(No Model.)

E. W. FARNHAM.

ELEVATED ELECTRIC RAILWAY.

No. 564,369. Patented July 21, 1896.

Fig. 1.

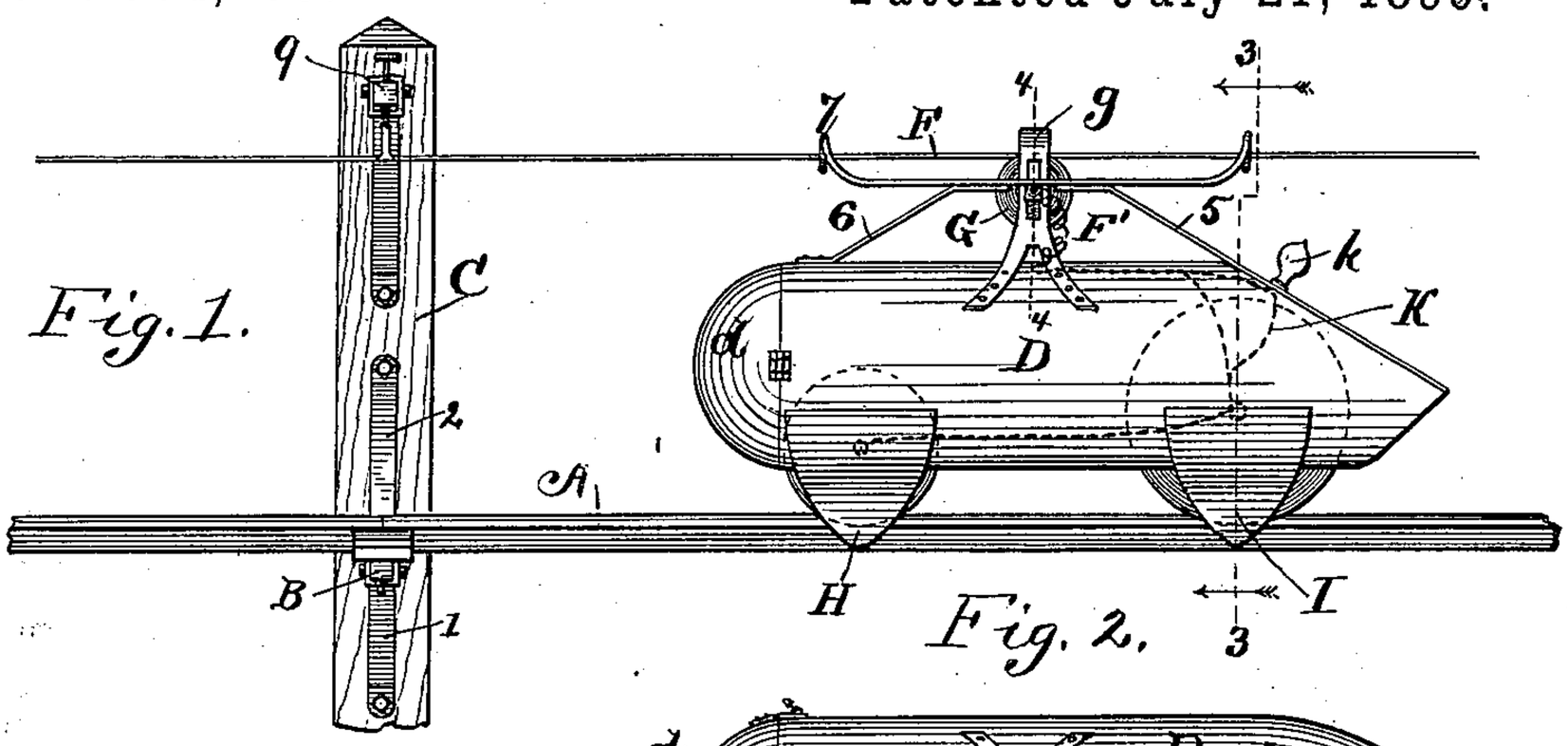


Fig. 2.

Fig. 3.

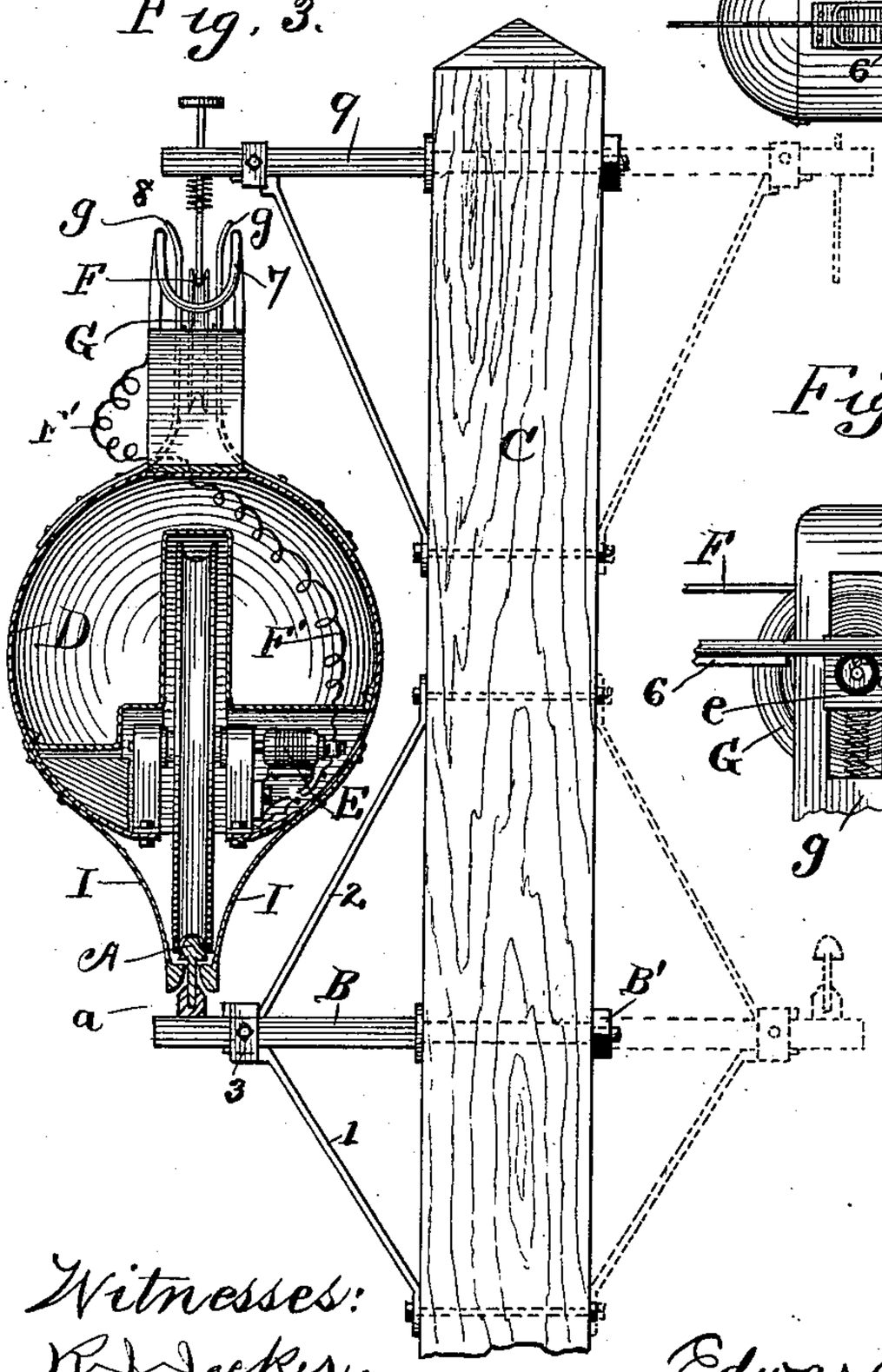


Fig. 5.

Fig. 4.

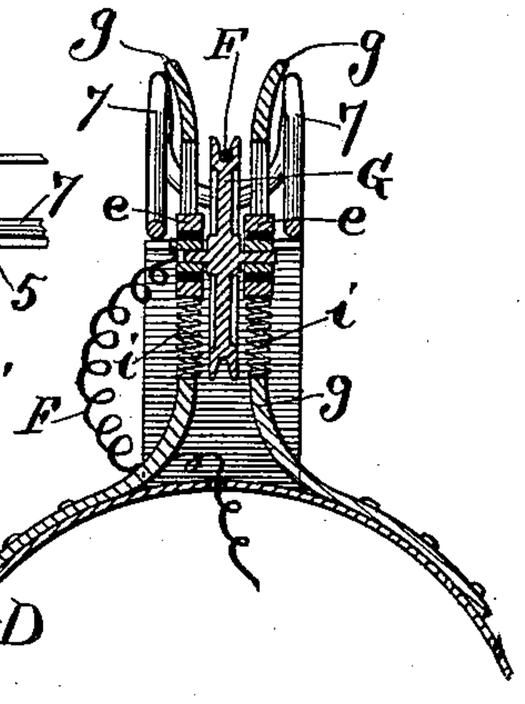
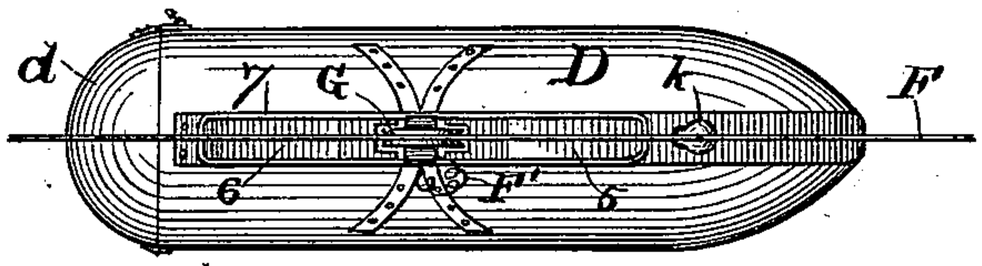


Fig. 6.



Witnesses:
R. J. Jacker.
A. A. Hall.

Inventor:
Edward Wilson Farnham
By Frank D. Thomason
Atty.

UNITED STATES PATENT OFFICE.

EDWARD WILSON FARNHAM, OF LA GRANGE, ILLINOIS.

ELEVATED ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 564,369, dated July 21, 1896.

Application filed October 14, 1892. Serial No. 448,899. (No model.)

To all whom it may concern:

Be it known that I, EDWARD WILSON FARNHAM, of La Grange, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Elevated Electric Railways, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings and to the letters and figures of reference marked thereon.

The object of my invention is to provide an overhead electric-railway system the cars of which run on an elevated single track, which is particularly suited to promote the rapid transit of mail and light baggage, and which is operated by a current generated at its place of destination as contradistinguished from its place of departure, so that the breakage of either the trolley-wire or track ahead of the car cuts out the same, and thus brings said car to a stop, thereby reducing the possibility of wreckage to a minimum and at the same time notifying the main station of the injury to the line, so that steps may immediately be taken to repair the same, substantially as hereinafter fully described, and as illustrated in the drawings, in which—

Figure 1 is a side elevation of the car used in conjunction with my invention and showing a portion of the track, trolley-wire, and support therefor. Fig. 2 is a plan view of my improved car. Fig. 3 is a vertical transverse section thereof, taken on dotted line 3 3, Fig. 1. Fig. 4 is a vertical transverse section through the trolley-wheel and supporting structure thereof, and Fig. 5 is a side view of the same.

In the drawings, A represents a suitable track, the concave tread of which is unprovided with basal flanges, so as to enable it to be easily seated and secured in the chairs *a*, which are secured to suitable brackets projecting laterally from the posts or poles C. These brackets consist of transverse bars B, which pass through and are secured in the posts C and preferably have that part within the posts of less diameter, so that when a suitable nut B′ is screwed onto the end opposite that on which the track is supported a shoulder is provided, which prevents the bar being drawn through the post when the nut is tightened. The end of said bar which supports the track A is braced by means of the brace 1 and strap 2, one end of each of which is secured to the post by suitable bolts or otherwise and the other ends of which are bent so as to lay flat against the upper and lower surfaces, respectively, of said bar, to which they are secured by means of a clip 3. In order to allow for the flexibility of the bar when the car passes over the same, I simply secure the toe of brace 1 between said bar and the clip, so that a straight longitudinal movement is possible, whereas the contiguous extremity of strap 2, projecting slightly beyond the clip, is turned up, so as to prevent any independent movement. The turning up of the extremity of the lower end of the strap is by itself sufficient to secure the clip to the bar; but said clip may be secured more permanently to said bar by means of a transverse bolt, if desired.

The car D, traveling upon the track A, is preferably given a sort of a shuttle shape, that is, it is cylindrical most of its length, has its rear end closed by a suitable concave door *d*, and has its forward end somewhat pointed, as shown. It is provided with two wheels having concave peripheries which are placed in alinement one back of the other, so as to run easily upon the track, and which are journaled in suitable bearings made in the lower part of the shell of the car, substantially as shown in Fig. 3. The larger forward wheel is preferably the drive-wheel, and has its journals on one or both sides extend through its bearings, so as to be engaged by a suitable electric motor E, which derives current from an overhead wire F through the medium of a trolley-wheel G. The journals of this trolley-wheel have their bearings in suitable bearing-blocks *e*, the center of which, immediately surrounding the journal of the trolley-wheel, is suitably insulated from the remainder of the bearing-block and has connected thereto by means of a suitable binding-screw the wire F′. These bearing-blocks move in suitable vertically-elongated slots made in the corresponding vertical frames *g* *g*, which are secured to the roof of the car, substantially as shown in the drawings. Under these blocks I place suitable spring-cushions *i*, which rest upon the lower edge of said openings, thus permitting the trolley to

accommodate itself to the sag or irregularities of the overhead wire F.

The vertical frames *g* are braced in front and rear by the fenders 5 and 6. These fenders consist of a broad sheet-metal strip, the former, 5, extending from the forward point of the car backward and upward at a suitable angle to near the forward vertical edges of the vertical frames *g*, where its rear end is bent horizontally and secured to the forward edge of frames *g*. The fender 6 is secured to the roof of the car at a point preferably near its rear end and extends in an upward forwardly direction to about the plane of the upper end of the fender 5, whereupon it is turned horizontally toward and connected to the rear edge of said vertical frames. I cut away the transverse end edge of each of these fenders, so as to provide free play for the trolley-wheel.

The upper ends of the vertical frames extend up some distance beyond the plane of the trolley-wire and serve as guards, which in the event of the wire becoming disconnected from the trolley-wheel would prevent the car from falling sidewise in either direction. I further provide against such an emergency by means of a guard-rail 7. This guard-rail has its parallel longitudinal stretches secured to the upper edges of the fender, which extend a suitable distance forward and rearward therefrom, is then bent upward, so as to come on either side of the trolley-wire, and is then bent downward under the same and connected to each other. This guard might be dispensed with, but every precaution which can be adopted it is well to utilize.

The trolley-wire is suspended in the lower ends of the hangers 8, which extend up through the extremities of the bracket 9 and have a spring surrounding the lower portion of the same between said bracket and the clamp constituting the lower end thereof, substantially as shown. This bracket is substantially the same in construction as that upon which the track is supported, with the exception that the strap 2 is omitted.

In order to assist in retaining the car on the rail and to guard against the traction-wheels jumping the same, I have provided both wheels with guards I I and H H. These guards are preferably heart-shaped, have their upper edges secured to the body of the car, and depend downward on both sides of the wheels to a point below the tread of the track, toward which they are curved as shown. Their lowermost point is then bent inward toward the rail so that should the car incline to jump from any cause, speed or otherwise, the inturned or hooked lower point of said guards I or H would catch under the tread of the rail and hold the car and traction-wheel from leaving the track, and also to support the car upon the track in case the trolley-wire should break, substantially as shown.

If desired I can have two tracks for my system by merely extending the horizontal bar of the bracket in substantially the same manner and as shown in dotted lines in Fig. 3.

When operating my improved railway at night, it is deemed advisable to place upon the front of the car a suitable headlight. This I accomplish in an economical manner by providing the wire F, at some suitable point along its length in the car, with a shunt-wire K. This shunt-wire is provided with an incandescent lamp *k*, which projects from the front of the car about as shown, and is provided, if desired, with a reflector back of it for throwing the light forward. The operator, when he launches the car upon the track preparatory to sending it on its journey, switches the current from the wire F over the shunt-wire to which the entire current or a portion thereof passes to the motor, to which said shunt-wire is connected at its opposite end. This shunt-wire and lamp may be dispensed with if desired.

In order to prevent the liability of the car D running off the track A and being precipitated to the ground while in transit from one station to the other by reason of the track being accidentally or purposely broken or cut, I place the current-generator at a station or point ahead of the car. Thus the moment the track is broken or cut the circuit is opened and the car comes to a standstill. The necessity of an arrangement of this kind is apparent and is of prime importance in the practical working of my invention.

What I claim as new is—

1. The combination with an overhead wire, hangers 8 bracket 9, a spring surrounding the lower end of said hanger below said bracket, a single rail, chair in which its vertical web is seated and bracket consisting of the bars B brace 1 and strap 2, of a car having two wheels arranged in alinement, the one back of the other, and motor for propelling said car which takes current from said overhanging wire, and is electrically connected through one of said wheels to the rail, as set forth.

2. The combination with a positively-electrified overhead wire, a single rail constituting the negative circuit of said overhead wire, of a bicycle-car, having corresponding parallel vertical frames arising therefrom which are provided with vertically-elongated slots therein, a trolley-wheel, bearing-blocks therefor the central part of which is insulated from the outer part thereof, and which are placed in the slots of said vertical frames, and a motor for propelling said car taking current from said trolley-wheel and electrically connected to said rail, as set forth.

3. The combination with a positively-electrified overhead wire, a single rail constituting the negative circuit of said overhead wire, of a bicycle-car, having corresponding parallel vertical frames arising therefrom which are provided with vertically-elongated slots therein, a trolley-wheel, bearing-blocks there-

for, the central part of which is insulated from the outer part thereof and which are placed in the slots of said vertical frames and spring-cushions therefor, and a motor for propelling said car taking current from said trolley-wheel and electrically connected to said rail, as set forth.

4. The combination with a positively-electrified overhead wire, a single rail constituting the negative circuit of said wire, of a bicycle-car having corresponding parallel vertical frames arising therefrom to a plane above said overhead wire, and a longitudinal guard-wire extending parallel with said wire both forward and backward from said frames and then bent under said overhead wire as described, a trolley-wheel journaled in said vertical frames and a motor taking current from said trolley-wheel, and electrically connected to said rail, as set forth.

ED. WILSON FARNHAM.

Witnesses:

CHARLES M. HIGGINSON,

E. J. DYKINS.