

(No Model.)

2 Sheets—Sheet 1.

W. B. MACK.  
ELEVATED RAILWAY.

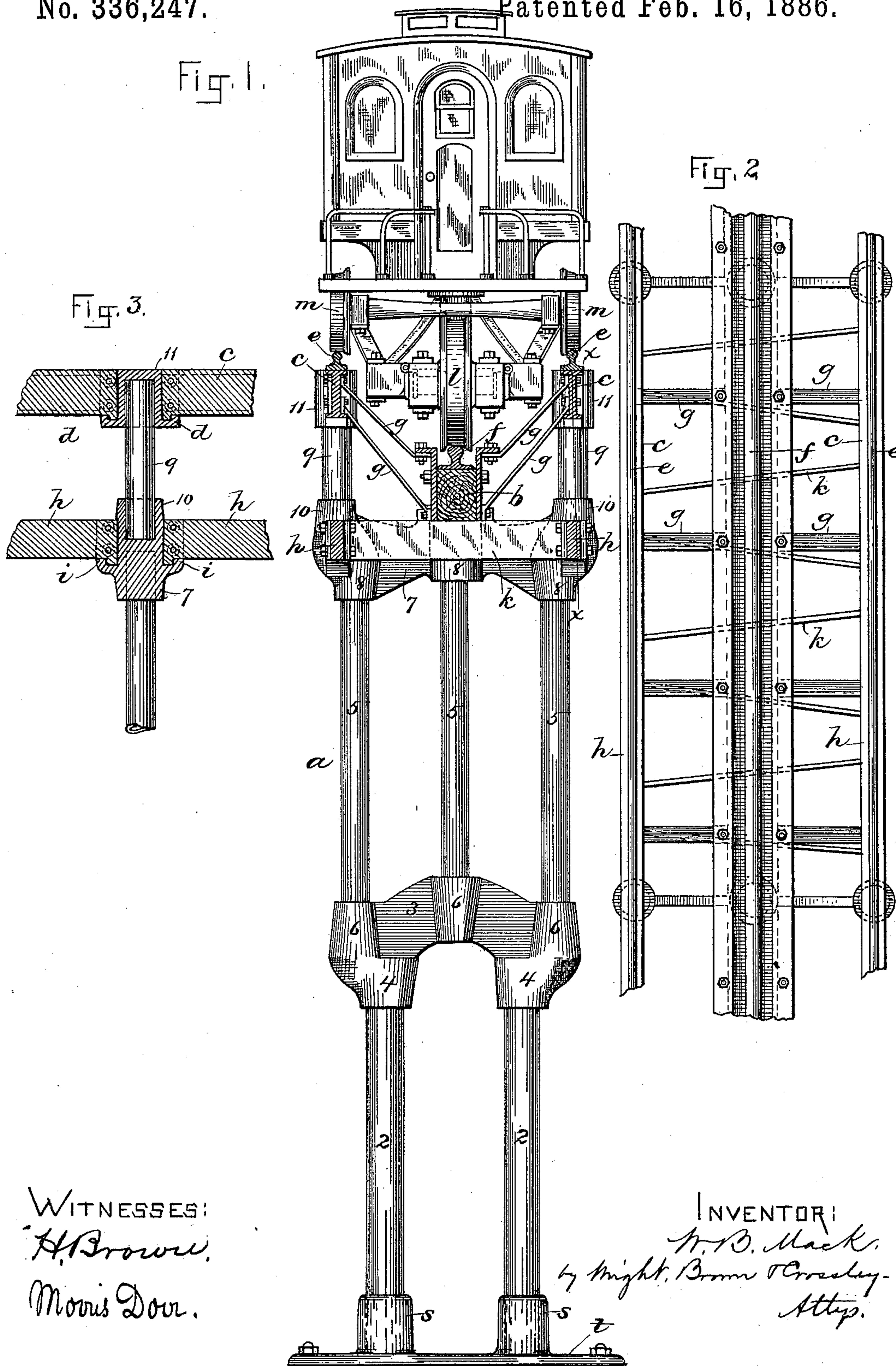
No. 336,247.

Patented Feb. 16, 1886.

Fig. 1.

Fig. 3.

Fig. 2.



WITNESSES:  
H. Brown,  
Morris Dorr.

INVENTOR:  
W. B. Mack,  
by Knight, Brown & Crossley,  
Attys.

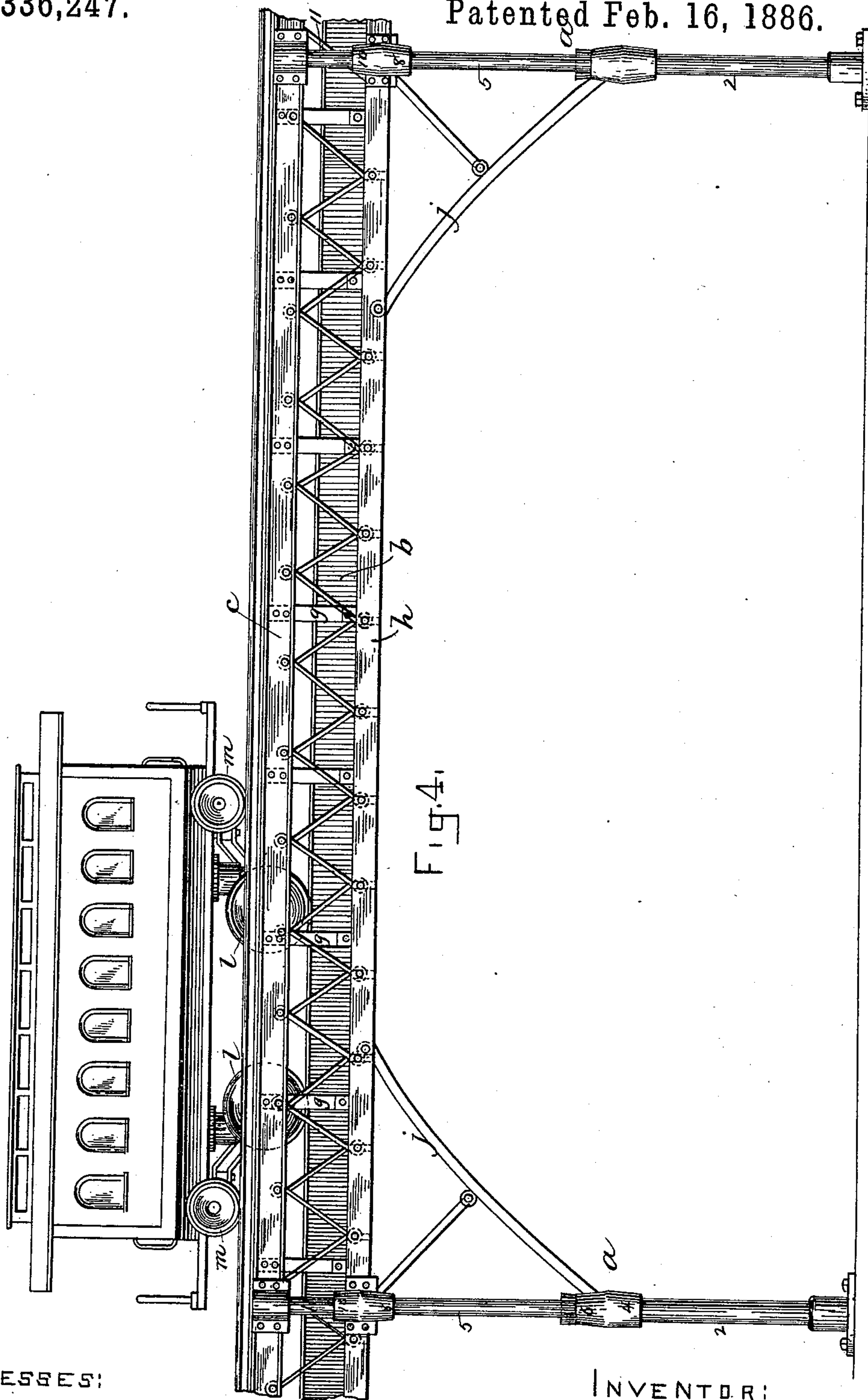
(No Model.)

2 Sheets—Sheet 2.

W. B. MACK.  
ELEVATED RAILWAY.

No. 336,247.

Patented Feb. 16, 1886.



WITNESSES:  
*H. Brown.*  
*Morris Dorr.*

INVENTOR:  
*W. B. Mack*  
*by night, Brown & Co.*  
*Atty.*



# UNITED STATES PATENT OFFICE.

WILLIAM B. MACK, OF BOSTON, MASSACHUSETTS.

## ELEVATED RAILWAY.

SPECIFICATION forming part of Letters Patent No. 336,247, dated February 16, 1886.

Application filed December 26, 1885. Serial No. 186,739. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM B. MACK, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Elevated Railways, of which the following is a specification.

This invention has for its object to provide an elevated railway of strong, simple, and durable construction, in which metal pipe or  
10 tubing can be used to form the vertical supporting posts or pillars.

The invention consists, as a whole, in an elevated railway comprising three track-rails, two of which are arranged side by side, as in  
15 ordinary railway-tracks, while the third is located between and below the two just mentioned, stringers or supports for said rails, and a supporting frame or structure for said stringers, composed of a series of vertical supports for each of said stringers, socketed ties for said supports, and a suitable system of  
20 braces.

The invention also consists in certain details, all of which I will now proceed to describe and claim.  
25

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a transverse section of my improved railway. Fig. 2 represents a top view of a portion thereof. Fig. 3 represents a section on line *x x*,  
30 Fig. 1. Fig. 4 represents a side elevation on a smaller scale than in the preceding figures.

The same letters of reference indicate the same parts in all the figures.

35 In carrying out my invention I erect at suitable distances apart vertical supports *a*, each composed of two vertical pillars, 2 2, of wrought or cast iron or steel, preferably tubular, suitably secured to the ground, a transverse tie-beam,  
40 3, having two sockets, 4 4, receiving the upper ends of the pillars 2 2, and three sockets, 6 6 6, in its upper portion, three vertical pillars, 5 5 5, inserted at their lower ends in the sockets 6 6 6, a tie beam, 7, having sockets 8 8 8,  
45 receiving the upper ends of the tubes 5 5 5, and two short pillars, 9 9, inserted at their lower ends in sockets 10 10, formed in the tie-beams 7. Over the central pillar, 5, of the vertical supports I place longitudinal stringers  
50 *b*, which rest directly on the tie-beams 7. To the shorter pillars, 9 9, I attach socketed

arms 11, to which I connect longitudinal stringers *c c*, the ends of which are inserted in sockets *d d*, formed on the caps, the stringers *c c* being higher than and parallel with the  
55 central stringer, *b*.

*e e* represent the outside track-rails, secured to the stringers *c c*, and *f* represents the central track-rail, secured to the stringer *b*, and therefore located between and below the out-  
60 side track-rails.

The shorter pillars, 9 9, are supported laterally by a system of diagonal braces, *g*. The pillars 2, 5, and 9 are rigidly secured in the  
65 sockets of the tie-beams by packings of lead or other material, or in any other suitable manner.

I prefer to connect the tie-beams 7 by longitudinal beams *h h*, under the rail-supporting stringers *c c*, said beams being inserted at their  
ends in sockets *i i*, formed on said tie-beams. 70

Arches or trusses *j*, extending longitudinally, may be placed between the vertical supports *a a*, as shown in Fig. 4. Diagonal braces *k* are bolted to the beams *h h*, as shown in Figs. 1 and 2.

It will be seen that the track-rails, arranged  
75 as described, are capable of supporting a car having larger central wheels, *l*, running on the central rail, and smaller wheels, *m m*, running on the outside rails. The weight of the car is thus distributed equally across the support-  
80 ing-structure, and the central rail is depressed, so that it can be used as a conductor of electricity in an electric railroad without danger of contact with anything but the wheels *l*.

The described construction of the vertical  
85 supports enables comparatively small and light pillars to bear with safety any weight liable to be imposed on the structure.

The invention is not limited to the number and arrangement of rails described and shown. 90 If desired, the rails *e e* may be secured to the beams or stringers *h h*, instead of being raised above the same, in which case the shorter pillars, 9 9, and the central stringer and track-rail may be omitted; or, if preferred, the cen-  
95 tral rail may be supported at a higher point than the side rails, so that the central wheel, *l*, would be smaller than the side wheels.

The pillars of the vertical supports may be either tubular or rectangular in cross-section. 100

The pillars 2 2 are preferably secured in sockets *s s* in a broad base-plate, *t*, which is pref-



erably considerably wider than the greatest width of the structure above. Said plate is solidly secured to a suitable base or foundation sunk in the ground.

5 I claim—

1. In an elevated railway, the combination, with the base-plate and the vertical pillars supported thereby, of the socketed tie-beams for connecting the upper ends of the said pillars, substantially as set forth.

10 2. In an elevated railway, the combination, with the side rails, *e e*, and the central rail, *f*, located below the said side rails, of the supporting-structure consisting of the longitudinal stringers for the said rails, vertical supports beneath each of said stringers, and tie-beams for the said vertical supports, substantially as set forth.

15 3. In an elevated railway, the supports composed of the vertical tubular posts and the tie-beams socketed to receive the posts, combined with the longitudinal stringers secured at their ends to the tie-beams, the latter having sockets to receive the ends of the stringers, as set forth.

4. In an elevated railway, the combination 25 of the vertical pillars, the tie-beams connecting said pillars, the longitudinal beams *h*, the stringers *b*, *c*, and *c*, and the track-rails supported thereby, as set forth.

5. In an elevated railway, the combination, 30 with the vertical supports, the side rails, *e e*, the central rail, *f*, located below the said side rails, and the stringers for all of the said rails, of the inclined or diagonal braces *g g*, connecting the side stringers with the central stringer, 35 and thereby securing and bracing the upper ends of the outer vertical supports, substantially as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two sub- 40 scribing witnesses, this 24th day of December, 1885.

WILLIAM B. MACK.

Witnesses:

C. F. BROWN,  
H. BROWN.