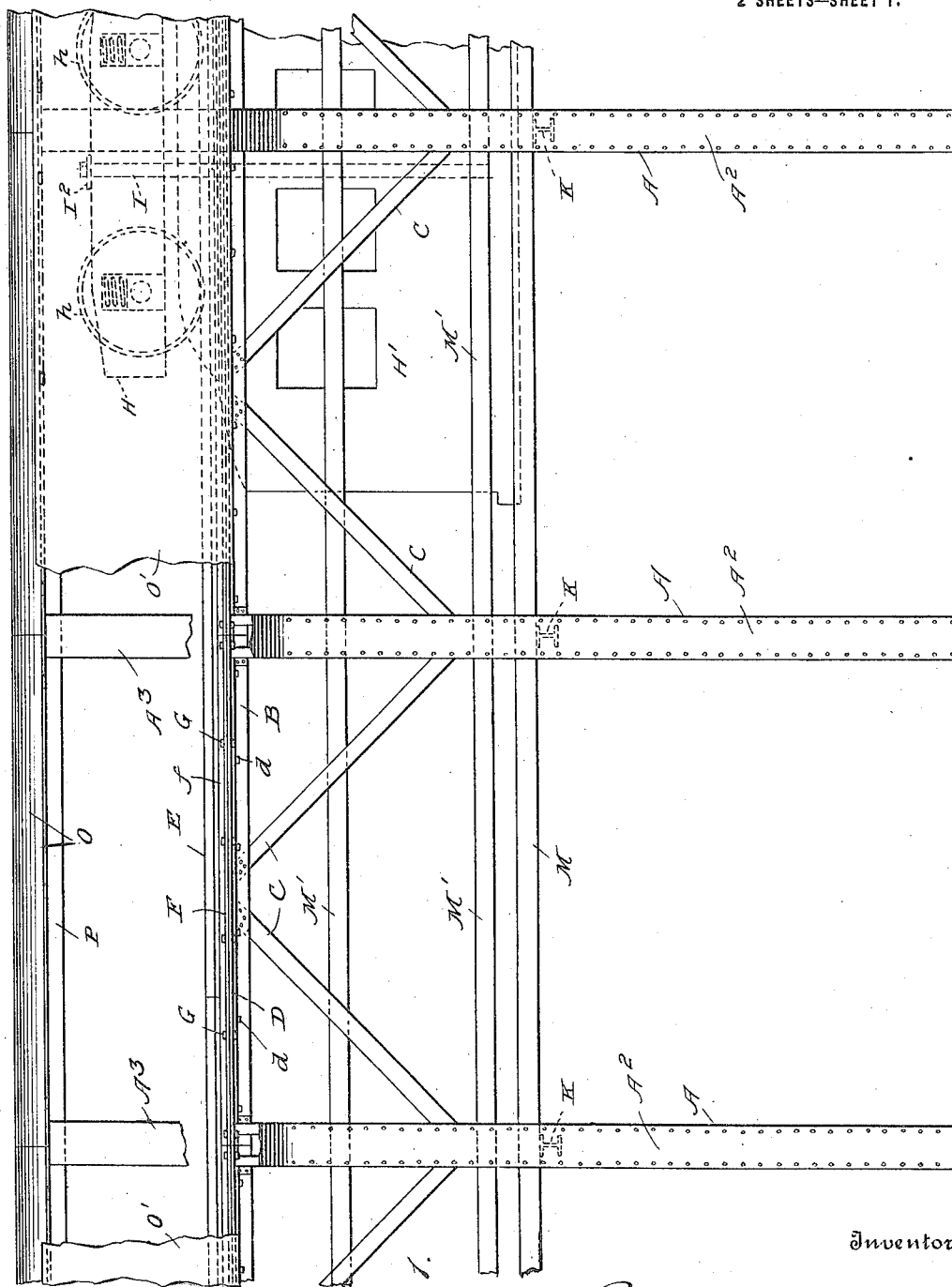


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ELEVATED RAILWAY SYSTEM.
APPLICATION FILED JUNE 18, 1917.

1,255,459.

Patented Feb. 5, 1918.
2 SHEETS—SHEET 1.



Witness
Chas. J. Maier

Hubert P. Brown

Fig. 1.

By

C. E. Padgett

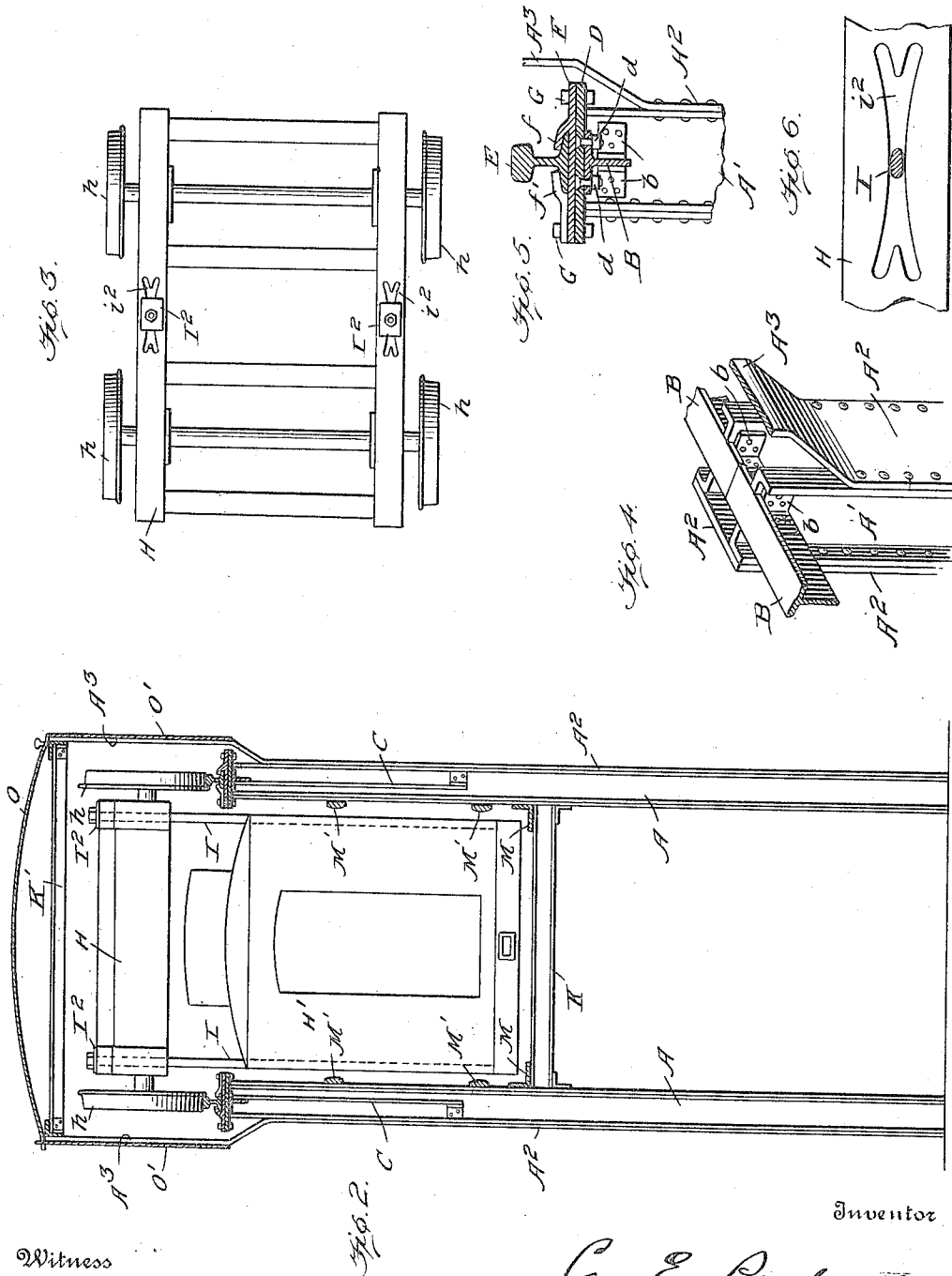
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UNITED STATES PATENT OFFICE.

CHARLES E. PADGETT, OF BUFFALO, NEW YORK.

ELEVATED-RAILWAY SYSTEM.

1,255,459.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES E. PADGETT, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Elevated-Railway Systems; and I do hereby declare the following to be a full, clear, and exact description of the same, when taken in connection with the accompanying drawings, forming part of this specification.

This invention relates to systems of transportation in which the cars are adapted to travel on ways elevated above the surface of the ground, the objects of the invention being to provide a simple and practical means whereby safe and rapid transportation may be effected both in urban and suburban localities, and with which all danger incident to surface transportation will be avoided and advantages secured in the way of increased safety, due to the fact that provision is made whereby disastrous accidents, due to derailment and to storm conditions will be effectually overcome.

Referring to the accompanying drawings,—

Figure 1 is a side elevation of a section of an elevated structure embodying the present improvements, portions being broken away and one end of a car or vehicle shown in outline.

Fig. 2 is a sectional elevation in a plane at right angles to Fig. 1.

Fig. 3 is a plan view of one of the trucks of the vehicle.

Figs. 4, 5 and 6 are details illustrating structural features of the fixed track frame and of the truck.

Like letters of reference in the several figures indicate the same parts.

In carrying the invention into practice, the fixed structure constituting the way over which the vehicles are propelled, embodies uprights or columns A, A, which will be of varying length or height, depending upon the contour of the surface, but with their upper ends at substantially the same level or at a level which will determine the grade of the tracks for the vehicles. These uprights or supporting pillars are spaced apart a distance

which will permit of connecting framing of a simple character but of sufficient strength to support the loads to be carried thereby, and they are preferably formed, as shown in detail in Figs. 4 and 5, of vertical channel irons A', with inner and outer plates A², riveted thereto, such forms of metal being adopted as will permit the use of stock material which may be conveniently and cheaply obtained. At their upper ends the columns or supporting uprights are connected by T-irons B, usually fastened in place by the customary angle brackets b, as in well understood structural iron work. The T-irons B are preferably located centrally over the columns and extend longitudinally throughout the entire length of the structure, there being provided suitable diagonal braces indicated at C to form a truss-like structure intermediate the column, so as to distribute the load more uniformly, and to relieve the connection between the columns and T-irons of shearing strains or any tendency of the structure to collapse by longitudinal movement.

The T-irons B form the base supports for the rails on which the vehicles travel and they are preferably provided with overlying base plates D riveted or bolted to the head flanges of the T-irons, as by bolts d and the base plates D extend laterally a short distance beyond the inner and outer edges of the columns A, as shown clearly in Figs. 2 and 5.

While the rails E may be of the usual type and bolted or fastened directly to the base plates D, they are preferably held in place by means forming part of the framing and rail base, which means also constitutes a guard to prevent disaster should a rail break or a joint become disconnected at any point in the length of the track. In the preferred construction and as shown, the base plate D is overlaid by a continuous track plate F having on the upper side a continuous overhanging flange f beneath which one of the base flanges of the rail will seat throughout the length of the rail, when the rail is in position directly over the T-iron B. The opposite base flange of the rail is confined beneath a removable flange plate f'

and the plates f' and F are adapted to be clamped and locked firmly in position on the rail base B by bolts or equivalent fastenings G, passing through the several
 5 plates at a point somewhat removed from the edges of the plates, so as to be out of the way of parts of the moving vehicle and so as to leave the inner edges of the plates unobstructed, whereby, in an emergency
 10 they may form a guide to prevent lateral displacement of the vehicle.

The vehicles are adapted to be suspended below trucks H having flanged wheels h of the usual railway car construction and traveling on the tracks E, the arrangement being such that the body of the vehicle, which
 15 may be a body for the conveyance of passengers as indicated at H' or a body for the conveyance of freight, as will be readily understood, is suspended below the trucks
 20 by hangers I extending down on each side of the car body H' and preferably substantially bounding the lateral dimensions of the car body, whereby any extreme lateral
 25 displacement would result in the hangers themselves being brought into contact with the edges of the track base plates or with safety guides to be hereinafter described.

The arrangement of the trucks running on the tracks directly over the vertical centers or axes of the columns imposes only compression loads on the columns themselves and, therefore, the latter may be of
 35 comparatively small cross sectional area, and the structure may be correspondingly cheapened in cost. With such a construction it is important that the columns on opposite sides of the car be connected together
 40 with sufficient rigidity and strength to prevent any possibility of the rails either spreading or the structure collapsing inwardly, and to meet this condition, the columns are arranged in pairs and connected
 45 together below the bottom of the car body, by transverse beams or girders K and above the plane of the top of the truck by transverse connections K', the ends of the latter being connected with upward extensions A³ preferably formed as integral parts
 50 of the outer plates A² of the columns, as shown clearly in Figs. 2 and 4.

A structure of the kind described provides a convenient means whereby vehicles
 55 traveling on the tracks may be protected effectually against inclement weather conditions, such as would interfere with the running of the trains and against disastrous accident, through breakage of the
 60 truck hangers or the possible derailment of the trucks. To provide against the latter contingencies, safety slide rails are provided extending longitudinally of the track and connecting the columns and transverse

girders, as the case may be, which safety
 65 slide rails will, in an extreme emergency, receive and support the car body while permitting it to progress forwardly until arrested by the frictional resistance between
 70 the moving and fixed parts, without producing disastrous results. Conveniently, angle irons M are located in position below and laterally of the lower edges of the car body and are rigidly connected with the
 75 transverse girders K and columns A, while plates at the tops of the column supplemental safety slide rails M' are bridged between the columns; thus the safety slide rails M', edges of the rail base plates and
 80 angle irons M, together, form continuous safety guides which will cooperate with and support the car body even though the truck frames or trucks be broken or derailed. Under ordinary running conditions, sufficient
 85 clearance is allowed between the car body or the hangers I and the safety slide rails to prevent any contact, and this clearance is approximately sufficient to permit the lateral displacement of the flanged
 90 wheels to a point where the flanges of the wheels will be about central only of the rails E and hence, before the wheels can become entirely derailed, the safety slide rails will
 95 come into action to prevent further movement in that direction.

The structure is such that a comparatively light and cheap form of housing may be placed over and, if desired, down on each
 100 side of the truck space above the rails E. As a convenient construction, an arched roof, in the form of plates O may be sprung between the longitudinal L-irons P connecting the upper ends of the extensions A³, and the ends of the transverse connections K',
 105 and side plates O' may be located on the outer sides of the extensions A³. Either one or all of these plates may be hinged or removably mounted in position so as to facilitate repair of the fixed structure, or
 110 renewal in the case of deterioration. Because of the complete support afforded by the fixed framing, the inclosing plates may be of relatively light gage and still be amply strong to withstand any strain imposed
 115 upon them by wind pressure or the pressure of any snow or ice loads which may be accumulated.

The arrangement of the supporting track, trucks and car body is such that the
 120 center of gravity may be located at approximately the plane of the supporting rails, and consequently, even at high speed, there will be little or no tendency of the car to tilt in one direction or the other in
 125 rounding curves and hence banking at the curves may be reduced to a minimum, but in order to permit of a degree of flexibility

which will permit of the trucks conforming to the curvature of the rails, without imposing undue strains on the car body or hangers, the hangers I preferably terminate at their upper ends in slide blocks I² located above the side frames of the trucks, while the hangers themselves extend through segmental slots I³ in the truck frames, with which arrangement the truck frames may assume a more or less angular position with relation to the car body and hanger, but at the same time relative lateral movement is effectually prevented.

It will be understood that the supporting wheels of the truck and car body will be driven by any suitable power mechanism, where the car is a motor car; or where the car or a train of cars is adapted to be drawn by a locomotive or motor car, the wheels of the latter only will be driven by motor mechanism.

Inasmuch as the structure provides a means of transportation which is practically safe against disastrous accidents through breakage or derailment, it becomes possible to drive the cars at an exceedingly high rate of speed, and it is preferred that the surface which may cause reduction in speed due to air pressure shall be rounded or pointed in the direction in which the car is traveling, as has heretofore been proposed in motor driven vehicles adapted to travel at high speeds and which feature is therefore not illustrated in the accompanying drawings.

What is claimed is:

1. An elevated railway structure embodying vertical parallel supporting columns spaced apart to form a passageway between them for the accommodation of a car body, transverse beams connecting the columns below the car body space, and tracks on which the car travels mounted on the upper end of the columns in substantially the vertical axial line thereof, whereby the weight of the car will produce compression strains only in the supporting columns.

2. In an elevated railway structure, the combination with the vertical supporting columns, tracks supported on the upper ends of said columns in substantially the axial line of the columns, transverse beams connecting the columns below their upper ends, whereby a space for the accommodation of the car body is formed between the columns and above the transverse beams, and safety slide rails mounted on the proximate faces of the columns and upper sides of the transverse beams respectively.

3. In an elevated railway structure, the combination with the vertical columns arranged in pairs spaced apart for the accommodation of a car body between them, supporting rails on which the car travels,

mounted on the upper ends of the columns and in substantial alinement therewith, supplemental extensions carried by the columns and projecting above the level of the rails, and transverse connections connecting the columns below the car body space and connecting the column extensions above the truck space over the rails.

4. An elevated railway structure embodying vertical supporting columns arranged in pairs spaced apart for the accommodation of a car body between them, supporting rails mounted on the upper ends of the columns, and in substantial alinement therewith, extensions carried by the columns and projecting above the level of the supporting rails, transverse connections between the upper ends of the extensions and between the columns below the car body space, safety guard rails carried by the proximate sides of the pairs of columns and lower transverse connections, and an inclosing covering extending over the column extensions and upper transverse connections, whereby a way is defined between the columns for the car body and above the columns for the truck on which the car body is suspended.

5. In an elevated railway structure, the combination with the vertical supporting columns arranged in pairs, and forming between them a space for the car body, rail base plates mounted on the upper ends of the columns, rails removably mounted on said base plates in substantial alinement with the columns, and transverse beams connecting the columns below the car body space, said rails base plates forming safety guideways for limiting lateral displacement of the car body.

6. In an elevated railway structure, the combination with the vertical supporting columns arranged in pairs with transverse connecting beams between the columns at a considerable distance below their upper ends, whereby a car body space is defined below the upper ends of the columns and above the transverse beams, of rail base plates mounted on the upper ends of the columns and having rail seats in substantial alinement with the columns with overhanging flanges carried by said rail base plates for embracing the base flanges of the rail.

7. In an elevated railway structure, the combination with the vertical supporting columns arranged in pairs spaced apart to form a car body space between their upper ends, with transverse beams connecting the columns of the pairs below said car body space, of T-irons mounted on the upper ends of the columns, rail base plates mounted on said T-irons, flanged rail-base engaging plates mounted on said base plates, and rails held by said flanged plates in substantial

alinement with the columns, whereby the weight of the car produces compression strains only in the columns and plates.

8. In an elevated railway structure, the combination with the vertical columns arranged in pairs, spaced apart to form a car body space between their upper ends, and base plates mounted on the upper ends of

said columns, or track plates carried by said base plates, and embodying continuous flange projections for overlying the rail flanges throughout the length of the rail and a rail seated beneath and held by said flanges. 10

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."