

(No Model.)

4 Sheets—Sheet 1.

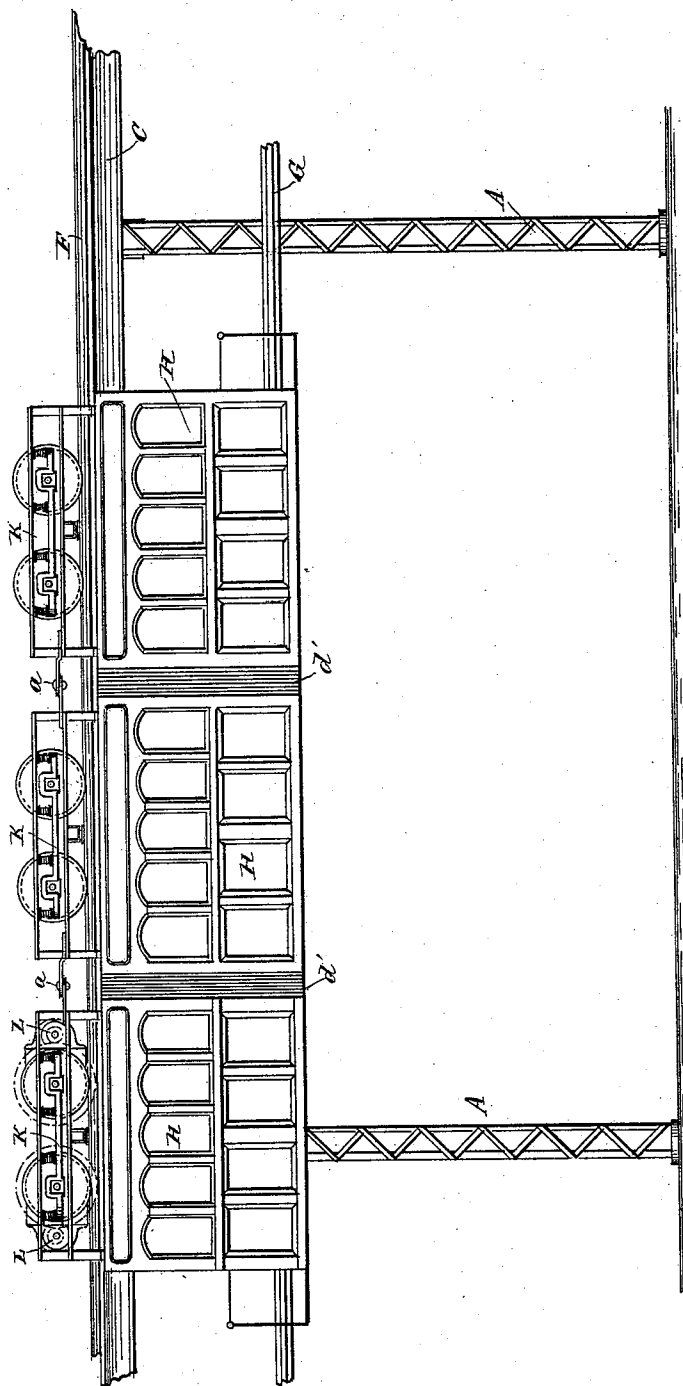
H. PAIGE.

ELEVATED STREET RAILWAY CAR AND TRUCK.

No. 466,364.

Patented Jan. 5, 1892.

Fig. 1.



Witnesses
A. H. Opsahl.
Frank D. Merchant,

Inventor.
Howe Paige
By his Attorney.
Jas. F. Williamson

H. PAIGE.

ELEVATED STREET RAILWAY CAR AND TRUCK.

No. 466,364.

Patented Jan. 5, 1892.

Fig. 2.

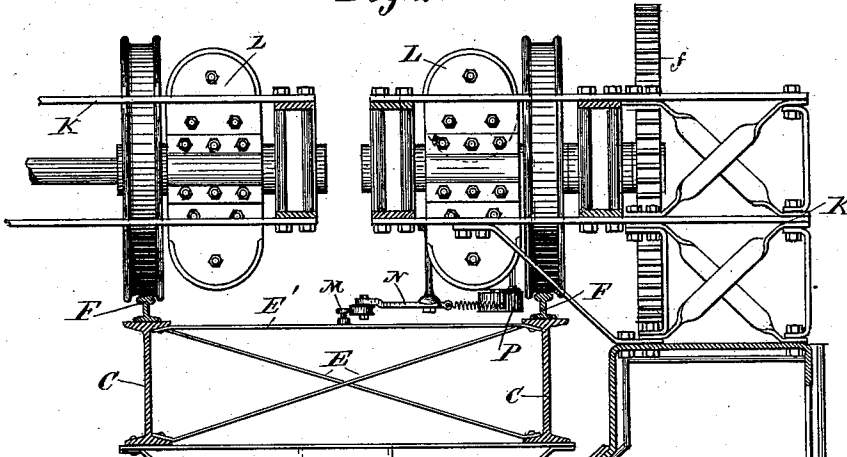


Fig. 3.

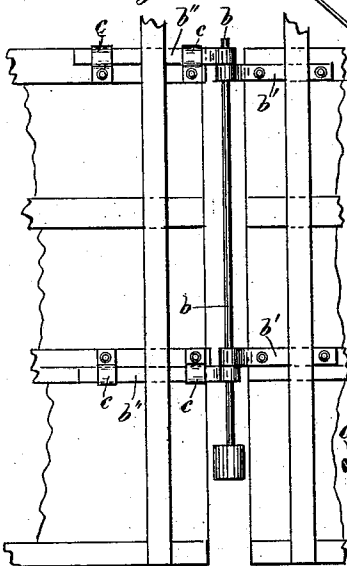
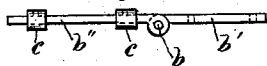


Fig. 4.



Witnesses.

A. M. Opsahl.

Frank D. Merchant.

Inventor

Howe Paige

By his Attorney.

Jas. F. Williamson

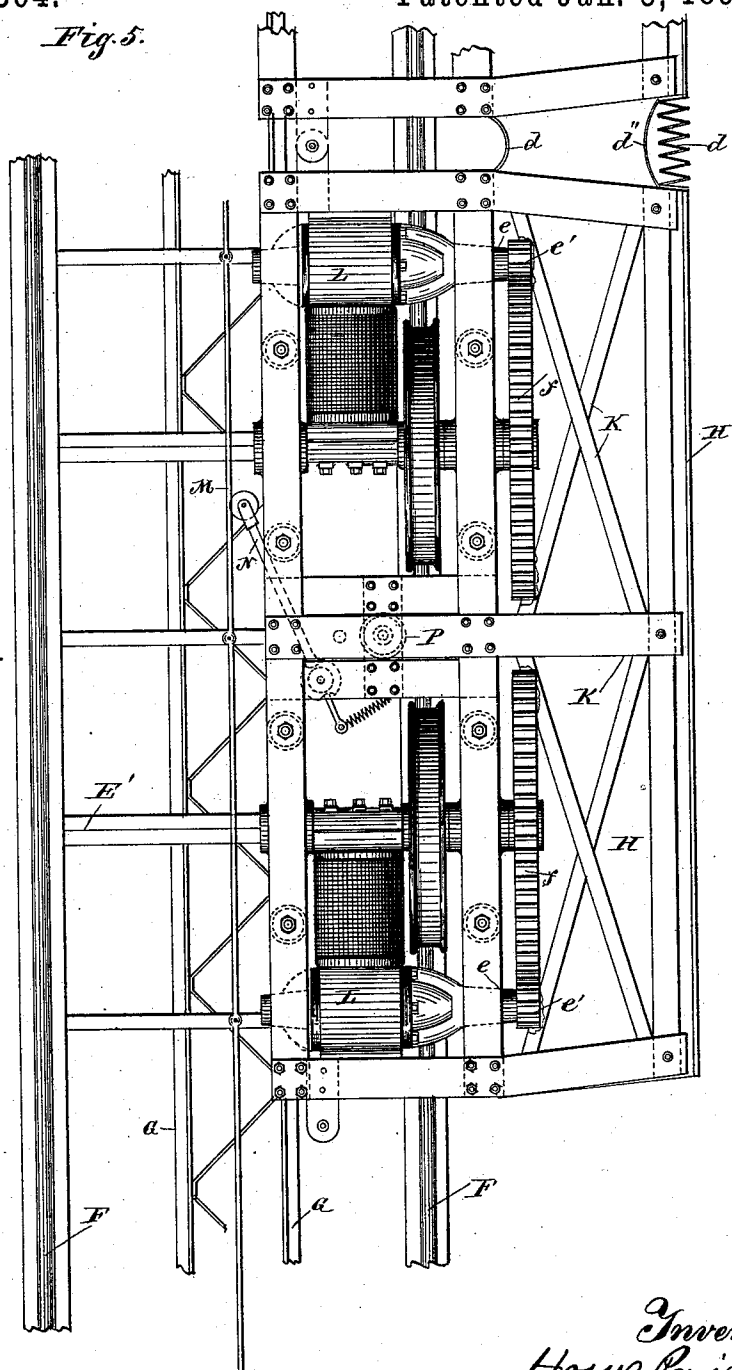
H. PAIGE.

ELEVATED STREET RAILWAY CAR AND TRUCK.

No. 466,364.

Patented Jan. 5, 1892.

Fig. 5.



Witnesses.

A. H. Opsahl

Frank D. Merchant.

Inventor.

Howe Paige

By his Attorney

Jas. F. Williamson

UNITED STATES PATENT OFFICE.

HOWE PAIGE, OF MINNEAPOLIS, MINNESOTA.

ELEVATED-STREET-RAILWAY CAR AND TRUCK.

SPECIFICATION forming part of Letters Patent No. 466,364, dated January 5, 1892.

Application filed September 2, 1890. Serial No. 383,776. (No model.)

To all whom it may concern:

Be it known that I, HOWE PAIGE, a citizen of the United States, residing at the city of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Elevated Street-Railways; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to provide an elevated street-railway which shall be simple in construction, economical in cost, and which shall reduce the street obstruction to a minimum. To this end I employ a single row of supporting-columns having cross-arms at their tops. On the outer ends of the cross-arms I place girders and connect the same by truss-braces. On the girders I place the track-rails, each rail constituting an independent track for the support of a dependent car. On the opposite sides of the columns, proximately in line with the lower part of the car-body, I secure guide-rails for engagement with anti-friction rollers on the car-body to limit the inward oscillation of the dependent car. The dependent car is secured to a suitable truck at its top, with its wheels running on said rail. Each car-body is provided with a single line of outwardly-faced seats at its back. The construction is such that the load on the car will fall in or inside a vertical line through the center of the rail, and the weight on the truck is so placed that it will counterpoise the load on the car, so as to prevent or reduce to a minimum the flange-friction of the wheel on the rail. Each car and each truck is composed of independent sections with pivotal connections, in order to adapt the same to short curves. The walls of the car-body are rendered continuous and made to adapt themselves to curves in the opposite directions by flexible walls. The walls connecting the sections on the one side are pivotally connected, while those on the other side are extensible and made of some flexible material. The connections are also such between the sections that the sections can separate to any limited extent at the bottoms; or, in other words, the car is also rendered flexible in the vertical direction to adapt the same to change

in grades. This flexible car, composed of independent sections, is the principle feature of my invention. So far as this feature is concerned, any suitable propelling mechanism may be used; but I prefer and have shown the electric propulsion. For the application of the same I mount an electric motor or motors on the axles of one or more of the sectional trucks and apply the motion of the armature directly to the axle, with the necessary reduction in speed, by a single large gear-wheel on the outer end of the axle in engagement with a pinion on the outer end of the armature-shaft. For the outgoing current I employ a single conductor mounted upon and insulated from the cross-braces connecting the girders, so that the top of the conductor comes between and just below the level of the rails. The rails are used as the return-conductors. Traveling contacts of any suitable kind take the current from the outgoing conductor to the motors. I have shown for the purpose a yielding or pivoted spring-contact mounted on the lower part of the truck, having a rolling contact against the vertical face of the conductor. Cars going in one direction take the current off of one side of the conductor and those in the other direction from the other side. It will thus be seen that a double-track elevated road is provided with cars going in opposite directions, which occupies a comparatively small part of the street. In view of the depending car or the absence of the under trucks, the tracks do not need to be so high in order to give the necessary clearance for vehicles in the street, and in view of the comparatively light weight of the trucks and single-seat cars, the supporting structure may be made of skeleton form and comparatively light, thus interposing very much less obstruction to the supply of light to the sidewalks and buildings along the line of travel.

In the accompanying drawings, wherein like letters refer to like parts throughout, Figure 1 is a side elevation of an elevated road and car constructed in accordance with my invention. Fig. 2 is a cross-section of the same, some of the parts being shown in end elevation. Fig. 3 is a detail in rear elevation showing the inner connection between adjacent sections of the car-body. Fig. 4 is a detail in plan of one of the hinges shown in

Fig. 3. Fig. 5 is a plan or top view of a part of the track and a part of one of the car-trucks. Fig. 6 is a plan or top view showing a curved section of the tracks and cars in position therein, some parts being removed.

A are the supporting-columns. B are the cross-arms or cap-plates on the same.

C are the girders.

E are the diagonal truss-braces, and E' the top or cross brace connecting the girders.

F are the track-rails.

G G are the guide-rails.

G' is the roller on the car-body engaging with the said guide-rails.

H is the car-body.

K is the car-truck, and L the electric motors.

M is the conductor for the outgoing current, and N is the pivoted spring-contact on the car-truck.

P is a safety or guard wheel attached to the under side of the car-truck for engagement with the rails, in case of possible displacement of the car-wheels, to prevent the car from falling from the tracks.

The current may be taken from the pivoted contact to the motor by any suitable conductor.

a are the pivotal connections uniting the truck-sections.

b b' b'' are the pivotal connections uniting the inner walls of the car-body. Of these one part of the hinge, as b'', is mounted in straps c, attached to a fixed part of the car-body, so that the hinge may be free to slide back and forth to a limited extent.

d is a flexible strap or curtain spanning the pivotal connection or joint on the inside, so as to make the wall continuous.

d' are the extensible walls uniting the sections on the outside, and d'' is a flexible strap or curtain similar to d, which may be used, if desired, inside of the extensible walls d'.

e is the armature-shaft, and e' is the pinion on the outer end of the same.

f is the large gear-wheel on the outer end of the car-axle in engagement with the pinion e'.

It will be understood that the floors and the ceilings connecting the sections of the car should be made of telescoping parts, (not shown,) so as to preserve a continuous interior to the entire car.

The operation is evident from the description already given. By reference to Fig. 6 it will be seen that when the car is traveling on the inside of the curve the extensible outer walls between the sections are compressed together, the sections turning apart on the pivotal connections uniting the inner walls, and when the car is traveling on the outside the flexible walls are extended; also, from Fig. 3 it may be seen that the sections may separate or close together slightly at the bottom when required on grades. It should also be noted that the trucks are extended inward to a considerable distance beyond the wheels,

and the electric motors are located on the part of the axles journaled in this extended part of the trucks. The weight of the motors thus forms part of the counterpoise to the car.

On the peculiar arrangement of the electric conductors and the contacts for taking the current therefrom to the motors on the cars I make herein no claim, but reserve to myself the right to apply for a patent thereon in a subsequent application.

What I claim, and desire to secure on this Patent, is as follows:

1. The combination, with an elevated track, of a dependent car composed of independent sections, having pivotally-connected walls on one side and extensible walls on the other.

2. The combination, with an elevated track, of a car composed of independent sections, having pivoted walls on one side and extensible walls on the other, and a flexible strip spanning the joint in the pivoted walls.

3. The combination, with the elevated track, of a dependent car flexible in both the horizontal and vertical planes, composed of independent sections united by a sliding joint.

4. The combination, with the elevated track, of the flexible car composed of independent pivotally-connected sections, and a flexible truck for supporting said car, composed of corresponding independent pivotally-connected truck-sections.

5. The combination, with the elevated rails, each constituting a separate track overhanging common central supports, of a dependent truck and car-body composed of independent sections pivotally connected together, supported from said rail and provided with a guide-wheel on its depending part, and a guide-rail on the faces of said supports engageable by said guide-wheel to limit the inward oscillation of the car.

6. The combination, with the single-rail elevated track and its supporting-columns provided with guide-rails to limit the oscillation of the car, of a truck mounted on said track and a car-body depending therefrom, the said truck being weighted on the side of the wheels opposite to the car-body to counterpoise the same and the location for the load on the car-body being such as to bring the line of strain in a vertical line through the rail or to the inside of the same, substantially as described.

7. The combination, with an elevated single-rail track, of a car-truck movable thereon, a depending car carried by said truck, and an electric motor mounted on the truck-axle to one side of the car-wheel opposite from the car-body and having its armature geared to the axle by a single gearing on the other side of the car-wheel, substantially as described.

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

HOWE PAIGE.

Witnesses:

JAS. F. WILLIAMSON,
FRANK D. MERCHANT.