

No. 639,713.

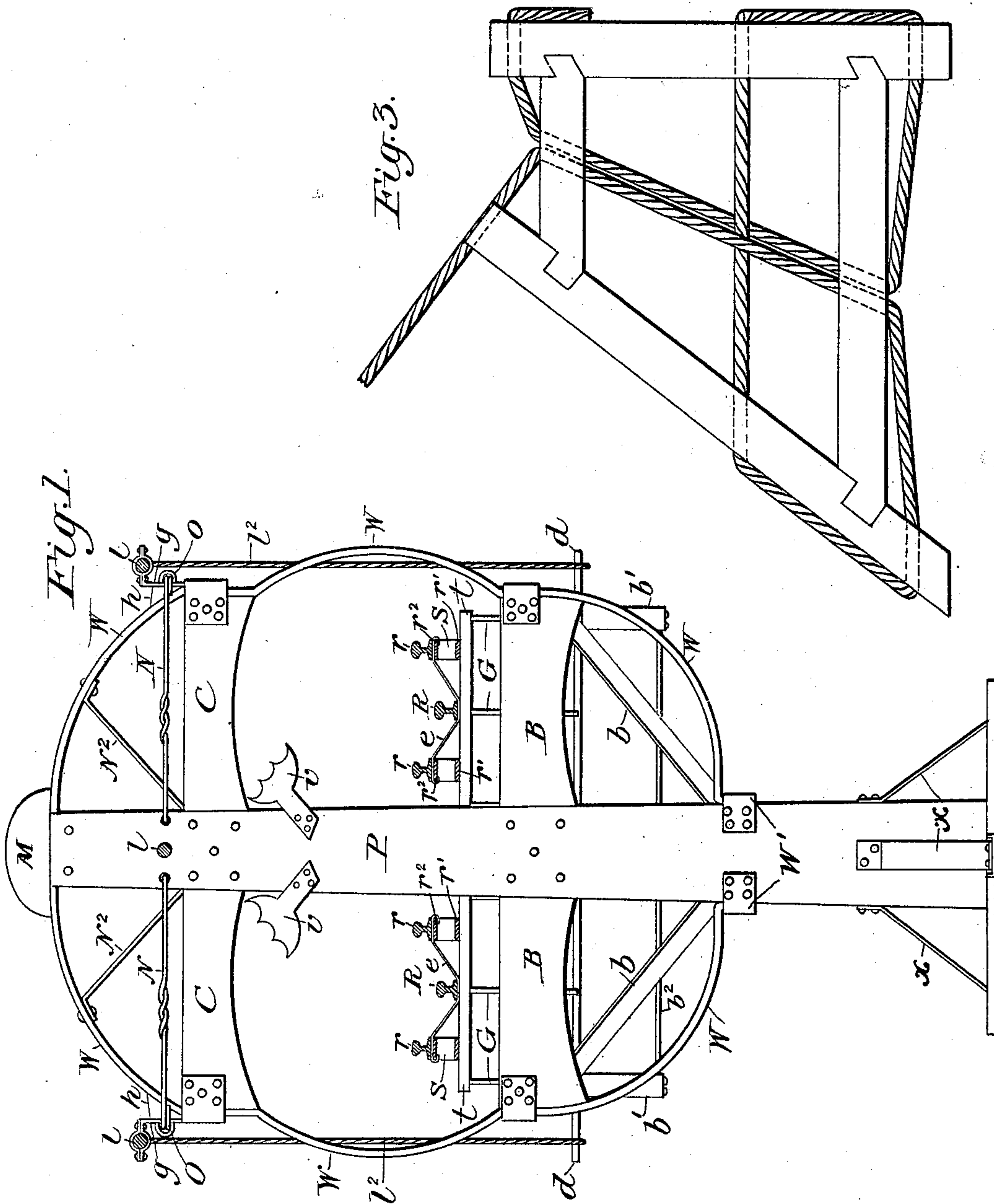
Patented Dec. 26, 1899.

J. H. COOLEY.  
ELEVATED ELECTRIC CAR LINE.

(Application filed Oct. 15, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:  
J. D. McLaren,  
H. S. Lewis.

Inventor:  
Joe H. Cooley

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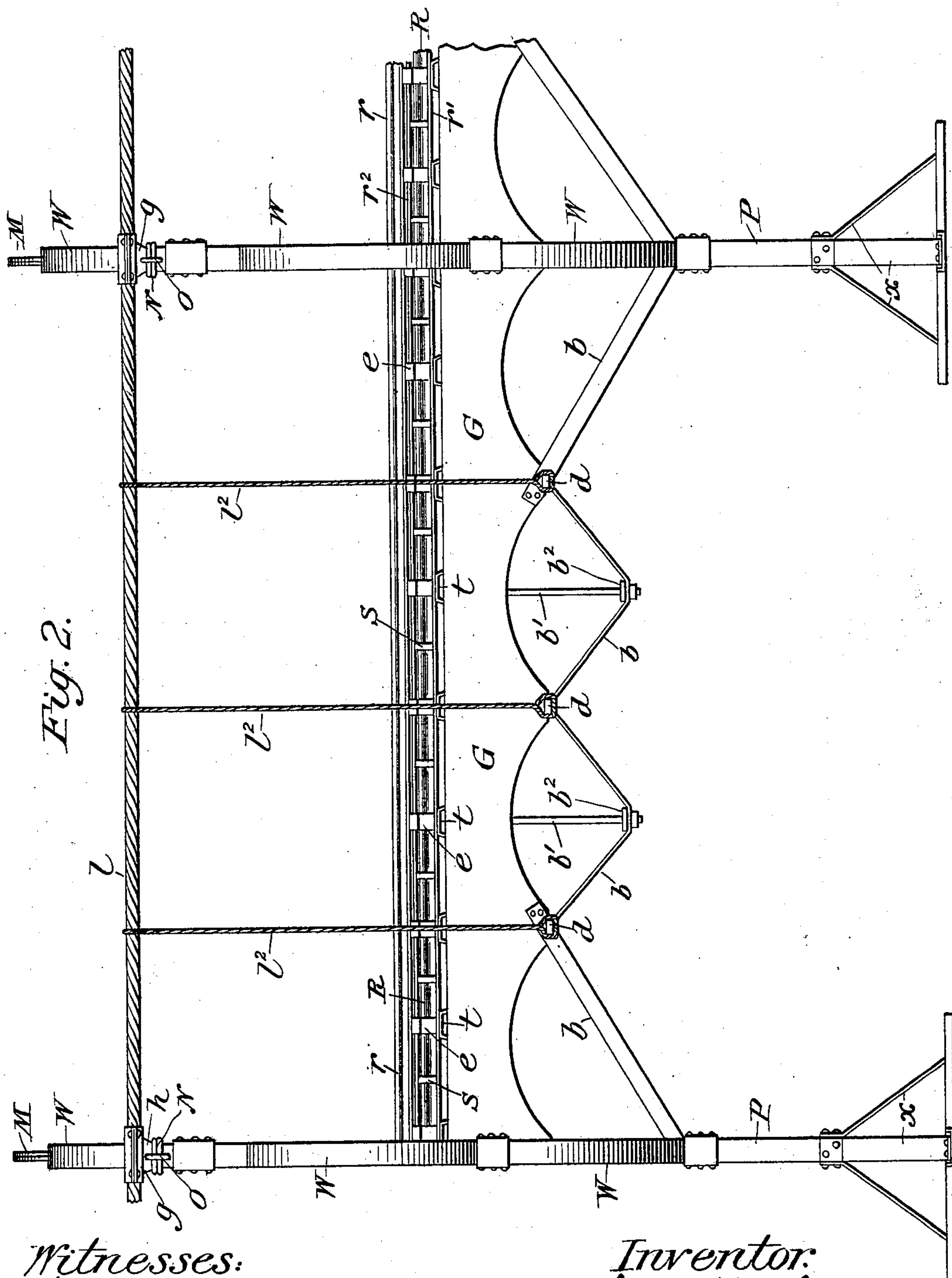
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*Witnesses:*

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W. S. Lewis,

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*Inventor:*

Joe H Bouley



# UNITED STATES PATENT OFFICE.

JOE H. COOLEY, OF ABILENE, TEXAS.

## ELEVATED ELECTRIC-CAR LINE.

SPECIFICATION forming part of Letters Patent No. 639,713, dated December 26, 1899.

Application filed October 15, 1898. Serial No. 693,688. (No model.)

*To all whom it may concern:*

Be it known that I, JOE H. COOLEY, a citizen of the United States, residing at Abilene, in the county of Taylor and State of Texas, have invented certain new and useful Improvements in Elevated Electric-Car Lines; and I do hereby declare the following to be a full and clear description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain new and useful improvements in elevated electric-car lines, and more particularly to improvements upon my former patent, dated May 31, 1898, and numbered 604,729, and relating more especially to improvements in the manner of the construction of some of the parts, all as will be hereinafter fully described, and set forth in the claims hereto annexed.

Figure 1 is an end section of my invention, showing all the parts assembled. Fig. 2 is a side elevation of the elevated track as shown in Fig. 1, and Fig. 3 is a preferred form of securing means for the cables.

Referring to the drawings by letters, P represents standards or posts arranged at suitable intervals and set in the ground at a suitable depth to insure their being held rigid therein and supported or anchored by means of the braces X or any other suitable brace which might suggest itself. Intermediate of the ends of these posts and at a desired height above the ground are arranged the transverse braces B and C, passing through openings in the standard P and which in practice will preferably be made of iron or other metal capable of great strength, as the entire structure will rest upon and be suspended from these braces. In order that these transverse braces B and C be strengthened and to equalize the strain and weight to which they will be subjected, I provide a substantially circular or oval shaped bracing-frame, as the case may be, which I will make in one or more pieces secured at the top of the standard P by any suitable means and extending on either side thereof down past and being engaged by the ends of the braces B and C and finally resting at its ends in the sockets W', near the bottom of the standard. Of course it is obvious that should I find it convenient this bracing-frame W could be made in six sections, three on a

side, without departing from the general structure or affecting the result materially.

G are girders the ends of which are secured to the transverse braces B in any well-known manner and are trussed and tied by means of the trusses *b* and the rods *b'*, upon which the cross-braces *b*<sup>2</sup> are secured. These girders I arrange, preferably, in series of three on each side of the standard P, as clearly shown in Fig. 1, and upon the upper edges of these girders the bottom of the cross or rail ties *t* will rest and be secured. Upon these cross-ties *t* will be fastened blocks S between the stringers *r'* and *r*<sup>2</sup>, the steel rails *r* being laid upon the stringers and fastened in the usual manner. The traction-rail or the middle rail R will rest directly upon the cross-ties *t*. It is upon this middle rail R that the single-truck wheel fore and aft the car will run, the rails *r r* being nearly balance-rails and are braced, as shown at *e*.

On either side of the car-body I will provide one or more spring-mounted wheels which will be normally held out of contact with the side rails, but which bear against them and through the medium of springs will serve to balance the car without inconvenience to the passengers.

*v v* represent any suitable trolley-support.

To further strengthen and brace the girders G and add rigidity to the entire structure, I provide at the respective ends of the transverse brace C an upwardly-extending bracket *h*, the ends of which project at right angles. Intermediate of the juncture of this right-angular projection with the main portion of the bracket and its outer end is a bowed portion, substantially semicircular in cross-section, in which a cable *l* rests and is securely held therein by means of a similarly-detachable member fastened to the bracket *h* by bolts. It will readily be seen that in case I make the frame W of six sections, as heretofore mentioned, this bracket might be cast or otherwise secured to the upper ends of the side members W<sup>2</sup> or made separate, as desired.

O is a loop in the bracket *h*, through which one end of the reinforcing-braces N are secured at the other end in an opening in the standard P. The tension on the bracket caused by the inward pull of this brace forces the inner side of the bracket against the tri-



angular block *g*, and thus prevents any displacement of said bracket and greatly adds to its rigidity.

The cables *l* will preferably be three in number, one on each side or end of the transverse brace *C* and one in the center of the structure, all three running longitudinally thereof, the center one passing through the standard. At predetermined intervals will be arranged downwardly-extending cables *l*<sup>2</sup>, which will be connected at the lower portions thereof to the cross ribs or braces *d*, which pass through openings in the girders *G*, which run across the entire width of the framework and project on either side of the girders for some little distance, and it is to these projecting ends that the cables *l*<sup>2</sup> are secured. About midway of the ends of these ribs or braces *d* the lower ends of similar downwardly-extending cables are secured, which, while they are not shown in the drawings, their relative positions will be obvious by reference to the middle cable *l* in Fig. 1.

From the foregoing description it will be seen that I have provided an elevated-railway system which will commend itself for simplicity, lightness, and rigidity of structure and adaptability to the use for which it is intended.

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

1. In an elevated electric-car system, the combination with the standards having a suitable anchor on the ends thereof, of cross-beams secured to and running transversely of the standards, supporting-girders the ends of which rest on said cross-beams, a traction-rail arranged on either side of the standard, car-balancing rails located below the car, one on either side of the traction-rails, cables secured to the ends of the cross-beam above the track and supporting the girders by means of a series of downwardly-projecting cables arranged at intervals along the first-named cable substantially as described.

2. In an elevated double-track electric-carline system, the combination with the posts, of the cross-beams *B* and *C*, girders arranged in series and supported by the cross-brace *B*, rail-ties arranged upon the upper edges of said girders, stringers and supporting-blocks arranged on the ties, supporting or balancing rails secured on said stringers and supporting-blocks, a traction-rail positioned intermediate of the two balancing-rails and running parallel therewith, cables secured to the outer

ends of the cross-beams *C* and supporting the girders through a secondary set of vertically-arranged cables positioned at intervals on the first-named cables substantially as described.

3. In an elevated double-track electric-carline system, the combination with the posts *P*, anchored in the ground, of the cross-beams *B* and *C*, the iron or steel bracing-frame adapted to equalize the weight of the structure and connected to the respective ends of the cross-beams *B* and *C*, two of the members of the bracing-frame at their upper ends being provided with brackets in which are cables running longitudinally the structure its entire length, and carrying a second set of downwardly-extending cables supporting a series of girders intermediate of their ends, said girders resting upon the cross-beam *B*, the cross-ties, stringers and curved braces, supporting-blocks and rails arranged on said girders substantially as described.

4. In an elevated double-track electric-carline system the combination with the posts having anchors at their ends adapted to be inserted in the ground below the surface thereof, cross-beams *B* and *C* arranged on said posts, the substantially circular bracing-frame secured to the respective ends of the cross-beams *B* and *C*, the cable-supporting brackets secured to the top of the side members of the circular bracing-frame, and held against the triangular blocks, located between the inner sides of the brackets and the outer sides of the supporting-frame by means of a transverse brace one end of which engages a loop in the bracket and the other end being secured in the standard, cables secured in said brackets, downwardly-extending cables arranged at predetermined intervals to the first-named cable at their upper ends, and at their depending ends to transverse ribs or braces passing through openings in the girders substantially as and for the purpose set forth.

5. In a double-track electric elevated-railway system, the combination with the standards and cross-braces, of the substantially oval-shaped bracing-frame *W* consisting of a series of curved bracing members, the intermediate members *W'* carrying at their upper ends angular cable-supporting brackets, cables secured in said brackets and running longitudinally the structure, substantially as described.

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Witnesses:

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W. H. JOHNSON.