

No. 639,498.

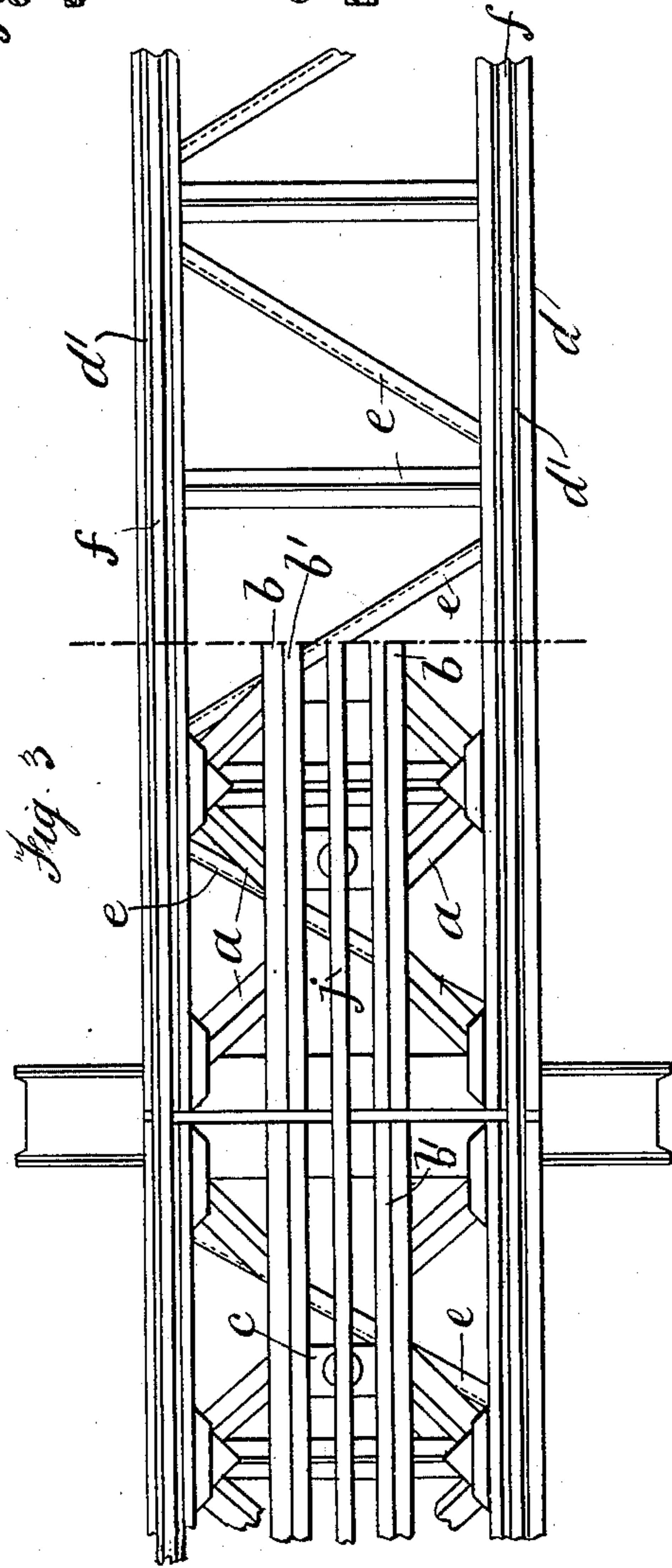
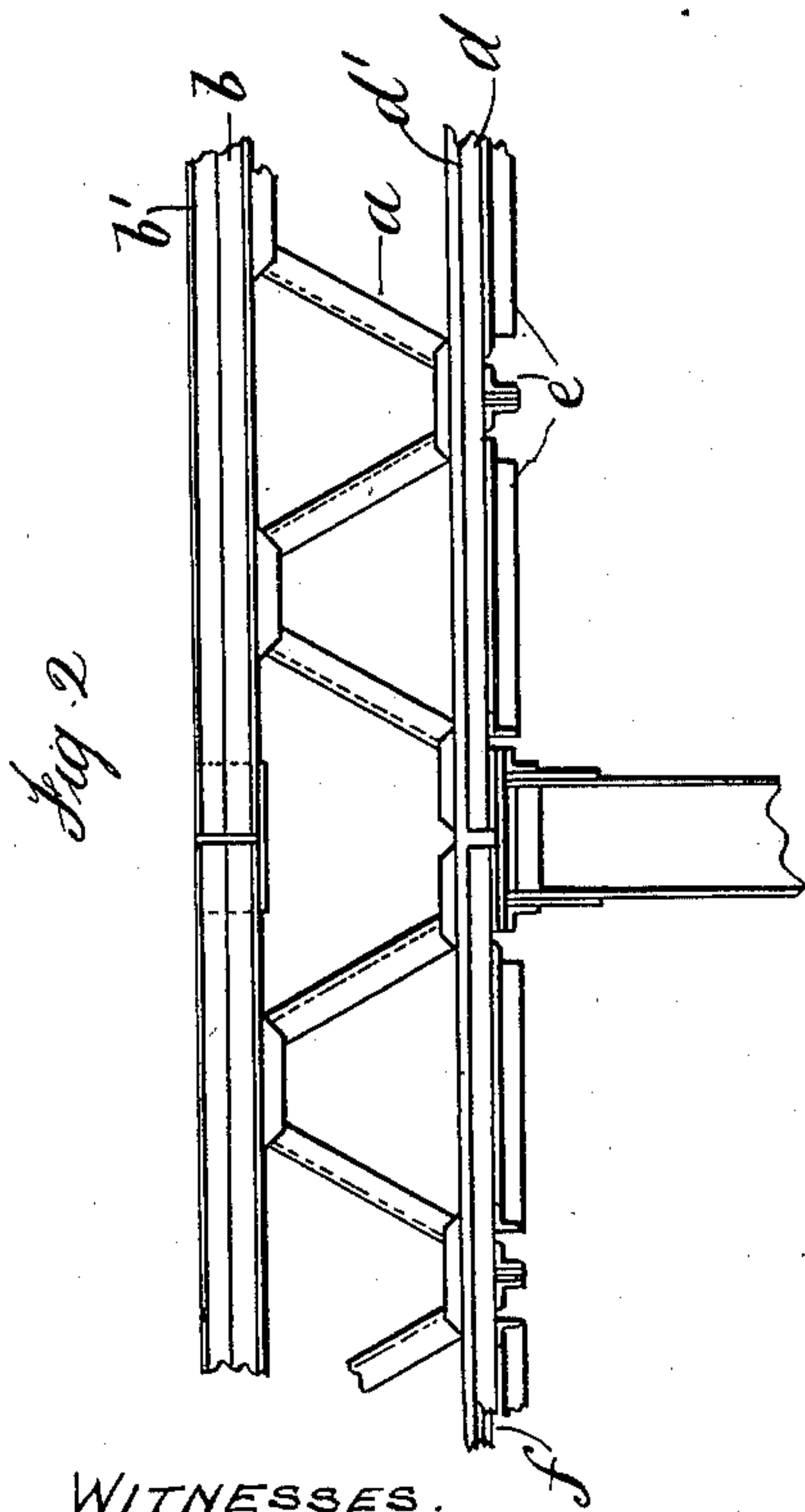
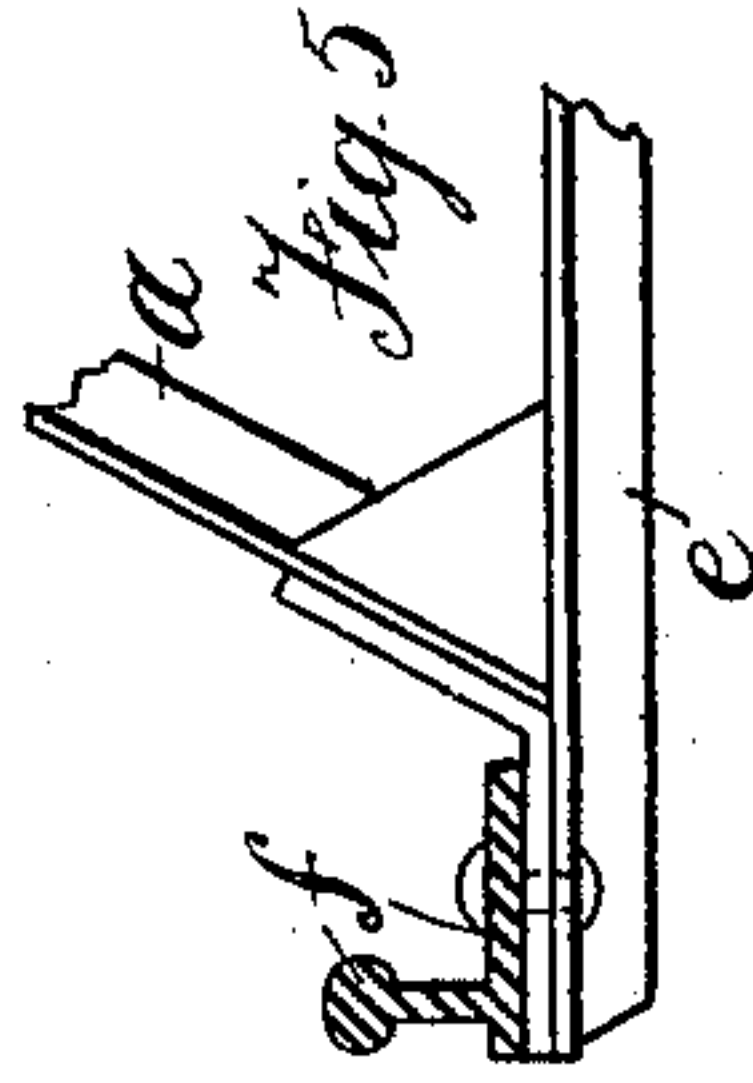
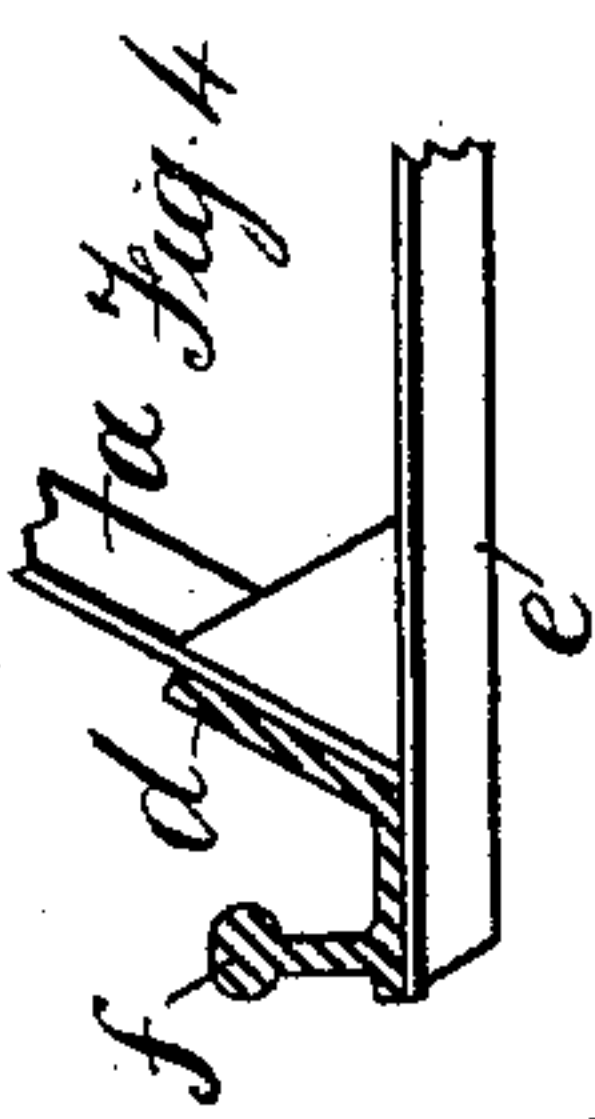
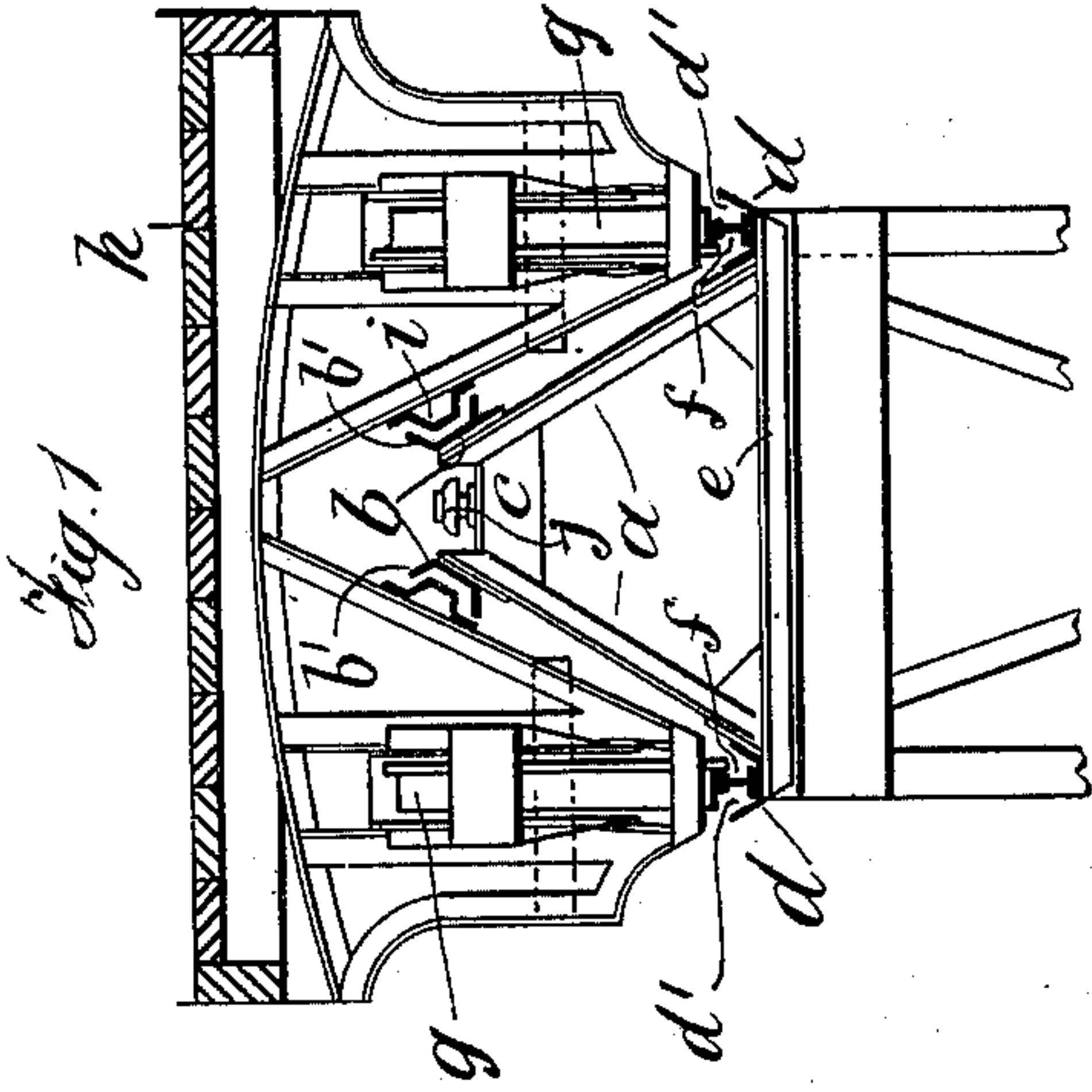
Patented Dec. 19, 1899.

G. BARKER.

ELEVATED OR GIRDER RAILWAY OR TRAMWAY.

(Application filed Dec. 21, 1897.)

(No Model.)



WITNESSES.

Charles Seel.
Alam Williams

INVENTOR.

Charles Barker

UNITED STATES PATENT OFFICE.

GERALD BARKER, OF LONDON, ENGLAND.

ELEVATED OR GIRDER RAILWAY OR TRAMWAY.

SPECIFICATION forming part of Letters Patent No. 639,498, dated December 19, 1899.

Application filed December 21, 1897. Serial No. 662,892. (No model.)

To all whom it may concern:

Be it known that I, GERALD BARKER, a subject of the Queen of Great Britain, and a resident of London, England, have invented
5 new and useful Improvements in Elevated or Girder Railways or Tramways, (for which I have obtained a patent in Great Britain, No. 4,938, bearing date March 9, 1894,) of which the following is a specification.

16 This invention relates to railways or tramways which are carried on girders generally elevated above the ground and supported on piers or columns, although the girders may in some cases be laid simply on the ground;
15 and the object is to construct such girders in a novel manner, whereby great strength to resist strains of all kinds, particularly torsional strains, shall be secured, with comparative lightness and simplicity in construction and
20 little obstruction to light when elevated above ground, and also whereby the height from the under side of the girders to the top of the main rails shall be reduced to a minimum and security against vehicles being upset
25 from off the girders shall be insured. For these purposes I make use of two girders, either plate or latticed, inclined toward each other at the top, so that the top booms meet or nearly meet, such booms being braced together, or they may be formed as one. The
30 bottom booms of the girders are also suitably braced together by horizontal bracing, so that a single girder triangular or nearly triangular in cross-section is formed. The main rails,
35 on which the vehicles run, are carried by or formed as part of the bottom booms, and guard-rails or like safety devices are attached to the girder at or near to the apex of the triangle, or the top booms are formed as guard-
40 rails, so as to prevent vehicles being upset.

On the accompanying drawings, Figure 1 is a cross-section, Fig. 2 a longitudinal elevation, and Fig. 3 a plan, of a girder-railway under my invention. Figs. 4 and 5 are detail
45 views of modifications of construction.

50 *a* are two girders of open construction inclined toward each other, the top booms *b* being braced or otherwise connected together by bracing or other connection *c* and the bottom booms *d* being braced together by triangulated bracing *e*, so that practically a single girder is formed approximately triangular in

cross-section having three webs and three booms, each two adjacent edges of the webs having a boom in common. The sides being
55 thus inclined, little obstruction is offered to light so far as adjacent buildings may be concerned, and also great strength is obtained, particularly to resist torsion, which occurs when the vehicles oscillate or whenever the
60 rails become unequally loaded. The bottom booms are in this case formed as channels *d'*, (although other forms may be used,) in which are secured the main rails *f*, upon which rails the wheels *g* of the vehicles *h* run. The chan-
65 nels are conveniently made use of to convey any water to down-spouts at intervals. The bottom bracing *e* is extended under the channels *d'* to support the same. The bottom
70 booms may, however, be formed in any desired way and the main rails secured to them by bolting or being carried on brackets, or a special section combining rail and boom may be employed, (see Fig. 4,) or the rails alone
75 may form the booms, (see Fig. 5,) as found convenient. The rails also, if desired, may be utilized to form part of the bottom boom by being securely riveted thereto. The top
80 booms *b* are preferably of channel or L sections, so arranged that one lip *b'* acts as a guard-rail, under or alongside which pass the guard-pieces *i*, attached to the vehicles *h*, thereby preventing the vehicles being upset
85 off the girder. The top booms, however, may be of any convenient construction and have guard-rails secured thereto in any desired way.

When electricity, cable, or rack is employed for moving the vehicles, the conductor, cable, or rack may be conveniently arranged
90 between the top booms *b*, as shown at *j*.

The girder-railway as above described may be supported in any usual way by piers, girders, arches, suspension wires or chains, or cantalivers, as found desirable.
95

I do not confine myself to the exact arrangement of parts or to the details shown, as it is obvious that many different designs may be made without departing from the nature of my invention; but
100

What I claim is—

1. In elevated or girder railways, a girder made up of three booms arranged in triangular form all connected by plate or triangu-

lated bracing, the two lower booms carrying the main rails, the bracing members all being in the planes of the sides of the triangular girder; substantially as described.

5 2. In elevated or girder railways, a girder formed of three booms arranged in triangular form all connected by plate or triangulated bracing, the upper boom being formed of two halves braced together, and the two
10 lower booms carrying the main rails, the bracing members all being in the planes of the sides of the triangular girder; substantially as described.

15 3. In elevated or girder railways, a girder formed of three booms arranged in triangular form all connected by bracing, the upper boom being formed in two halves braced together

and each half being arranged to act as a guard-rail, the two lower booms carrying the main rails, the bracing members all being in the
20 planes of the sides of the triangular girder; substantially as described.

4. An elevated or girder railway formed of three booms arranged in triangular form, each being connected to the others by suitable
25 bracing, the two lower booms supporting the main rails, the bracing members all being in the planes of the sides of the triangular girder; substantially as described.

GERALD BARKER.

Witnesses:

CHARLES PEEL,
ALAN WILLIAMS.