

No. 624,427.

Patented May 2, 1899.

E. M. BOYNTON.
RAILWAY.

(Application filed Oct. 29, 1898.)

(No Model.)

3 Sheets—Sheet 1.

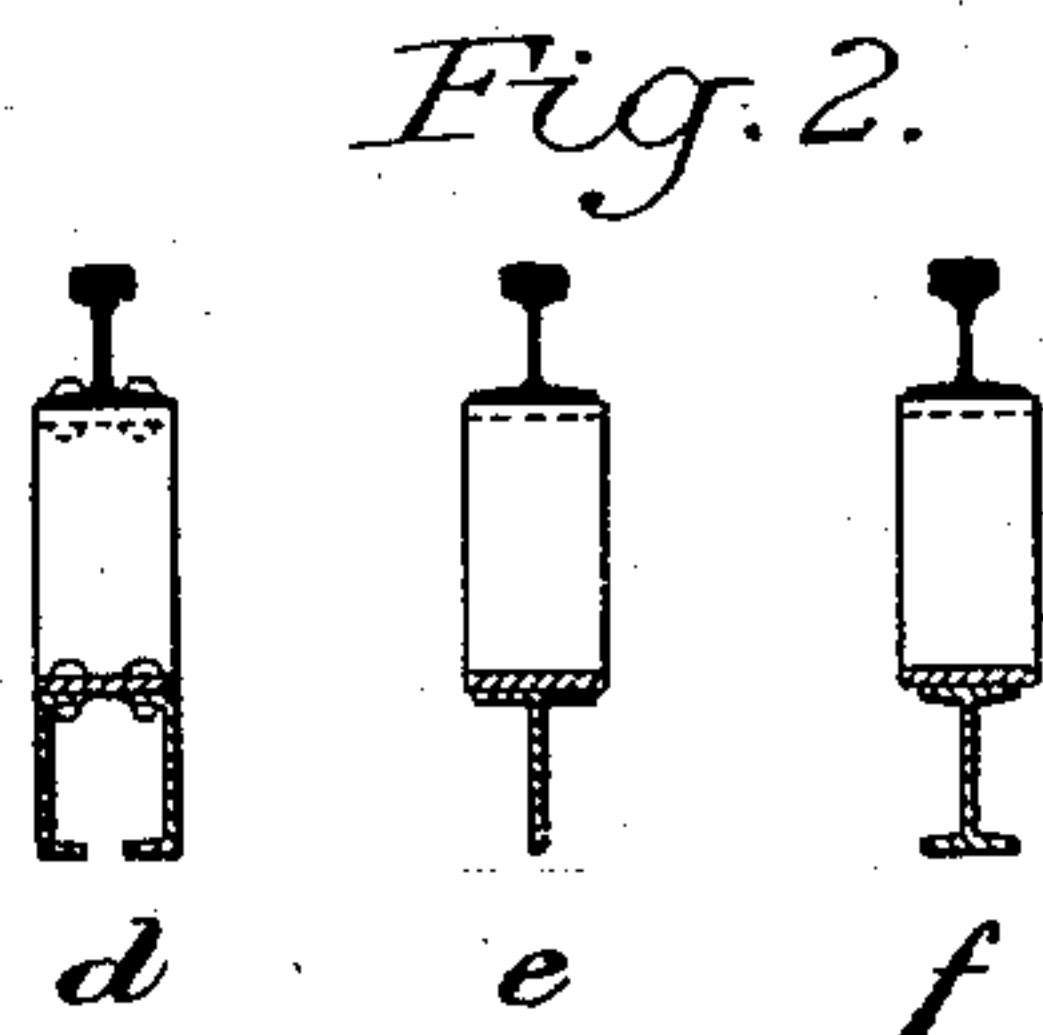
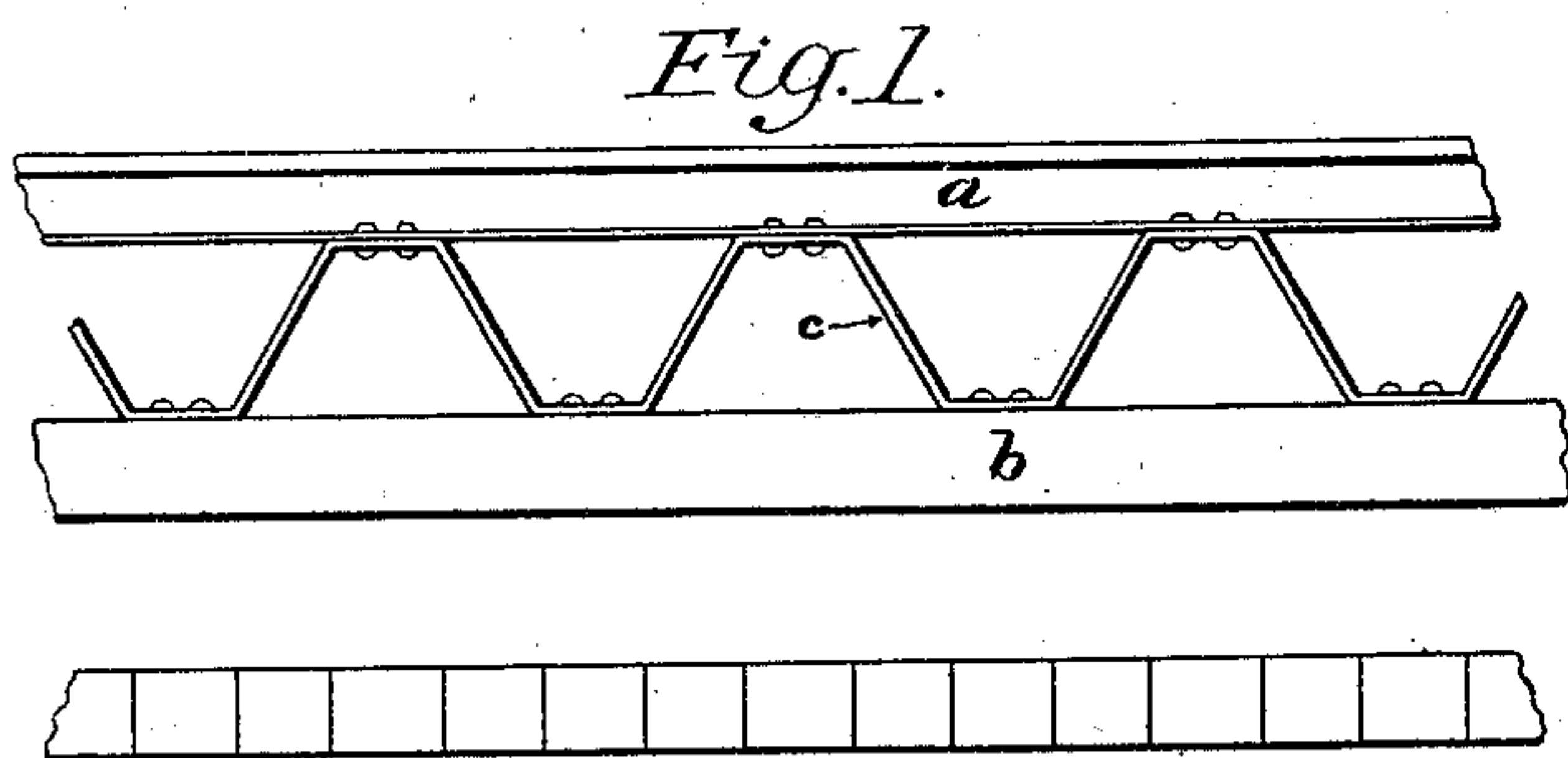


Fig. 4.
g

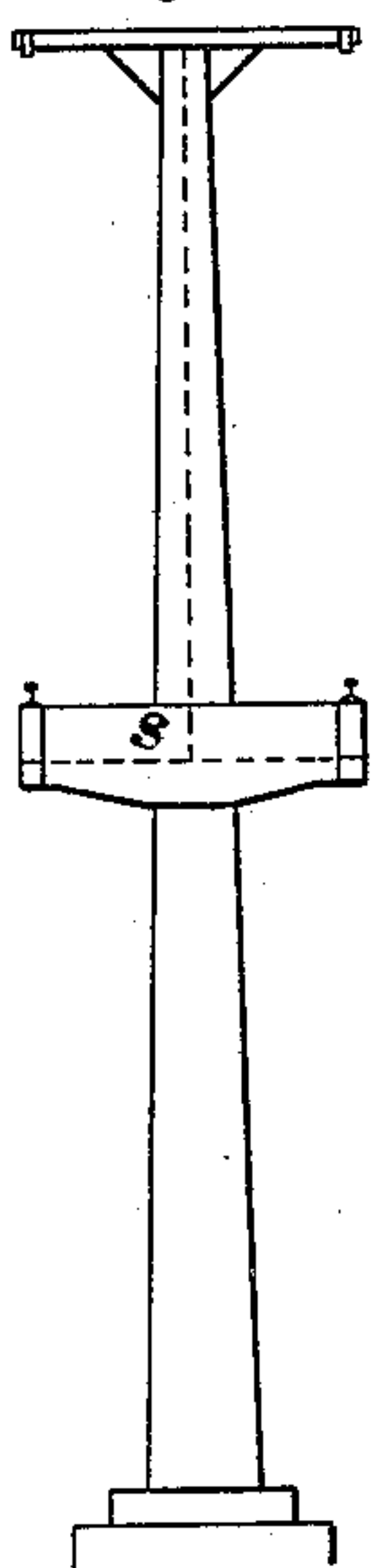
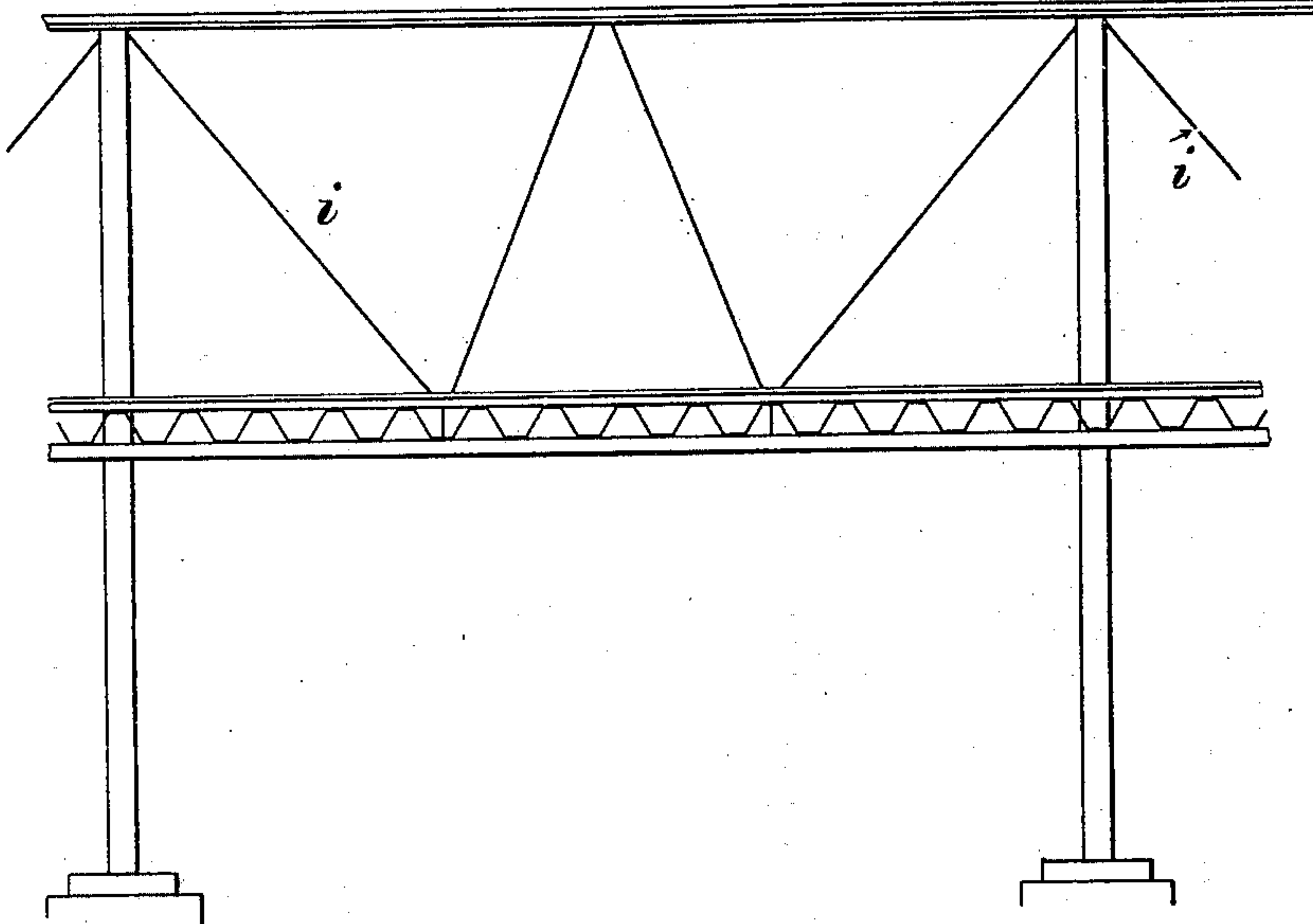


Fig. 3.
h



WITNESSES
E. P. Shaw
C. W. Sumner

E. M. Boynton INVENTOR

No. 624,427.

Patented May 2, 1899.

E. M. BOYNTON.
RAILWAY.

(Application filed Oct. 29, 1898.)

(No Model.)

3 Sheets—Sheet 2.

Fig. 5.

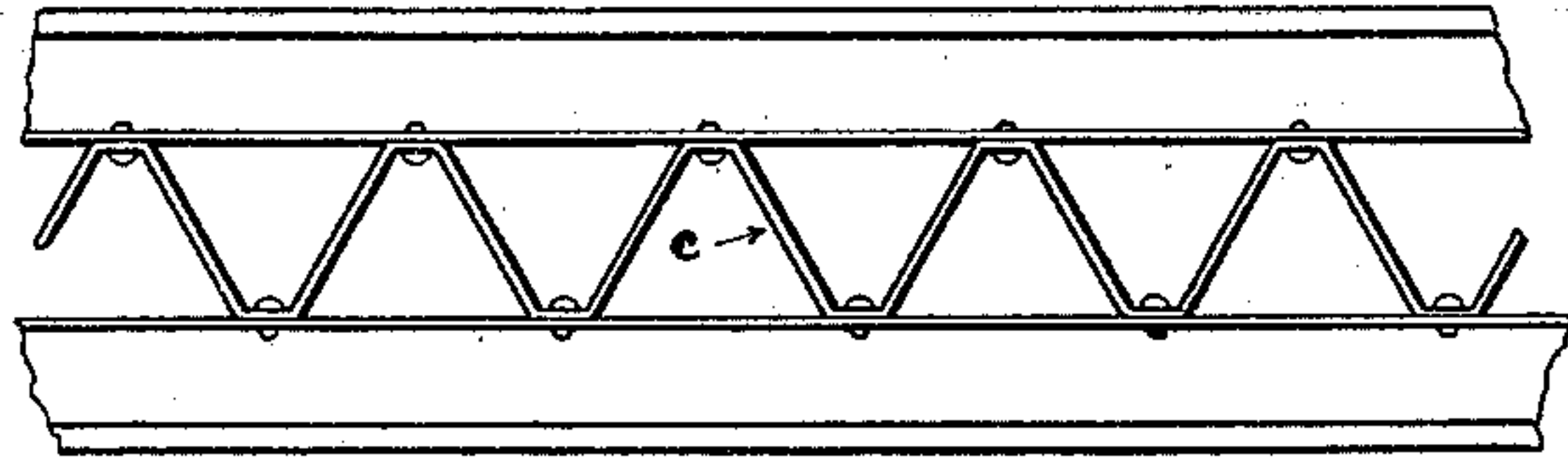


Fig. 7.

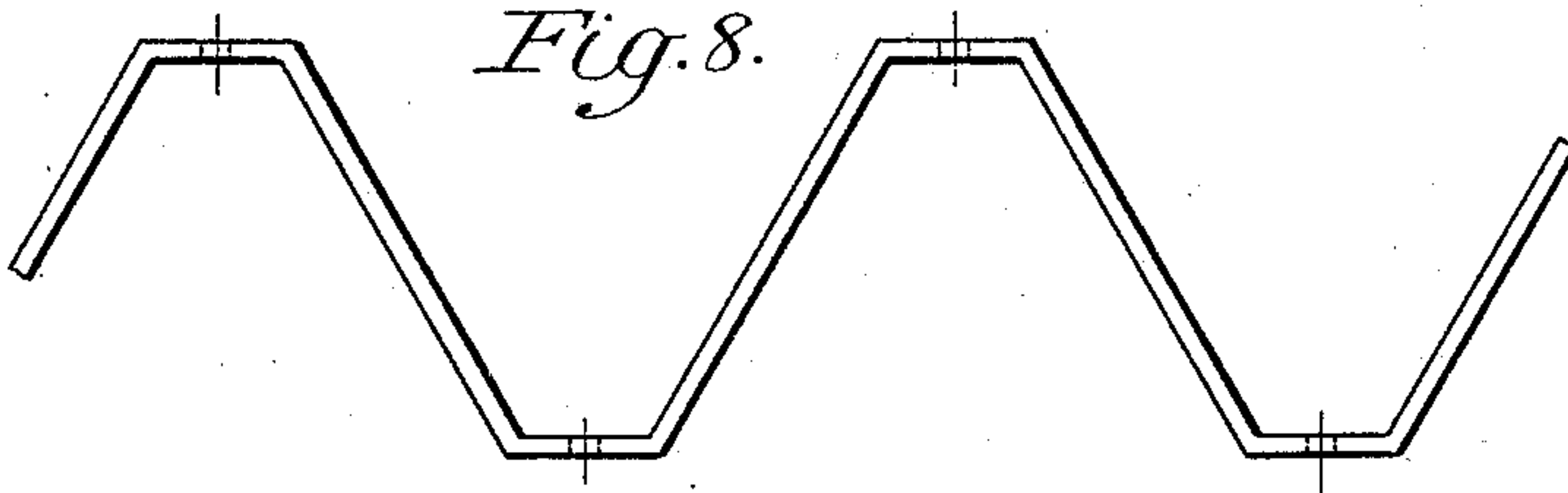


Fig. 8.

Fig. 6.



Fig. 9.

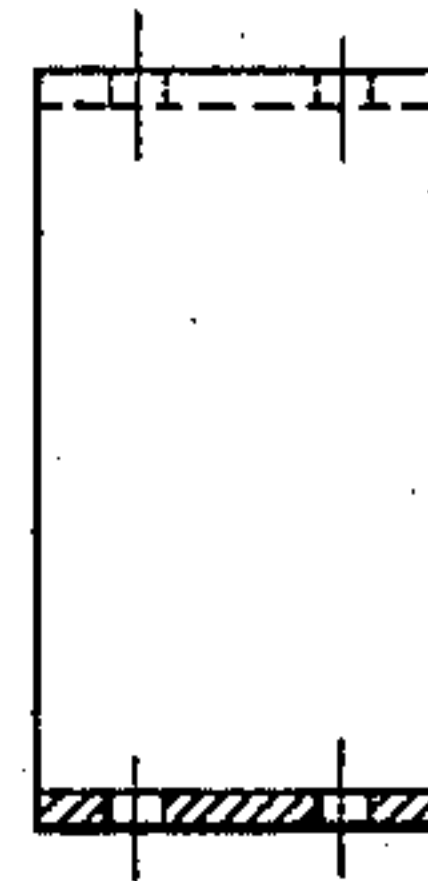
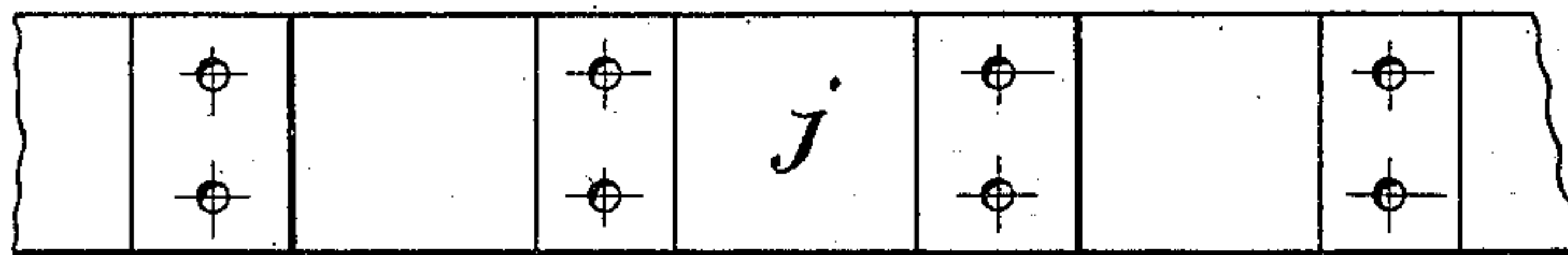


Fig. 10.



WITNESSES:

E. P. Shaw
C. W. Sumner

INVENTOR

E. M. Boynton

No. 624,427.

E. M. BOYNTON.
RAILWAY.

(Application filed Oct. 29, 1898.)

Patented May 2, 1899.

(No Model.)

3 Sheets—Sheet 3.

Fig. 11.

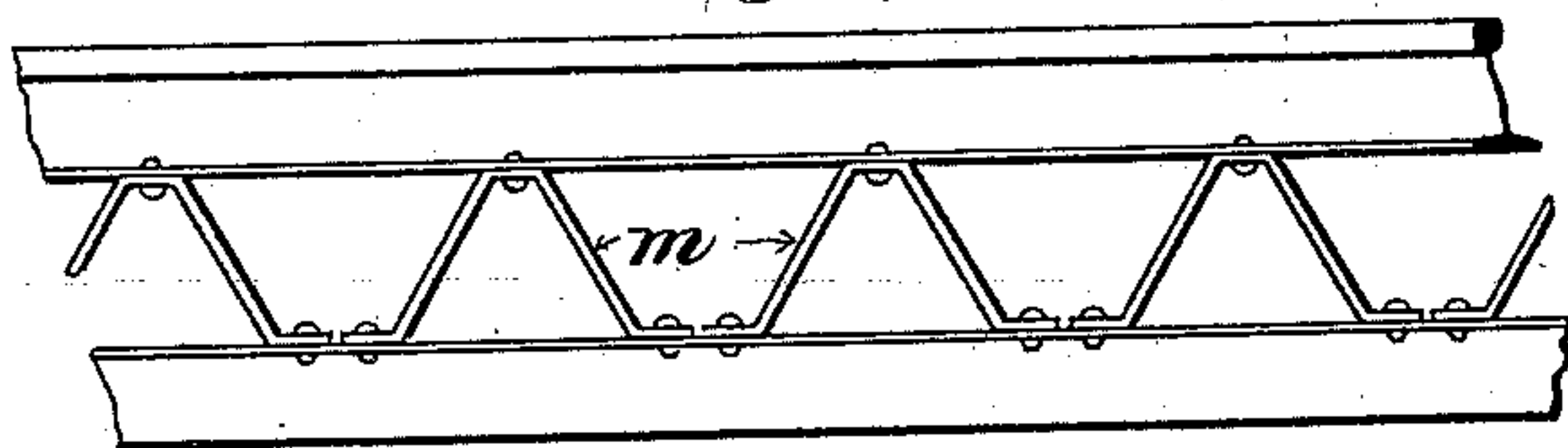


Fig. 13.

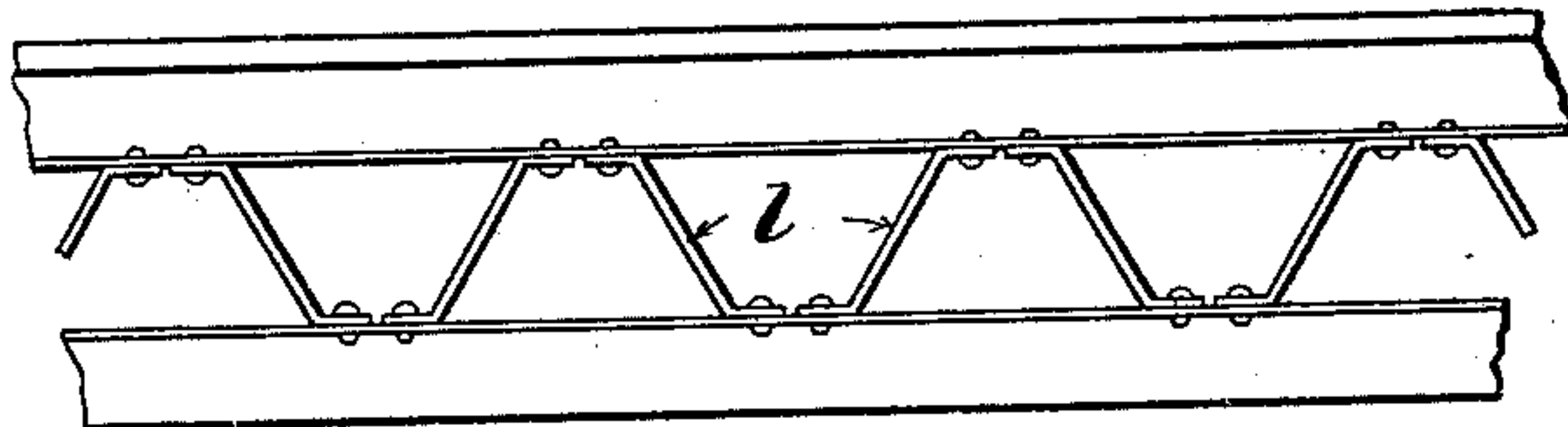


Fig. 12.

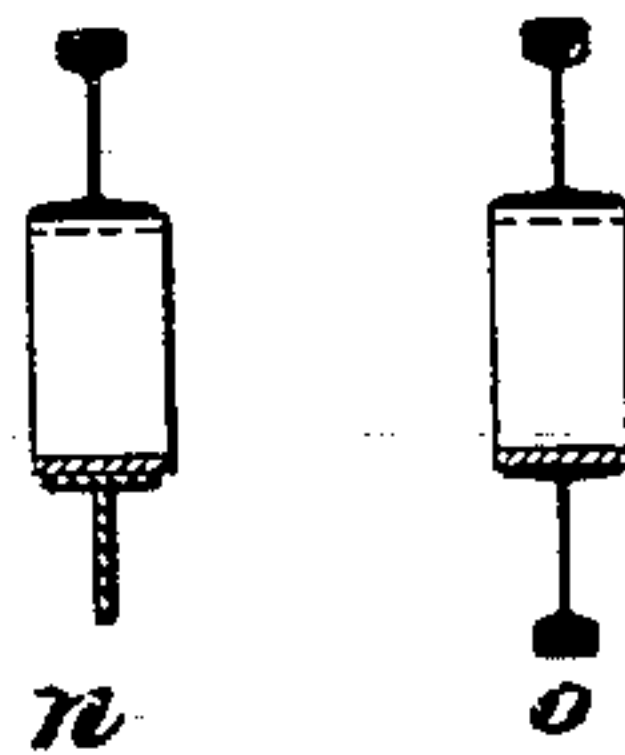


Fig. 14.



Fig. 16.

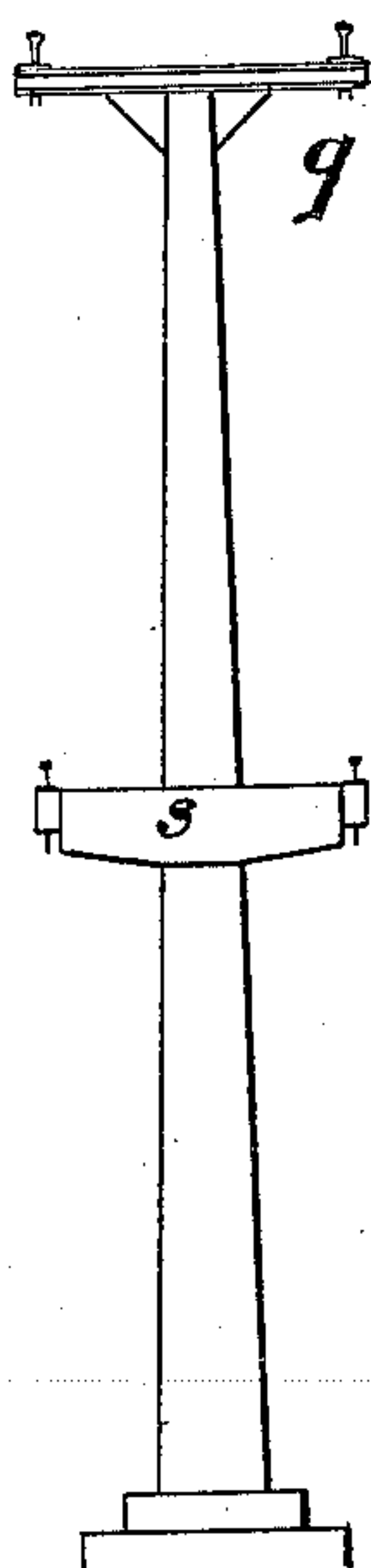
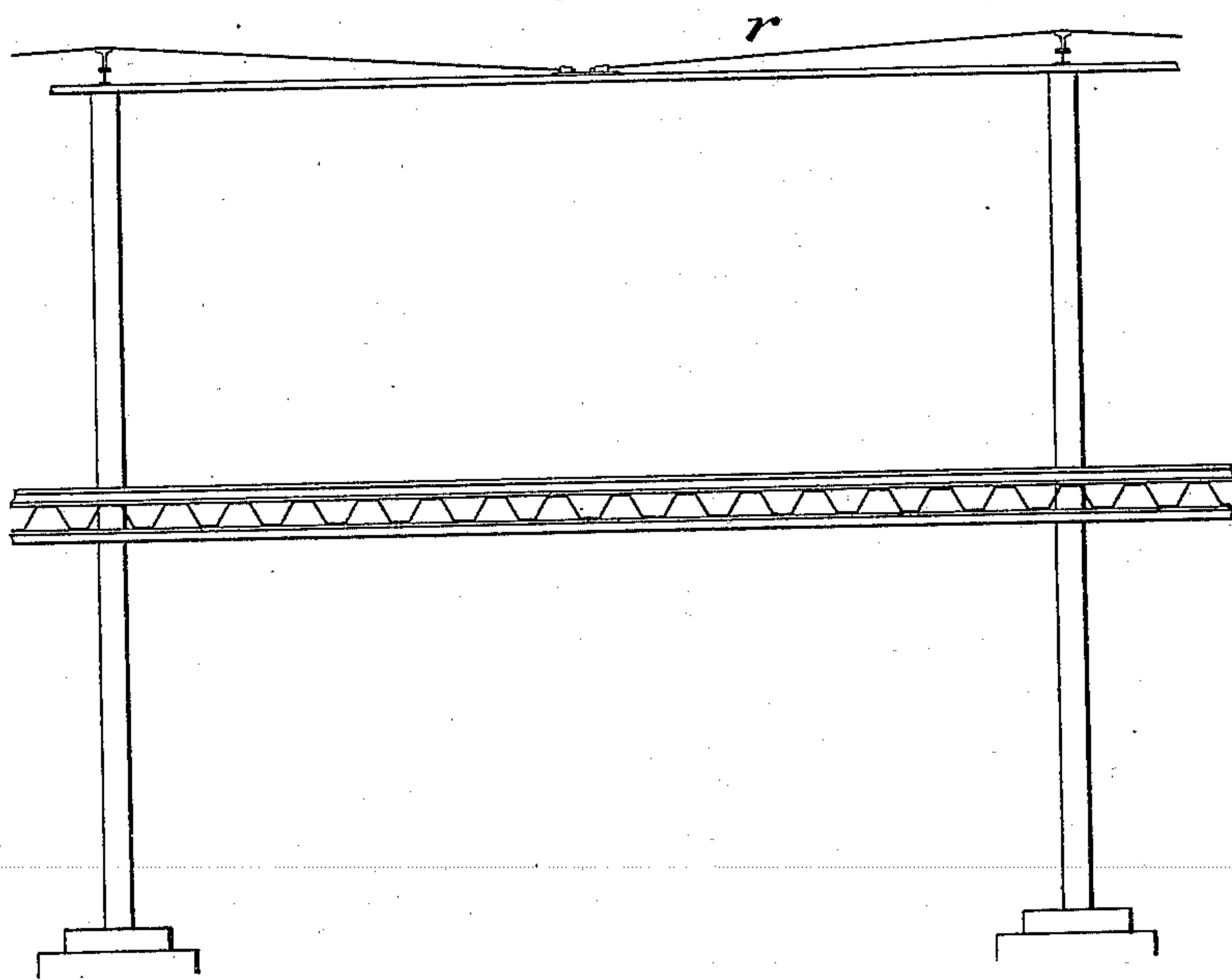


Fig. 15.



WITNESSES:

E. P. Shaw
C. W. Sumner

INVENTOR

E. M. Boynton

UNITED STATES PATENT OFFICE.

EBEN MOODY BOYNTON, OF WEST NEWBURY, MASSACHUSETTS.

RAILWAY.

SPECIFICATION forming part of Letters Patent No. 624,427, dated May 2, 1899.

Application filed October 29, 1898. Serial No. 694,925. (No model.)

To all whom it may concern:

Be it known that I, EBEN MOODY BOYNTON, of West Newbury, in the county of Essex and State of Massachusetts, have invented certain
5 new and useful Improvements in Railways, of which the following is a specification.

The object of this invention is to improve the methods of construction of railways and the building of the same, their posts, cross-
10 girders, and especially their supporting-girders and rail combined, of which the following is a true and substantially accurate description to enable any person to construct the same.

15 I do not claim to have discovered the lightening of girders by a trestle or lattice, broadly, as the construction and connection of ordinary structural iron by similar processes are well known; but it has been found necessary
20 to make the extended stringers, I-beams, plate-beams, or trestle-supporting girders separate from the rails and by laying wooden ties upon them or other substances cushion the rails resting upon the ties or upon some
25 soft material other than metal designed to receive the impact and cushion the rolling-wheels and the force transmitted in the operation of trains.

Figure 1 is a side elevation of my combined
30 rail and girder. Fig. 2 is a cross-section of the same, showing three forms of girder. Fig. 3 is a side elevation of an elevated road embodying my invention. Fig. 4 is an end elevation of the same. Figs. 5 and 6 represent
35 side elevation and cross-section, respectively, of a modification. Figs. 7, 8, 9, and 10 are detail views of the lattice-bar. Figs. 11 and 12 show side and end elevation, respectively, of another modification. Figs.
40 13 and 14 represent additional modifications. Figs. 15 and 16 show side and end elevation, respectively, of an elevated road using my improved girder and rail.

By the method shown I use a less quantity of steel, with great economy in weight,
45 in the cost, and time of construction, and secure a lighter, safer, and better construction than has been heretofore known by connecting two deep girder-rails or deep T-rails together by a light lattice, which, as shown in
50 Fig. 1, lattice *c* is made of a continuous

crinkled bar molded in shape to support the train upon the rail *a* and connect and transfer a portion of the strain to the rail *b* below, so that two rails presumably of the depth of
55 from six to twelve inches are enabled by the extension of the connecting-lattice *c* to carry a loaded train of bicycle railway-cars or other cars with a less friction, with greater elasticity, and with much greater strength in
60 proportion to the amount of steel required than by any other system heretofore known. Said supporting continuous lattice-bar may be made with a foot or riveting face-contact sufficiently long to admit of two rivets or
65 more being fastened on each side through the foot of the rail, two on each side of the web of the T-rail or girder-rail. These take the place of spikes that now fasten the rails of
70 railways to the ties and are much more secure fastenings for rails than any other nails driven into wood can be, and the lattice-bar is preferably constructed sufficiently light to give
75 an elastic support to the wheels of the train as they pass over the rail above, and thus save the destruction of rails, wheels, motors, and the unpleasant sensation to the passengers in the
80 car. Besides all wood is thus eliminated, an important matter in street-railways of cities where fires burning the oily wood in conflagrations endanger the entire structure.

d, *e*, and *f* show girders constructed with deep T-rails, forming a portion or one-half the girder-rail of Sheet 1.

g is an end view of a single-post structure
85 with the compound rail and girder-beam in place.

h is a side view of the girder and also of the guiding-rail and current-conductor of
90 single railways.

The supports *i* and *i'* are fastened to a cross steel I-beam or other cross-girder, which may be in any suitable form and receives one or more of said supports *i* and *i'*, which may be
95 either single, double, or triform to support said light lattice-beam from the center and with fastenings running diagonally beneath the trains and supporting to some degree the weight resting upon the rail *a* in the passage
100 of said trains.

In Sheet 2 a lighter form of lattice with a shorter face connection and a single rivet is

shown, as *c*, Sheet 2, connecting similar rails or rail and steel girder, as are shown in Sheets 1, 2, and 3.

j represents the cross-girder used in each of the Sheets 1, 2, and 3 and requires no further description, as it may be of any suitable form to connect the supporting-girders or brace them, either direct at right angles or with angles diagonally to protect against wind strains. It is fastened directly to the base or side of the steel rails or any part of the girder where it may be most conveniently placed or fastened to strengthen the structure and connect the same together.

k clearly delineates two steel rails connected and is an end view of the same, the same being reversible.

In Sheet 3 the same essential result is sought to be obtained by a sectional light adaptation of angle-bars or T bars and braces bent either in single, as in letter *l*, Sheet 3, or double, as in letter *m* of said Sheet 3, and said figures may be interspersed and made either of plate or of angle-iron where it is inconvenient to make longer angles to take the place of the crinkle-bar. These plates may be made either flat of any suitable width to fasten to the supporting-rail and to the under plate or rail or rolled steel girder or they may be made with angle-steel, and thus be much lighter and yet sufficiently strong to support the rail to which they are riveted. Any reasonable number of rivet-holes, it is manifest, may be added by lengthening the contact-faces of these single or double lattice-braces that connect the rails and support the train.

n, *o*, and *p* are end views of the girders described.

q is an electric conductor for the guidance of single-rail trains where desirable and is an end view.

r is a side view of a convenient method of support where wooden beams are used or may be used for metal beams.

s is a plate equivalent to the cross-ties above described, but is fastened directly to the post to support the girders at the right and left of the same in the end view shown.

Having thus described my invention, I claim in the construction of railways, and especially of single-rail railways—

1. A steel rail and girder combined, containing a single supporting-rail above, latticed to a similar rail below in the manner set forth, with a crinkled steel bar securely riveted to cushion the same and hold the same in place with greater safety, elasticity and lightness and with less shadowing of the street than has been heretofore known.

2. In combination, a rail, a supporting steel angle-beam, and a sectional bracing between said rail and angle-beam, substantially as described.

3. A steel rail and girder combined, containing a single supporting-rail above, latticed to a similar rail reversely arranged below, with a crinkled steel bar or lattice securely riveted to cushion the same, said rail and girder adapted to be reversely used, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

EBEN MOODY BOYNTON.

Witnesses:

A. W. CLAPP,

B. W. SUMNER.