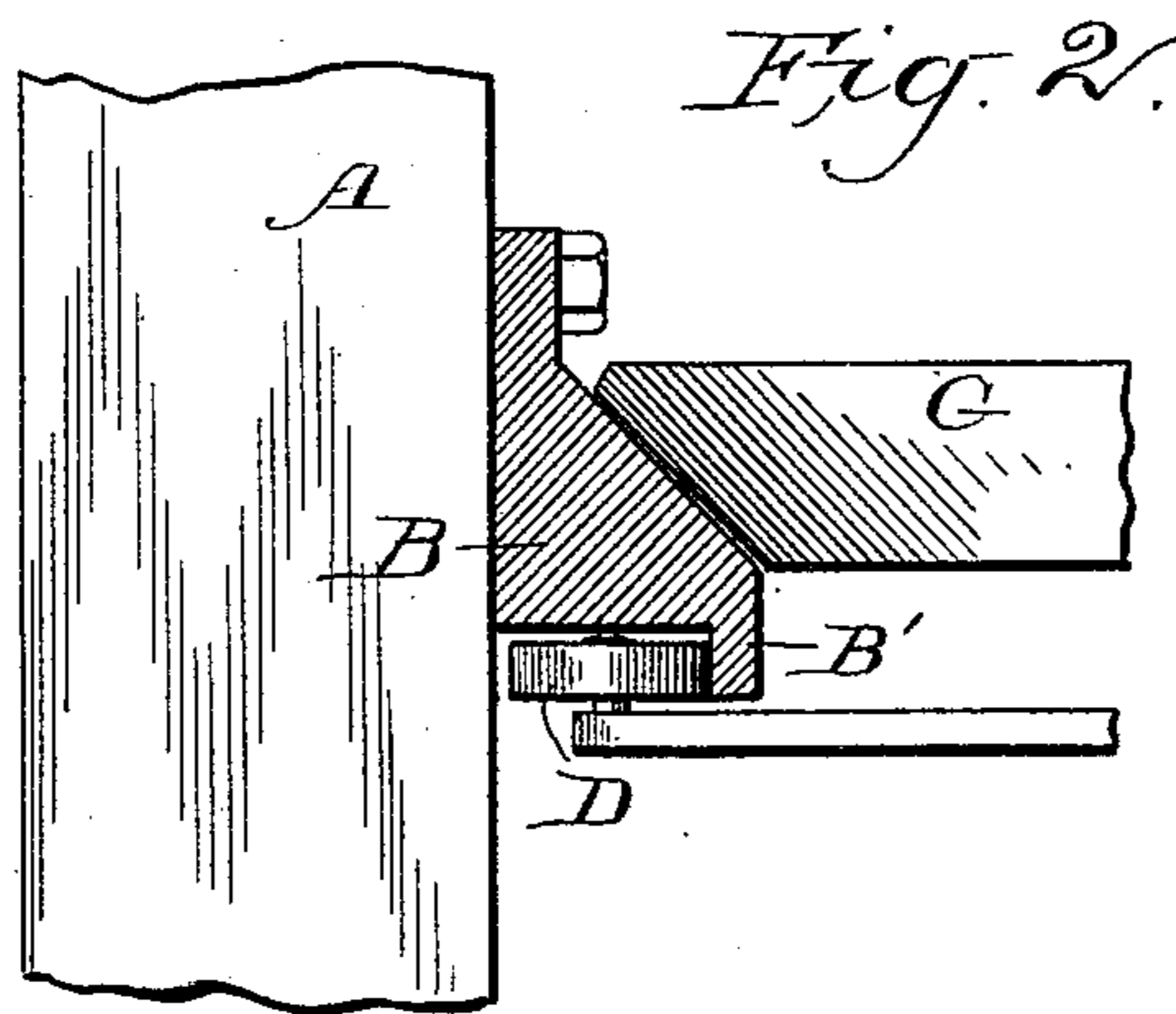
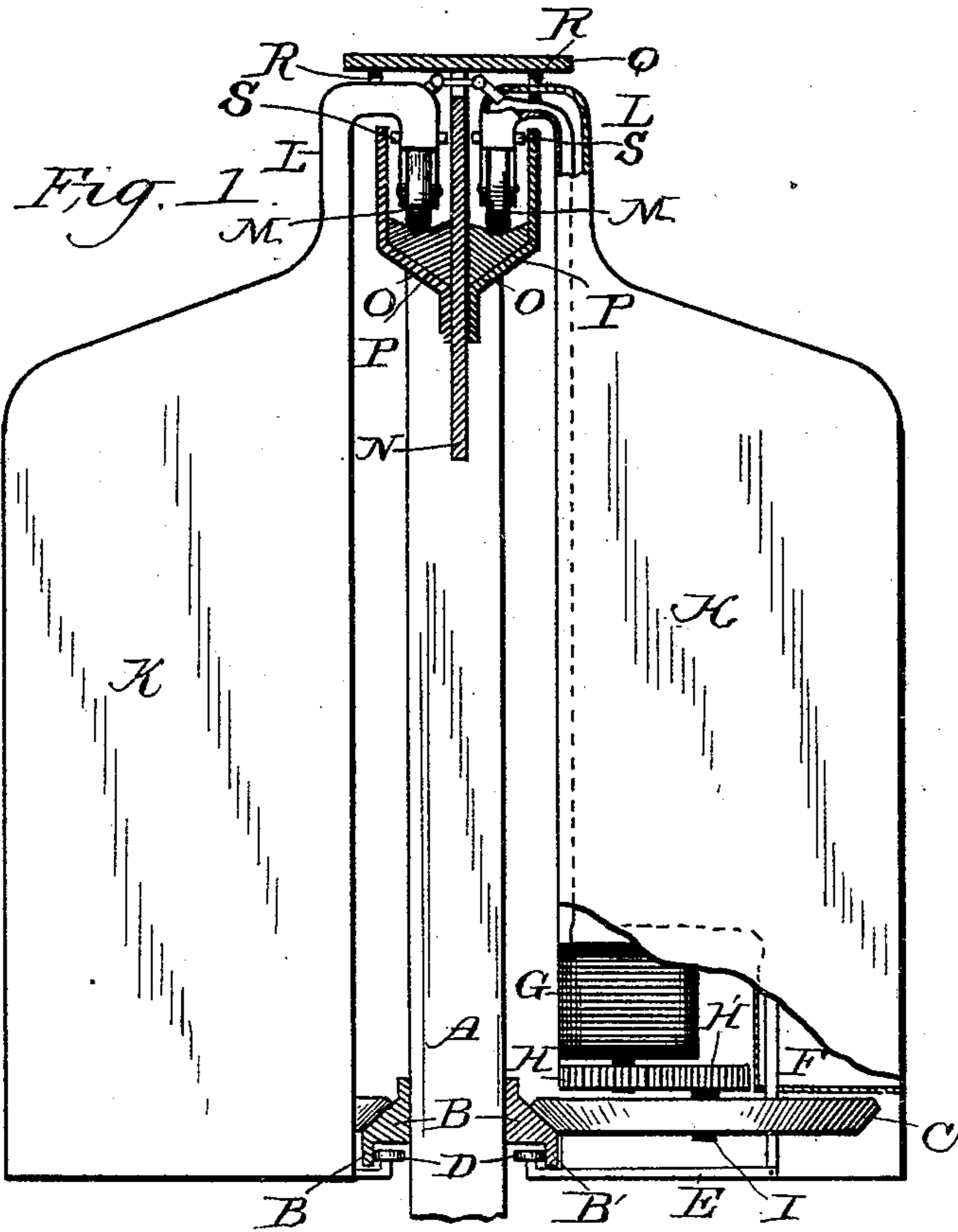


(No Model.)

L. F. COOK.  
ELEVATED RAILWAY SYSTEM.

No. 496,189.

Patented Apr. 25, 1893.



Witnesses

J. W. Reynolds  
Louise Milslead

Inventor

Lucian F Cook.

# UNITED STATES PATENT OFFICE.

LUCIAN F. COOK, OF TACOMA, WASHINGTON.

## ELEVATED-RAILWAY SYSTEM.

SPECIFICATION forming part of Letters Patent No. 496,189, dated April 25, 1893.

Application filed April 29, 1892. Renewed January 31, 1893. Serial No. 460,230. (No model.)

*To all whom it may concern:*

Be it known that I, LUCIAN F. COOK, of Tacoma, in the county of Pierce and State of Washington, have invented certain new and useful Improvements in Elevated-Railway Systems, of which the following is a specification.

My invention relates to that class of elevated railways wherein a double line of cars is sustained upon a single row of posts or columns, the cars being suspended off their center of gravity so as to cause the propelling mechanism to bear against its traction member or rail by the gravity of the car.

Referring to the accompanying drawings,—Figure 1 represents a vertical cross section of the track structure showing the cars in elevation and partly broken away. Fig. 2 represents the traction devices on a larger scale than on Fig. 1.

Referring to the drawings by reference letters, A is one of the supporting columns or posts which support the track structure proper.

B are the traction rails, and C, the drive-wheels.

D are pulleys or wheels by means of which, through suitable lever connections as E and F, the traction may be increased between B and C at pleasure.

G is a dynamo or other source of power, such, for instance, as a compressed air engine, steam engine, or gas engine.

H and H' represent gears whereby the drive-wheels C are propelled.

I is the shaft of the drive-wheel C, and it is driven by gear H'.

K, K are the cars which are supported upon the wheels M on track-rails P, through the hook-shaped hangers L.

N is a girder or beam extending from post to post, and to which are secured the side beams O, O, and between which girders N and O, O, said track-rails are secured.

The hanger is provided with guard pulleys or wheels R, S, the former of which prevent undue rising of the wheels M, and the latter prevent side vibration.

Upon the top of the main girder N is the top guard-plate Q against which the guard-wheels R bear in case of the wheels M leaving their rails vertically.

The track structure for supporting the cars is the same as that described in my application, Serial No. 428,426, filed April 9, 1892, and need not therefore be further described herein.

The principal feature in my present invention is the construction of my traction rail, and of the drive-wheels relative thereto, whereby I am enabled to readily increase the traction between the two at will, and thereby insure the desired speed. Under ordinary circumstances, the gravity of the cars and their load might be sufficient to produce the desired traction between the drive-wheels and their rails. But to insure any desired amount of friction between the traction rails and the drive-wheels, I form the rails with an inclined or beveled traction surface, and the drive-wheels with a correspondingly formed bearing thread. The traction being varied according to the bevel of the rail and drive-wheels. And I provide means whereby the car attendant can at any time force the driving-wheels against their rails, and in so doing it will readily appear that the result will be to tend to transfer the weight of the load onto the traction rail and wheel, since the inclined or wedge surfaces of the two will cause the wheels to mount or ascend the inclined face of the rail, and in so doing, of necessity the weight of the car will be transferred to the said rail and drive-wheel, and thus the traction will be increased. The operator on the car has to but move his lever F so as to draw the wheel D hard against the lips or flanges B' of the rail B, and thus he can readily secure the amount of traction required.

Of course it will be understood that my car and track may be provided with the brake-rail and other appliances necessary to separate the driving-wheels and traction-rails when desiring to stop same as in my application, Serial No. 417,122, filed January 5, 1892, and allowed February 26, 1892, but as they form no part of the present invention, they need not be described herein. However, since the propelling mechanism is upon the car, in the present instance, and under control of the attendant, a separate brake-rail may not be necessary, as the reversal of the drive-wheels, or a brake applied to them or to the traction-

rail, either or both, would well answer the purpose.

It will be apparent from the foregoing description that I have provided a very simple, and at the same time effective, means for readily transferring a part, or indeed the whole of the load to be propelled, onto the traction-rail and drive-wheel, whereby I am enabled at all times to insure sufficient contact between the traction surfaces to propel my load.

I have shown and described my invention as applied to a double track structure, but of course it is evident that it is applicable to a single line as well: and also that it can be employed on lines where the cars are not suspended off of their centers of gravity.

It is evident as to the number of beveled drive-wheels on each car, that it will depend upon the size of the car and the load to be carried: and when one drive-wheel is sufficient, the remaining wheels which bear upon the traction-rail to steady the car will of course have their bearing surfaces beveled or inclined the same as the drive-wheels. This, of course, is evident to any one conversant with such matters, and such wheels need no illustration. It is also evident that in many instances the means for drawing or forcing the inclined traction surfaces together may not be necessary, as the action of gravity alone would be sufficient.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a system of elevated railway propulsion, the combination of a traction-rail having an inclined bearing or tread surface, with a car having a correspondingly inclined drive-wheel, all substantially as shown and described.

2. In a system of elevated railway propulsion, the combination with a car suspended off its center of gravity, of a traction-rail having an inclined tread portion, and a drive-wheel on said car having a correspondingly inclined tread, substantially as shown and described.

3. In a system of elevated railway propulsion, the combination with a rail having an inclined tread, of a car having a correspondingly inclined drive-wheel, and means for forcing said inclined parts together, substantially as shown and described.

4. In a system of elevated railway propulsion, the combination with the track from which the cars are suspended, of an inclined traction-rail, a car having a correspondingly inclined drive-wheel and means for increasing the traction between the said rail and wheel, substantially as shown and described.

LUCIAN F. COOK.

Witnesses:

W. R. TAYLOE,  
L. G. JOHNSON.