

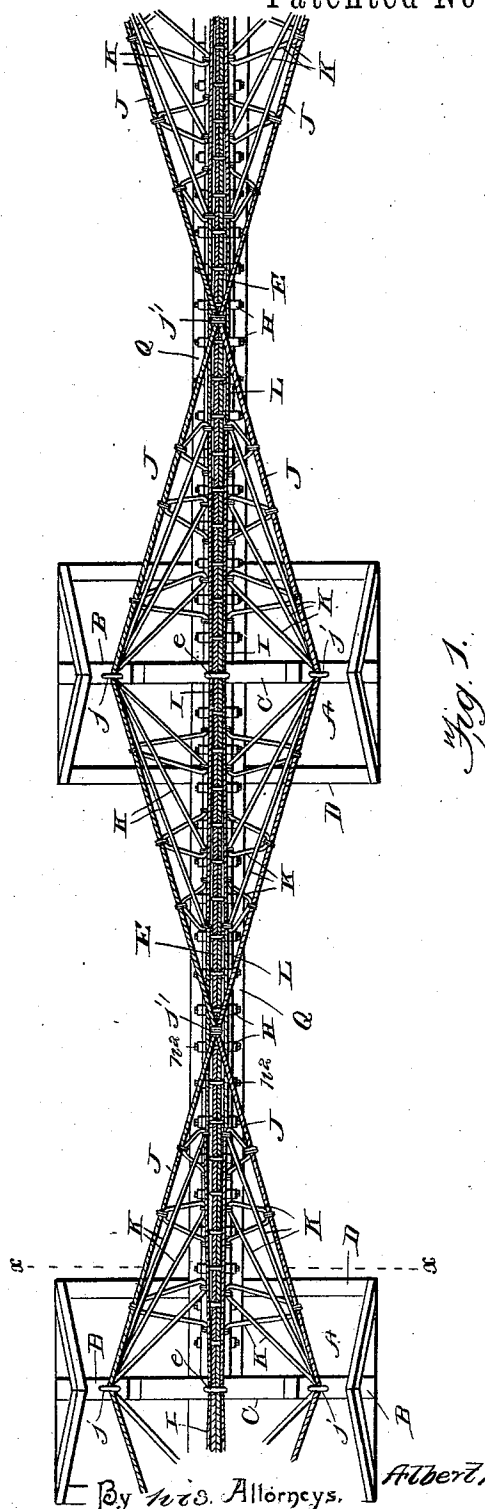
(No Model.)

3 Sheets—Sheet 1.

A. ST. J. PICKETT.
ELEVATED RAILWAY.

No. 529,749.

Patented Nov. 27, 1894.



Witnesses

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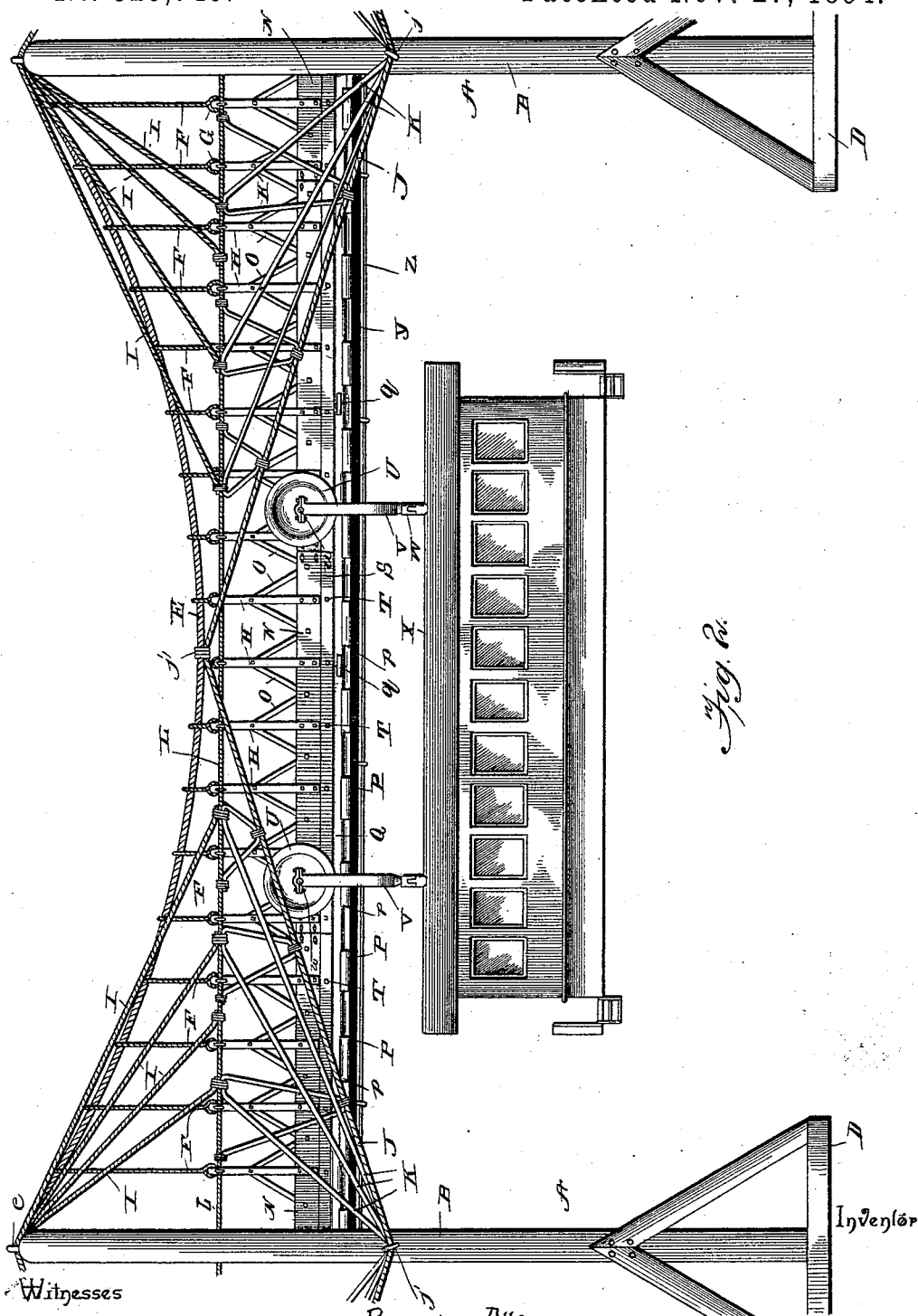
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3 Sheets—Sheet 2.

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Witnesses

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UNITED STATES PATENT OFFICE.

ALBERT ST. J. PICKETT, OF DELAWARE, OHIO.

ELEVATED RAILWAY.

SPECIFICATION forming part of Letters Patent No. 529,749, dated November 27, 1894.

Application filed November 15, 1893. Serial No. 491,026. (No model.)

To all whom it may concern:

Be it known that I, ALBERT ST. J. PICKETT, a citizen of the United States, residing at Delaware, in the county of Delaware and State of Ohio, have invented a new and useful Elevated Railway, of which the following is a specification.

This invention relates to elevated railways, and it has for its object to provide an improved railway of this character which shall possess exceptional strength, while at the same time affording every facility for rapid transit.

To this end the main and primary object of the present invention is to construct an elevated railway of a suspension character, which may be easily constructed over any kind of road without the usual tedious and expensive grading, while at the same time being insured against damage by washouts, landslides, &c., and another object is to provide a railway on which the cars may travel at a very high rate of speed without danger of collision or derailment.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the accompanying drawings:—Figure 1 is a top plan view of a section of an elevated railway constructed in accordance with this invention showing nearly two spans of track. Fig. 2 is a side elevation of one span. Fig. 3 is a vertical sectional view on the line $x-x$ of Fig. 1. Fig. 4 is an enlarged detail elevation of a short section of the track and its hanging supports. Fig. 5 is an enlarged vertical sectional view on the line $y-y$ of Fig. 4.

Referring to the accompanying drawings:—A represents suitable upright supporting towers constructed of material of suitable strength and comprising the opposite braced uprights B, connected at their upper ends by the transverse cross beams C. The upright frame towers B, are arranged at regular spaces apart along the line of the road, and are provided with the widened supporting bases D, which insure the steady seating of the said towers on the bed of the road. These towers may be arranged in their proper places along the route without the necessity of grading or

the other preparations necessary in building ordinary surface railways, and said towers serve as the main support for the longitudinal suspension cable E.

The longitudinal suspension cable E, forms the main hanging support for the track devices to be presently described, and said main cable runs longitudinally of the entire line of road, and passes directly over the top cross beams of the frame towers A, and is suitably secured as at e , centrally to such upper cross beams. The said main cable E, which is thus sustained in an elevated position, is made of a sufficient strength in order to withstand not only the weight of the rail devices supported thereby, but of the trains which are adapted to run on the rail devices supported by the cable, and such cable preferably comprises a pair of cables securely clamped together in order to form practically one continuous suspension cable for the entire line of track.

In order to secure the entire supporting strength of the suspension cable while at the same time not unduly straining the same, such cable is spanned from arch to arch on a curve, in the same manner as suspension cables in bridges and other similar suspended structures, and securely attached at their upper ends to the main suspension cable E, is a series of hanger ropes F. The hanger ropes F, are arranged vertically or diagonally as may be found desirable, and terminate at their lower ends in the connecting eyes G, which loosely receive the upper closed ends of the metallic hanger loops H.

The metallic hanger loops H, which are thus suspended from the main suspension cable E, are arranged in a number reasonably close together between the supporting towers, whereby a practically rigid or unyielding support is given to the track devices, and additional rigidity is given longitudinally to the track supports by means of a series of short auxiliary suspension cables I, passing over the top of each tower and connected at their extremities to the longitudinal connecting rod or rope L, which connects the upper ends of the hanger loops H, said cables ranging on both sides of the center of each span, and such auxiliary cables which are attached to points adjacent to the hanger loops at proper distances, serve to diminish the pull or strain on

the main cable and assist in keeping the track in a perfectly horizontal position. While a practically rigid or unyielding support is thus provided for the track devices to be presently described, lateral swaying or yielding must be overcome and to prevent this I employ the side bracing cables J. The side bracing cables J, pass around the opposite sides of the towers and are secured thereto at j , and leading from the towers are bowed in toward the main cable between the towers of each span, and are secured to the central lowest point of the main suspension cable E, as at j' , thereby holding the said main cable perfectly steady and firm in its longitudinal disposition, and it is to be noted that the point of attachment j , at the sides of the towers is as far below the lowest central point in the main cable's sag or curve, as the extreme upper end of the towers is above such lowest point of the main cable, so that any pull or weight placed upon the center of the span will make a corresponding pull upward on the side bracing cables J, of the adjoining spans, which in turn pulls down on the main cable of the next span thus providing means whereby the strain throughout the entire length of the track structure is equalized. Bracing guy ropes K, are attached to the side cables J, between the center of each span and the towers, and are also connected at both sides of the upper ends of the hanger loops H, or at least to the longitudinal connecting rod or rope L, which connects the upper extremities of the hanger loops, and not only provides for the connection of the bracing guy ropes thereto but also serves to resist any tendency of the hanger loops to pull apart.

Having fully described the specific construction and the manner of bracing the supporting device for the track structure, I will now refer more particularly to such track structure, and by reference to the drawings, it will be clearly seen that each of the hanger loops H, comprise the parallel side arms M, having off-standing lower ends m , forming inner shouldered portions, which receive the upper ends of the parallel stringer plates N, the inner sides of which stringer plates are in a line flush with the inner sides of the arms M. The parallel stringer plates N, extend longitudinally along the entire line of the road, and consist of a number of aligned sections of iron, steel or other suitably strong plates, such sections being fastened together intermediate of the hanger loops so as to break joint as far as possible throughout the entire structure, and at the joints of said sections of the stringer plates, the same are slotted as at n , to receive the connecting bolts n' , whereby the proper expansion and contraction of the track structure may be provided for. The said parallel stringer plates N, are also securely bolted to the lower off-standing shouldered ends of the hanger loops by the bolts n'' , and are securely braced to such hanger loops by the diagonal brace rods O, se-

cured at their lower ends, intermediate of the hanger loops, between the stringer plates and at their upper intersecting ends between the opposite arms of the hanger loops by a slotted connection o. The said parallel stringer plates N are each provided with a regularly spaced series of off-standing chair flanges P, disposed at direct right angles to the vertical disposition of the plates. By reason of having the right angularly disposed chair flanges regularly spaced apart, the flanges of one stringer plate are permitted to underlap the lower edge of the other stringer plate between its flanges, whereby the flanges of one stringer plate project at one side of the other stringer plate, and the said chair flanges projecting at both sides of the track structure are provided with the upturned clamp ends p , which embrace the outer lower edges of the opposite rails Q. The opposite rails Q, rest flat on the chairs P, formed by the flanges of the stringer plates, and are connected together at their joints by the usual rail joints q . The said rails are further provided at their upper inner edges with the beveled projections R, on which fit the lower beveled ends of the longitudinal clamp strips or plates S. The longitudinal clamp strips or plates S, are arranged longitudinally along the outside of both of the stringer plates N, and are securely clamped thereto and held abutting against the lower extremities of the loop arms M, by the bolts T, and at the joints of the sections of said clamp strips or plates are provided the usual slot connections permitting contraction and expansion.

The opposite rails Q, are adapted to form traveling supports for the car wheels U, journaled on the car axles u , and mounted in the opposite upper ends of the U-shaped truck yokes V, which span the bottom of the track structure and are provided at their lower closed ends with the knuckle joints W, by means of which they are connected to the top of a car X, of any suitable construction. These trucks may be arranged in any number desired on top of the cars, and it will be obvious that any suitable propulsion may be employed for propelling the cars, but in the event of employing electric motor devices a suitable insulator strip Y, may be secured to the bottom of the track structure to provide means for supporting the ordinary trolley wire or conductor Z.

Changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In an elevated railway, the upright frame towers, a longitudinal suspension cable passing over the top of said towers and sagging there-between, a track suspended from said cable, and side bracing cables passing around

the outer sides of said towers and connected between the towers to the central point of each span of said cable, substantially as set forth.

2. In an elevated railway, the upright frame towers arranged in longitudinal alignment, a main longitudinal suspension cable passing over the top of said towers and sagging therebetween, the longitudinally arranged track, hangers suspended from the suspension cable and connected to the track, a longitudinal rod or rope connecting the upper ends of the hangers, auxiliary suspension cables passing over the top of each tower and connected at their extremities to the longitudinal rod or rope, and side bracing cables passing around the outer sides of said towers and connected between the towers to the central point of each span of said cable, substantially as set forth.

3. In an elevated railway, the upright frame towers in alignment, a main suspension cable arranged longitudinally over the top of said towers, a longitudinally arranged track, hangers suspended from the suspension cable and carrying the track, a longitudinal connecting rod or rope connecting said hangers, auxiliary suspension cables passing over the top of each tower and connected at proper distances to said connecting rod or rope, the side bracing cables passing around the towers and connected at an intermediate point to each span of said suspension cable, and the bracing guy ropes attached to the side cables and to said connecting rod or rope, substantially as set forth.

4. In an elevated railway, a main suspension cable sustained in an elevated position, a series of hanger loops suspended from said cable, a stringer plate attached to the lower ends of said hanger loops and having aligned

rail chairs, and the track rails secured on said rail chairs, substantially as set forth.

5. In an elevated railway, a main suspension cable sustained in an elevated position, a series of hanger loops suspended from said cable, parallel stringer plates secured to the lower ends of said hanger loops and having at their lower ends right angularly disposed rail chairs, and the opposite rails clamped in position in the rail chairs upon the outside of each stringer plate, substantially as set forth.

6. In an elevated railway, a main suspension cable sustained in an elevated position, a series of hanger loops suspended from said cable and provided with lower off-standing shouldered ends, parallel stringer plates secured to said lower shouldered ends of the hanger loops and each of which is provided at its lower end with a spaced series of right-angularly disposed off-standing chair flanges underlapping the other stringer plate and terminating in upturned clamp ends, the opposite rails fitted on the chair flanges at one side of each stringer plate and provided at their upper inner edges with beveled projections, longitudinal clamp strips secured to the opposite stringer plates under the lower extremities of the hanger loops and provided with lower beveled ends fitting the beveled projections of the rails, and diagonal brace rods secured at their lower ends between the stringer plates and at their upper ends to the hanger loops, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ALBERT ST. J. PICKETT.

Witnesses:

T. M. MARRIOTT,
Q. D. FOSTER.