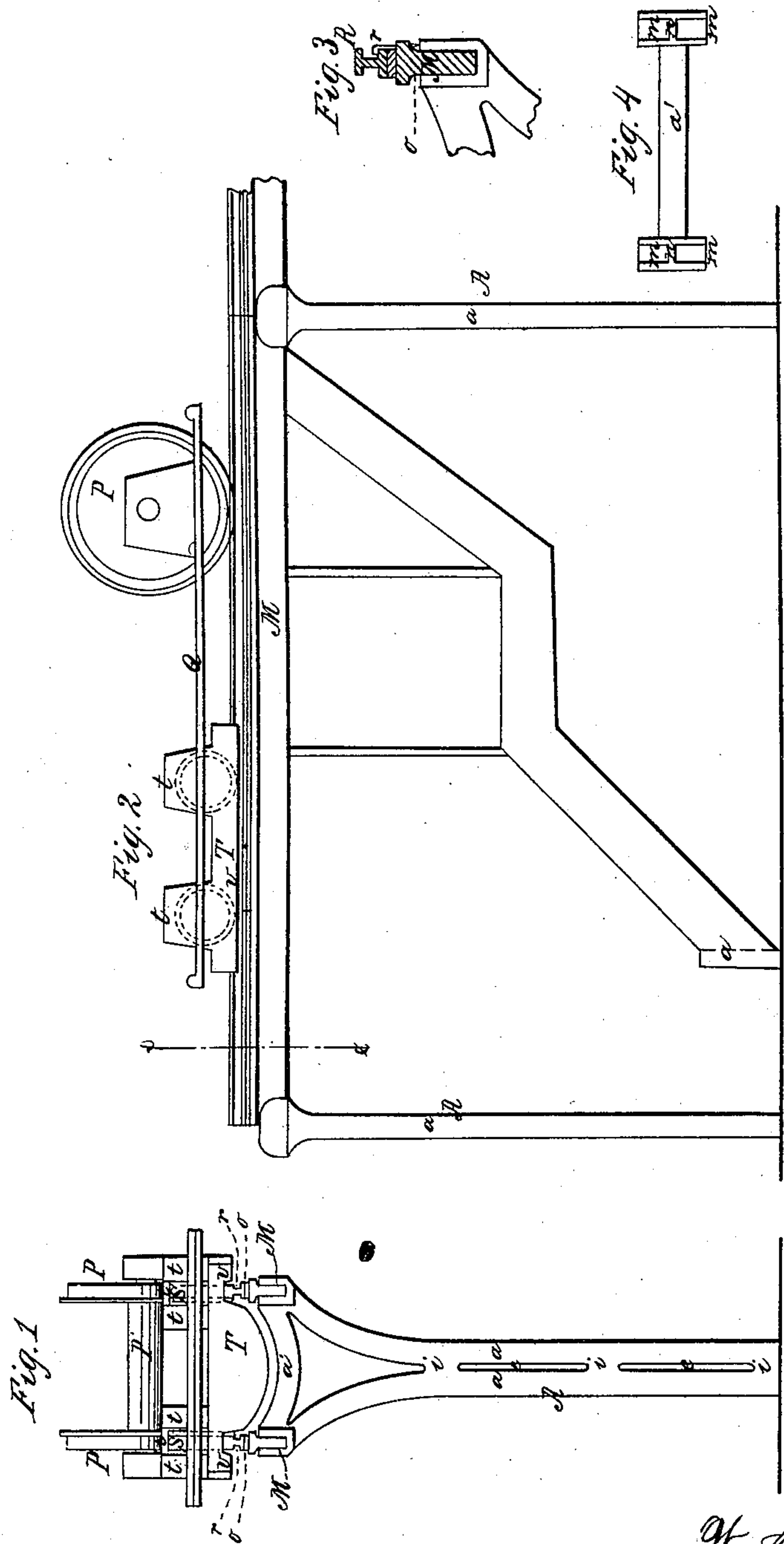


W. H. Rand

Elevated Railway

No 96,727.

Patented Nov. 9, 1869.



Witnesses;
C. A. Pettit
H. C. Phillips

Inventor;
W. H. Rand
by *Samuel H. Phillips*
Attorneys

United States Patent Office.

WILLIAM H. RAND, OF BROOKLYN, NEW YORK.

Letters Patent No. 96,727, dated November 9, 1869.

IMPROVED ELEVATED RAILWAY.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, WILLIAM H. RAND, of Brooklyn, in the county of Kings, and State of New York, have invented a new and improved Elevated Railway; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a vertical cross-section through line *x x* of fig. 2.

Figure 2 is a side elevation.

Figure 3 is a detached cross-section, showing the construction of the rail, stringers, bolts, and packing.

Figure 4 represents a plan of the top of the columns.

The object of this invention is to improve the construction of elevated railways, so as to reduce their cost, and render them stronger, safer, more beautiful in appearance, and better adapted to the different methods of propulsion than any heretofore brought into public use.

In the drawings—

A A represent the pillars that support the railway, each being in the form of the letter *Y*, as seen in fig. 1, the *Y* having a broad base, and consisting of two tubular columns, *a a*, separated from each other by open spaces *e e*, and connected by the solid cast connections *i i*, at as many points as may be conducive to the stability of the structure.

The tops of the two columns *a a* of each pillar are united by the inverted arch *a'*, cast with and forming a part of the pillar.

The upper end of each column *a* is shown clearly in fig. 4, *m m* being vertical grooves therein to receive the ends of the stringers, and separated by a central transverse ridge, *n*.

M M are T-shaped iron stringers, the ends of which rest in the beds *m m*, as shown in the several drawings, and are fastened therein by transverse bolts.

The stringers are connected together, at regular intervals, by curved cross-beams or ties, similar in shape and position to the ties *a' a*, seen in fig. 1.

Pieces of rubber, wood, or other material, *m'*, may be put under the end of the stringers, in the grooves *m*, to deaden the sound and prevent fracture.

From the stringers *M* depend brackets or rods, which support a stairway provided with landing-places, located directly beneath the railroad, and forming part of the elevated structure, so that the said railway may be connected with the sidewalk.

By this mode of suspension no posts are required to sustain the stairway, thus preventing the obstruction, to some degree, of the sidewalk, and at the same time forming an easy descent for passengers.

On the upper surface of the stringers rest a flat

strip, *o*, of wood, rubber, or other similar material, and on the upper side of this rests the rail *R*, the latter being of the ordinary shape, and being confined in place by means of half-headed bolts *r r*.

The object of the intervening strip *o* between the iron rails and stringers is to interrupt the vibrations and deaden the sound of the passing trains, as well as to give a little flexibility or elasticity to the connection, and prevent the breaking of the rails and stringers by the concussion of the heavy car-wheels.

The half-headed pins or hooks are the most convenient means for fastening the rails and packing in place, for while they ordinarily hold them firmly and securely, they will readily release them upon being turned half way round, so that the hook or head of the pin will become disconnected from the base flange of the rail.

The *Y*-form of the pillars, in connection with the curved form of the cross ties, adapts the railway to a different kind of car from any heretofore employed, and which has peculiar advantages in the matter of safety.

I will here describe the general construction of such car, inasmuch as it is intimately connected with my improved railway, and forms a part of this invention.

P P are the rear wheels, which can be made of any practicable size, in the usual form, and attached to the same axle, *P'*, or to independent axles.

Q is the body of the car, and *S* the forward truck, supported on four wheels, *s s*, running on independent axles.

All the car-wheels work in slots in the body of the car.

The truck-wheels *s s* are covered by yokes or arches *t t*, each of which connects the bearings of a single wheel, so as to strengthen the truck and support the axles properly.

The central portion *T* of the truck extends down nearly to the curved cross-ties, and is conformed to their shape, as seen in fig. 1.

A portion of the truck extends down outside of the rail, as seen at *v v*, so that the truck encloses the rail on both sides. In the event, therefore, of the cars running off of the track, there is little danger.

The body of the truck, sunk between the two stringers, and the flanges *v v* outside of the rails, will effectually keep the car in position and prevent accident to the passengers.

The part *T* may be ballasted, if thought advisable, for further security, and the body of the car itself may be so suspended from or supported by the axles as that the bottom of it will occupy the space between the stringers, and serve to ballast the car.

The rear wheels may extend up through the floor of the car, as seen in fig. 2, being properly boxed.

This construction also adapts the railway to the use

of locomotives provided with a central traction-wheel. In that case, the rail upon which such wheel operates will be affixed to the middle of the curved ties, so that the traction-apparatus will be at the centre of the engine and between the rails R R.

All the heavy parts of the engine can easily be constructed to come at or below the level of the supporting-rails R R, so that it will be almost impossible to capsize the cars.

When the car is constructed with the trucks S S, as shown in figs. 1 and 2, the body of the car may be supported at a single point upon the truck, and there provided with a suitable spring or springs, to make it "ride" more easily, and a king-bolt, upon which it can turn laterally in passing curves.

Having thus described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. The column A, constructed with the two tubular piles *a a*, united at *i i* and at *a'*, all in one casting, substantially as and for the purposes set forth.

2. In connection with said column A, having the recesses *m m* in its top, separated by the ridge *n*, the arrangement of the stringers M M, packing *o o*, rails R R, and eccentric-headed pins *r r*, all constructed and adapted to each other, in the manner and for the purposes specified.

3. In an elevated railway, the employment of curved cross-ties *a' a'*, connecting the tops of the piles *a a*, and also connecting the stringers at suitable distances, substantially as and for the purposes set forth.

4. In connection with the railway, substantially as described herein, the employment of cars or trucks constructed with the deep body, as shown at T, and the side flanges *v v*, the rail R being enclosed between the parts T and *v* when the car is in position, substantially as and for the purposes set forth.

WM. H. RAND.

Witnesses:

JAMES T. GRAHAM,
A. V. BRIEEN.