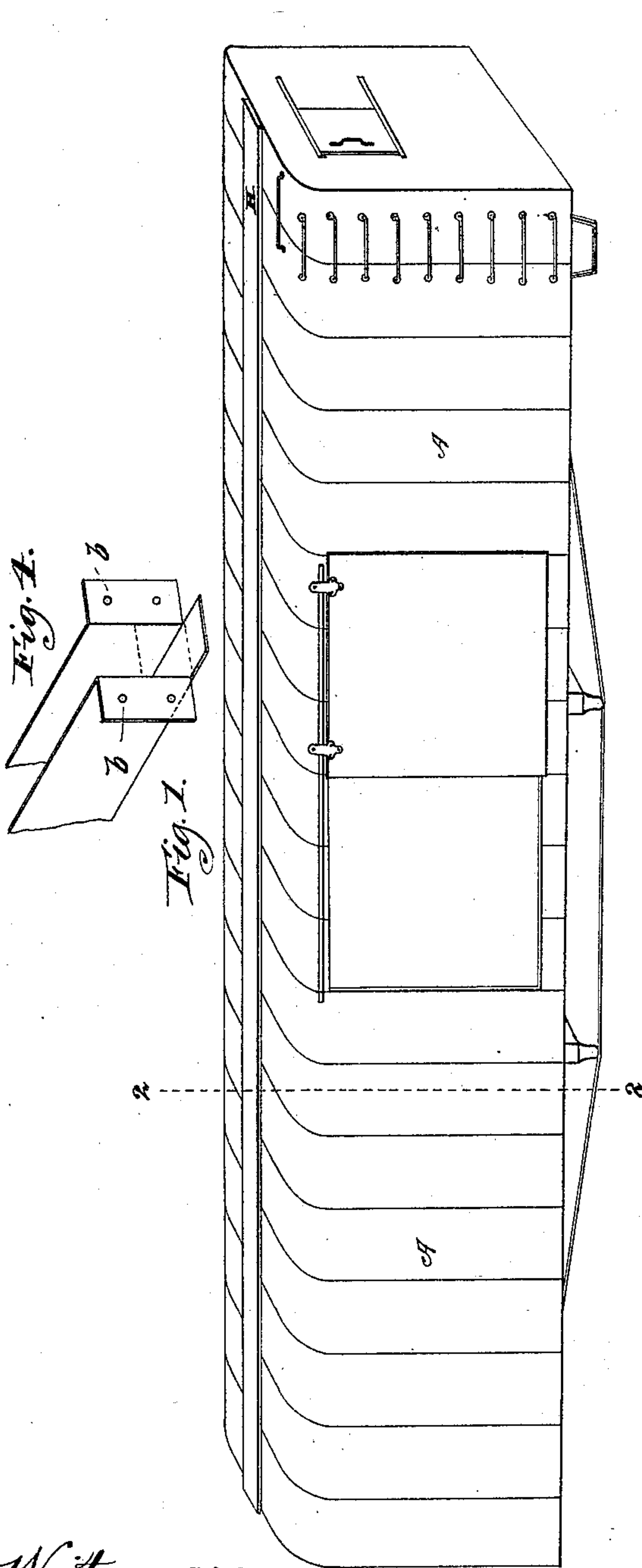
(No Model.)

2 Sheets—Sheet 1.

G. L. HARVEY.
CAR CONSTRUCTION.

No. 432,275.

Patented July 15, 1890.



Witnesses,
J. M. Mann
Douglas Dyer Smith

Inventor,
George L. Harvey

By Offield Towle
Attys,

(No Model.)

2 Sheets—Sheet 2.

G. L. HARVEY.
CAR CONSTRUCTION.

No. 432,275.

Patented July 15, 1890.

Fig. 2.

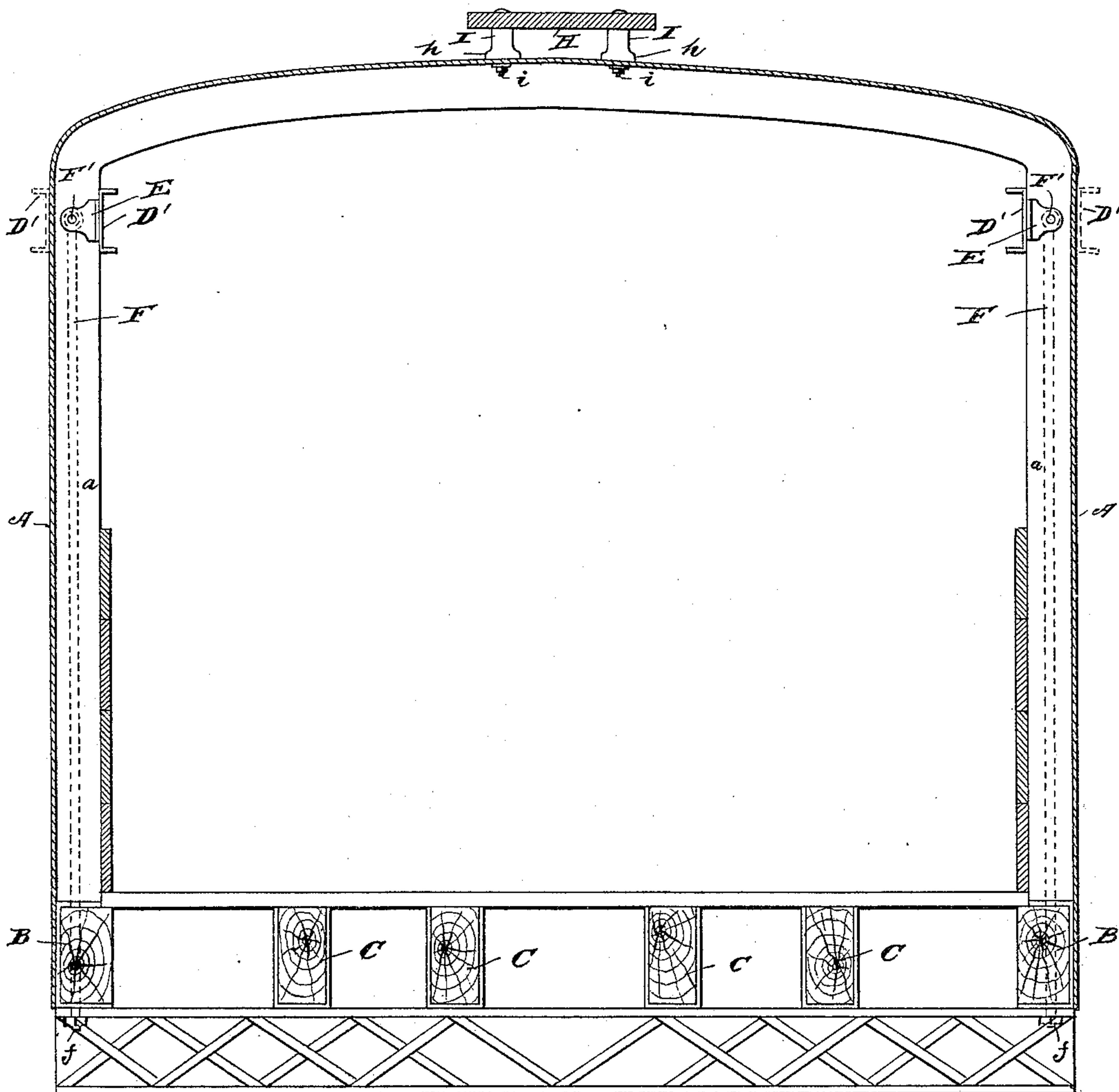


Fig. 7.

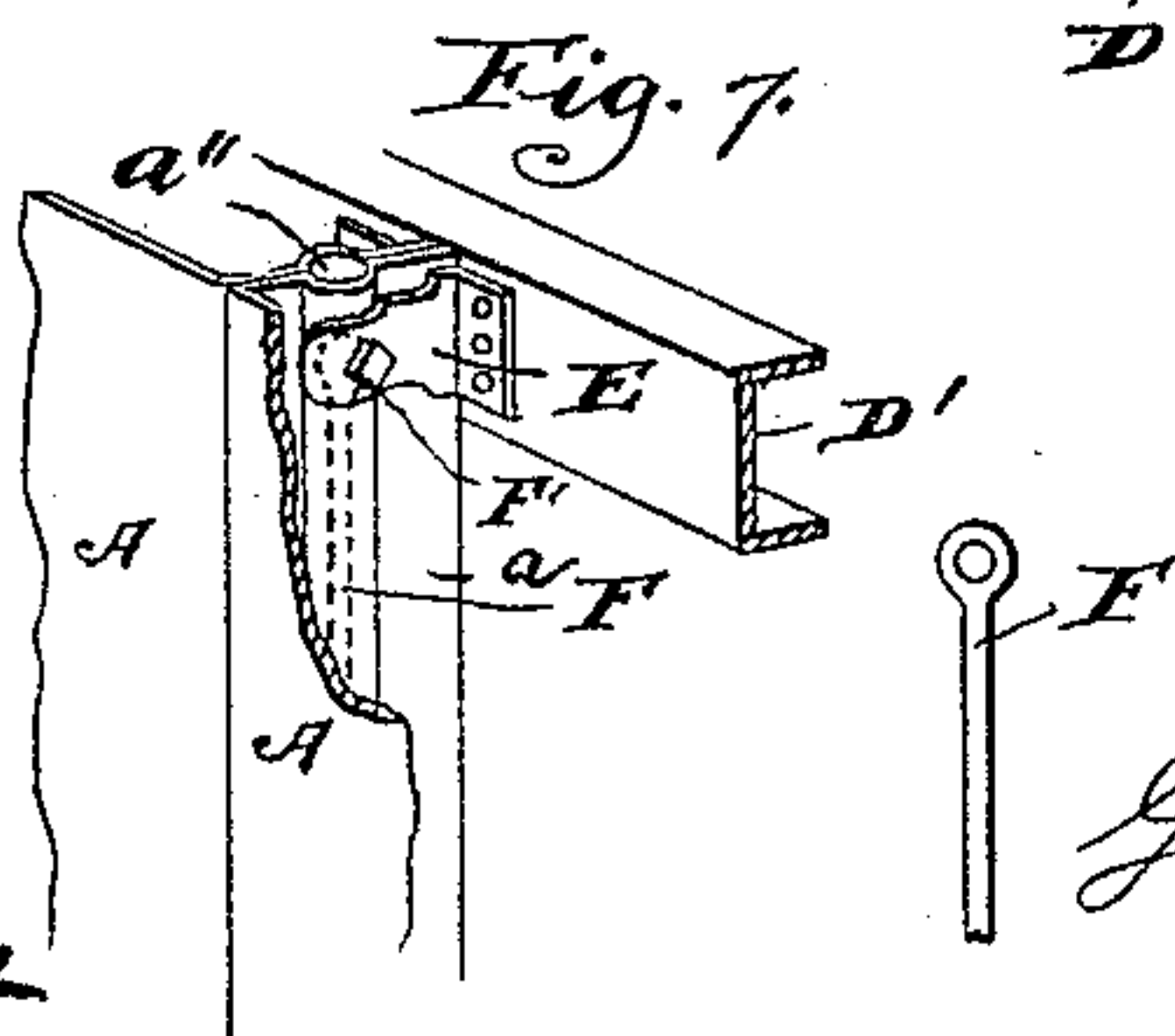
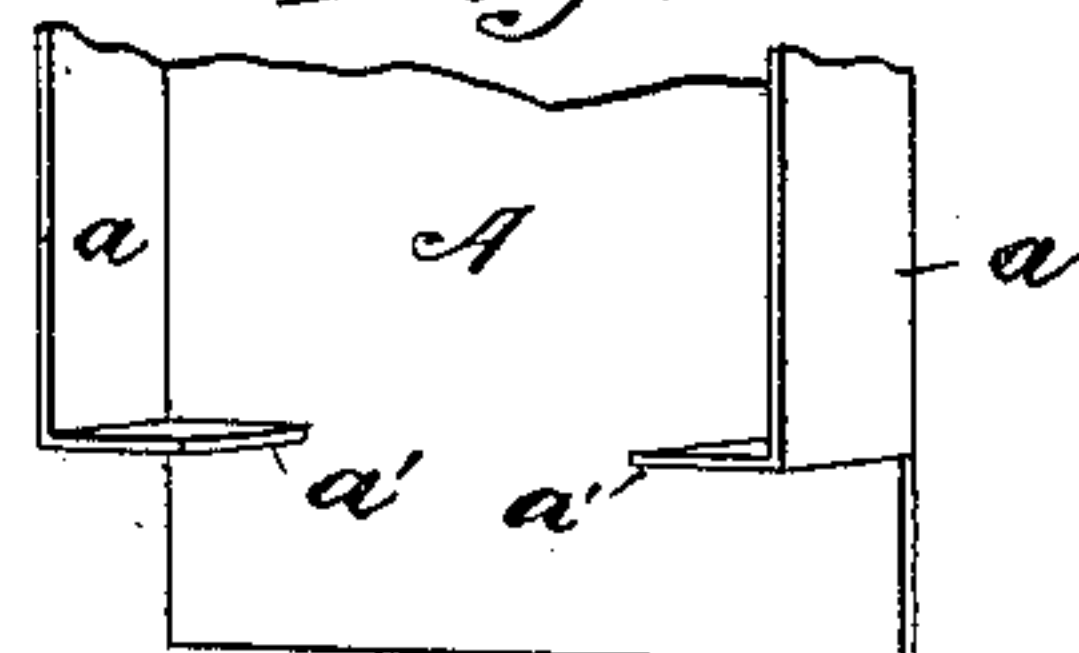


Fig. 9.



Witnesses,
J. S. Mann,
Rogers & Company

By

Inventor,
George L. Harvey
Offield & Towle
Attys.

UNITED STATES PATENT OFFICE.

GEORGE L. HARVEY, OF CHICAGO, ILLINOIS.

CAR CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 432,275, dated July 15, 1890.

Application filed March 19, 1890. Serial No. 344,497. (No model.)

To all whom it may concern:

Be it known that I, GEORGE L. HARVEY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Car Construction, of which the following is a specification.

My invention relates to the construction of metallic car-bodies; and the invention consists, first, in a novel construction of the sills of the car; second, in a novel means for strengthening the sides of the car toward the roof by means of a longitudinal beam, which is preferably connected by a tie-rod with the floor-sills, and, third, to a construction of a run-board on the top of the car.

In the accompanying drawings, Figure 1 is a perspective view of a freight-car embodying my improvements. Fig. 2 is a transverse sectional elevation thereof on the line 2 2 of Fig. 1. Fig. 3 is a perspective view of the car-sills at the end, partly broken away, and Fig. 4 a detail of the end of one of the longitudinal sills. Fig. 5 is a cross-sectional elevation of the door. Fig. 6 is a detail perspective view of the side of the car toward its top, with a longitudinal strengthening-beam secured to the outside of the metal plates, and showing, also, an interior brace to strengthen the sections at the point of connection with the plate. Fig. 7 is a detail perspective view, partly broken away, showing the connection of the tie-rod to the beam or plate. Fig. 8 is a sectional elevation of the roof of the car and through the run-board and its supports, and Fig. 9 is a detail perspective of the lower end of side section.

In constructing the body of the car I employ metallic plates of such length that when bent at two points they will provide a section of both of the vertical walls and of the roof of the car; but these metal sections may be constructed from shorter plates having their ends welded together. The side margins of these plates, which are marked A in the drawings, are bent to provide flanges α , which are preferably secured together by welding or by welding and riveting, and the completed car-body will be constructed by joining a sufficient number of these metallic sections edge to edge. The body-sections are secured at their lower ends to side sills B, which are pref-

erably U-shaped in cross-section, and the flanges of the side sections will preferably be bent at right angles at their lower ends to form a foot α' , seated on the upper flange of the U-beam and preferably welded or riveted thereto. The lower ends of the plates A pass outside the U-beams and will also be welded or riveted to the web thereof. It is evident that this construction will effectually provide against the separation of the body of the car from its sills B when in collision—a fault which is common in most cars as at present constructed. It is also economical.

The central sills may be constructed from channel-beams, and when so constructed will be placed with their open side upward, and may receive wooden stringers C, to which the floor is fastened. The ends of these sills will be flanged, as shown by the dotted lines in Fig. 3, and the flanges, which are marked b , will be secured to the web of an end sill B', which is an angle or channel beam whose flanges embrace or overlap the ends of the sills.

By reference to Fig. 4 it will be seen that in turning out the flanges b the webs of the beams are not cut away, but are preferably bent upward, as shown by the dotted lines in said figure, whereby the flanges are braced and additional surfaces secured for welding or riveting the sills together. By preference the web of the sills B will be welded or riveted to the lower flange of the end sills. The end sills are of such length as to project to the plane of the outside of the car-body and receive between their flanges the ends of the side sills. The web b' of the end sills will project beyond the outside of the side sills, and will be bent to lie flat on the outside of said sills, to which it will be secured by welding or riveting.

D represents a needle-beam in the form of a latticed girder secured transversely beneath the sills B.

To strengthen the body of the car toward its top, I employ a longitudinal beam D', which may be secured either upon the outside or the inside of the car, and for strength will preferably be a channel-beam and welded to the body-sections when secured on the outside, as shown in Figs. 2 and 6. When secured upon the inside, these beams will be

provided with the lugs or ear-pieces E and adapted to embrace the flanges *a* of the body-sections, to which they may be riveted or welded.

5 F are tie-rods, whose upper ends may terminate in an eye and be secured by the passage of a bolt F' transversely through the lugs E, through the eye of the bolt, and preferably through the flanges *a* of the body-section, as shown in Fig. 7. By reference to said
10 figure it will be seen that the flanges *a* are corrugated longitudinally, and when placed together provide the aperture *a''* to receive the tie-rod. The lower end of the tie-rod will
15 pass through the sills B and their lower ends secured by the nut *f*.

The car-doors are constructed from metal plates G, whose margins are flanged, and a number of these plates may be welded to-
20 gether to make a door of the desired width and strength. The plates will have their margins *g* bent inwardly, as shown in Fig. 5, and the margins of these flanges will be welded to the body of the plate, as at *g'*. The ends
25 of the plates will preferably be similarly treated, and thus is provided a door whose edges are strengthened by a continuous marginal flange strong enough to withstand hard usage and yet sufficiently light and inexpen-
30 sive. A door of this character when fitted to the frame will add to rather than impair the strength of the car-body, and I propose to so connect the door to the car that it may be fitted into, instead of over, the opening.

35 The run-board H is supported upon the pillars I, which are preferably castings having an aperture for the passage of a securing bolt or rivet *i*, and will also have the cup-shaped flange *h*, which is seated on the

roof. This construction prevents any leak- 40 age through the aperture and furnishes a very strong yet inexpensive means for mounting the run-board.

I claim—

1. In car construction, the combination 45 of the longitudinal floor-beams constructed from channel-iron and having their flanges and webs bent to adapt them for engagement with the end sills, said end sills constructed from channel-iron and having an integral 50 portion projected beyond the plane of the sides of its side sills and adapted to be bent upon and secured to said sills, substantially as described.

2. A car-door constructed from a metal 55 plate or plates, having its margins bent at an angle to the body of the door and returned, and the edges of said margins secured to said body, substantially as described.

3. In car construction, a run-board mounted 60 upon metallic supports having an aperture for the passage of bolts or rivets, and a flanged base adapted to bear on the roof of the car, substantially as described.

4. In a car, the combination, with the body 65 constructed from a plurality of vertical sections, each composed of a metal plate or plates having flanged margins whereby the sections are secured together, of a longitudinal beam or plate secured with said flanges toward the 70 roof by means of lugs on the plate, and tie-rods secured with said plate and with the floor-timbers, substantially as described.

GEORGE L. HARVEY.

Witnesses:

FREDERICK C. GOODWIN,
C. C. LINTHICUM.