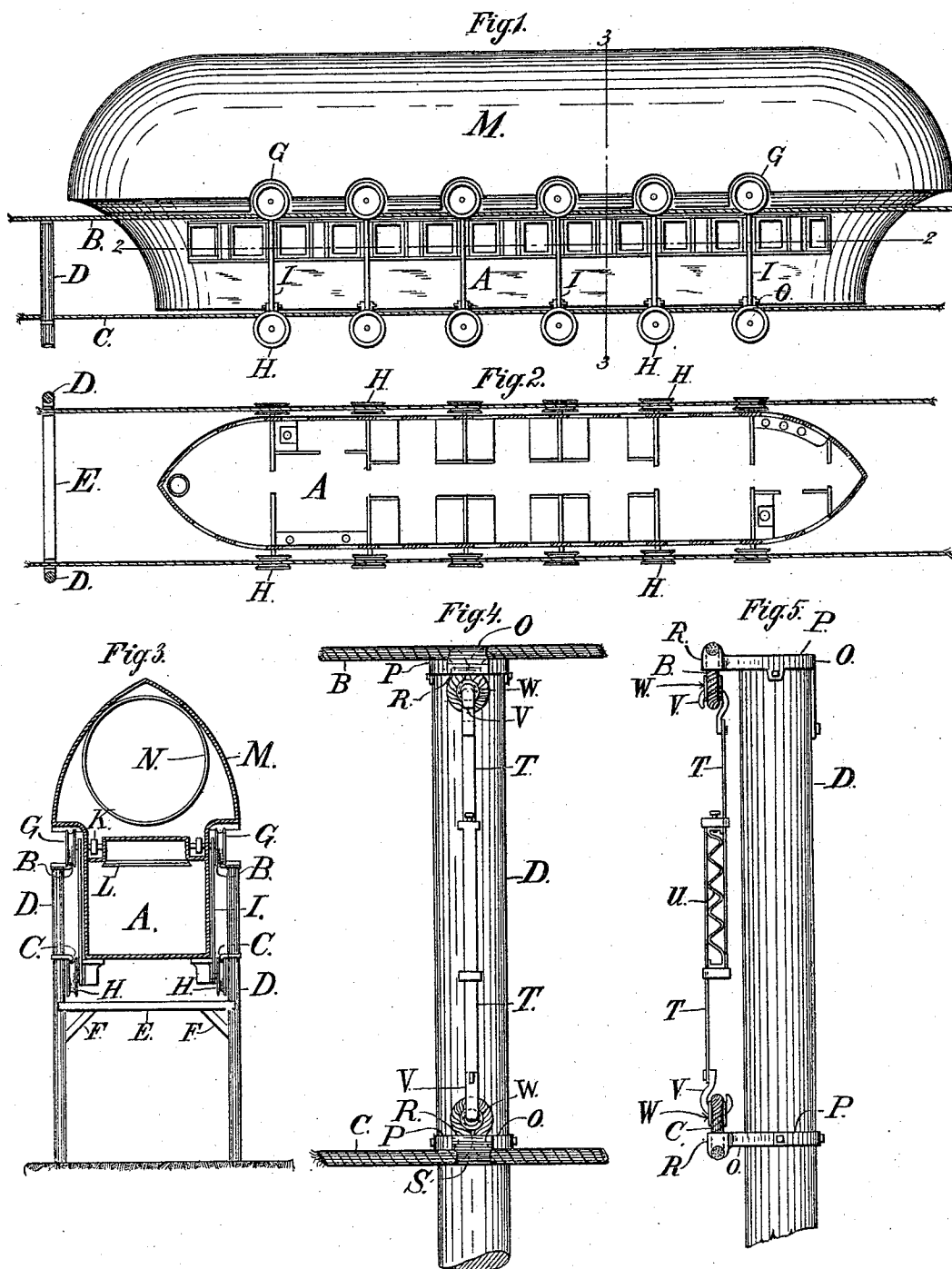


(No Model.)

H. W. KIRCHNER.
ELEVATED RAILWAY.

No. 485,700.

Patented Nov. 8, 1892.



Witnesses.
Geo. Crookes
W. M. Byrne.

Inventor:
Henry H. Kirchner
by Paul Bakerwell
his attorney

UNITED STATES PATENT OFFICE.

HENRY W. KIRCHNER, OF DENVER, COLORADO.

ELEVATED RAILWAY.

SPECIFICATION forming part of Letters Patent No. 485,700, dated November 8, 1892.

Application filed May 4, 1891. Serial No. 391,511. (No model.)

To all whom it may concern:

Be it known that I, HENRY W. KIRCHNER, a citizen of the United States, residing in the city of Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Means for Transportation, of which the following is a full, clear, and exact description.

My invention relates to means for transportation in which the roadway is elevated above the ground and in which the weight of the cars and occupants is wholly or partially supported in transit by being attached to a weight-compensating device and the roadway intended more as a guide than a support.

More particularly my invention relates to improvements in the devices for which United States Letters Patent No. 441,672 were granted to myself and George N. Chase on December 2, 1890. It consists in an improved form of device for supporting the weight of the car, &c., and in an improved form of device for automatically keeping the supporting parallel cables normally stretched at an equal tension.

In the accompanying drawings, in which like letters of reference denote like parts in the several figures, Figure 1 is a side elevation of my improved car and roadway. Fig. 2 is a horizontal section taken on the line 2 2 in Fig. 1. Fig. 3 is a vertical section taken on the line 3 3 in Fig. 1; and Figs. 4 and 5 are respectively a front and a side elevation of the supporting-posts for the roadway, showing in enlarged detail the device for stretching the cables.

A is the body of the car, practically similar in details of construction to that shown and described in the patent already referred to.

B and C are respectively the upper and lower supporting and guiding roadway-cables, which are secured to and supported by the posts D, which are connected and braced together on either side of the roadway by the spanners E and struts F. (See Figs. 2 and 3.)

G and H are respectively the upper and lower supporting and guiding pulleys, which on the same side of the car A are adjustably secured together by the connecting-bars I, as described in the patent referred to. To the journal-shaft K of one of the upper sets of

wheels is secured the operative part of some motor L for giving motion to the car A.

To the body of the car A is secured the superstructure M, made of some light strong material, preferably aluminum, from which the air can be withdrawn, forming a vacuum-chamber.

N is one of the several spiral braces placed within the chamber M at convenient intervals in the length of the same for reinforcing the walls of the vacuum-chamber M against outside pressure.

O (see Figs. 4 and 5) is my improved cable-supporting bracket-piece, which is secured to the posts D at intervals in the line of the roadway where it is found desirable to place stretching devices. The bracket-pieces O are formed with a band portion P, formed to embrace the posts D, conforming to the outline thereof and to be secured thereto. The overhanging or projecting portion R is formed with two curved holes S of a size to correspond with the cables B and C, which lead from opposite directions in a line parallel to the line of the roadway-cables, converging toward each other until they meet in a line at right angles to the line of cables. The intermediate space between the holes is occupied by the material of the bracket, forming a bridge across from one portion of the cable to the other when it is looped through the bracket, as shown in Fig. 4.

My improved stretching device, as illustrated in Figs. 4 and 5, consists in two flat bars T, one end of which is formed or bent at right angles (see Fig. 5) and a perforation formed in the outer end thereof to accommodate the other bar when they are secured together, as shown in Fig. 5, forming a loop or double stirrup, into which is fitted the compression-spring U. To the extending ends of the bars T are secured the hooks V, adapted to be hooked into the loop of the cable when threaded through the bracket-block, as shown in Fig. 4. Into the loop are fitted the thimbles W for preventing the kinking of the cable and the wearing of the same by the hooks V. The tendency of the spring U is to expand, carrying with it the overlapped ends of the bars T, bringing together the hooks V, and thereby stretching the cables B and C to com-

pensate for the varying lengths of the cables due to changes in temperature.

5 In practice it is intended to exhaust the air from the vacuum-chamber M and have it take the place of the gas-receiver, as described in the aforementioned patent, to support the car A.

I claim—

10 In an elevated railway, a roadway consisting of an upper and a lower cable on each side of said roadway, said cables being supported in upper and lower brackets secured to supporting-posts, said brackets being formed at intervals in said roadway with two oppositely-extending holes, through which the
15 cable is threaded, forming a loop which engages with hooks secured to either end of a stretching device, whereby the cables in said

roadway are kept at the proper tension, said stretching device consisting of two parallel bars secured together with their ends respectively overlapping the other bar and loosely secured thereto, forming a sliding double-stirrup loop, in which is secured a compression-spring, the tendency of which is to separate said overlapping ends longitudinally, combined and operating substantially as described, and for the purposes specified.

In testimony whereof I have affixed my signature, in presence of two witnesses, this 13th day of April, 1891.

H. W. KIRCHNER.

Witnesses:

JOS. A. GROVES,
JOS. H. FLOWER.