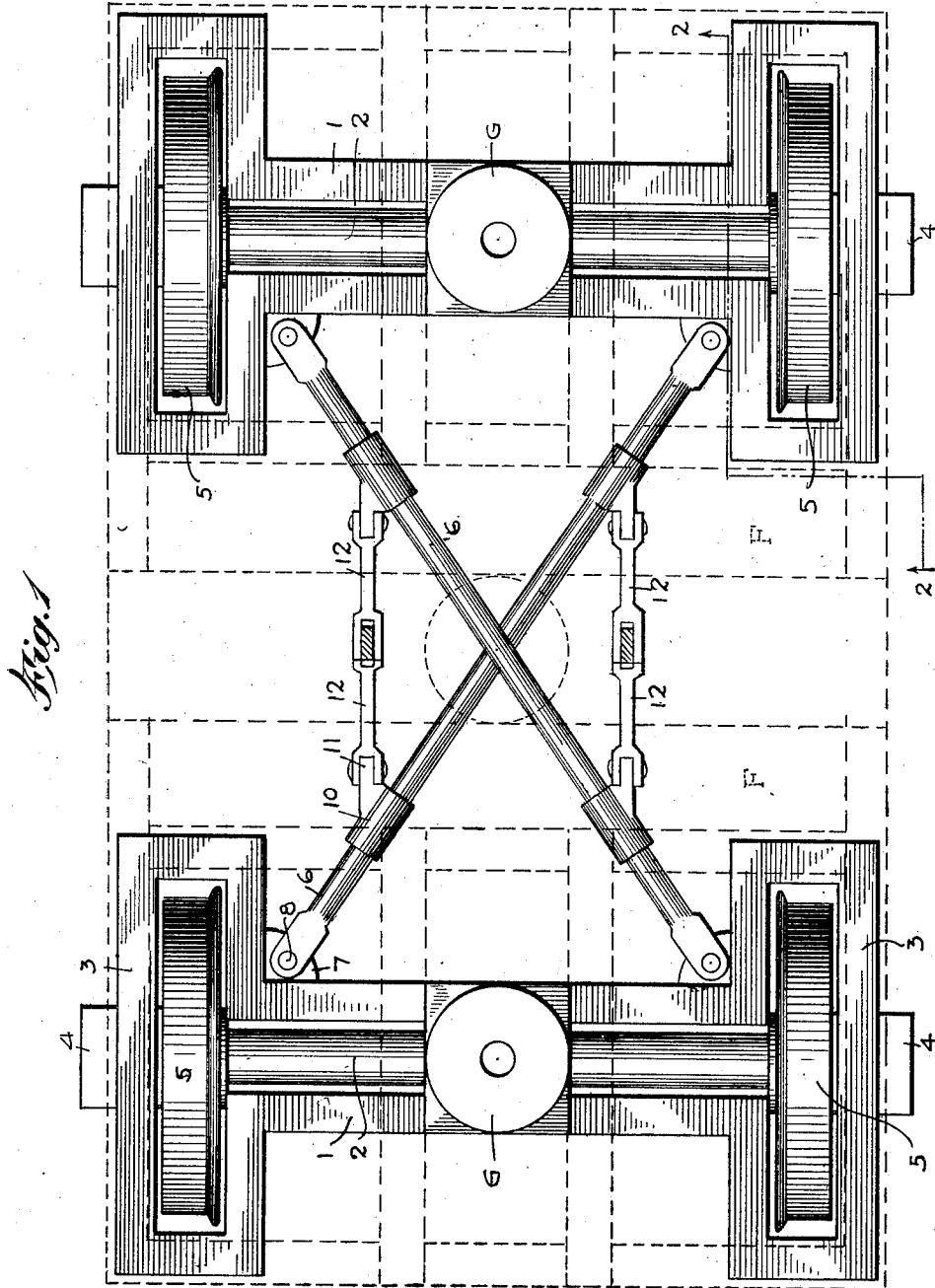


C. A. LINCOLN.  
 CAR TRUCK.  
 APPLICATION FILED DEC. 20, 1910.

1,003,277.

Patented Sept. 12, 1911.

2 SHEETS—SHEET 1.



*Fig. 1*

WITNESSES  
*[Signature]*  
 W. S. Ostow.

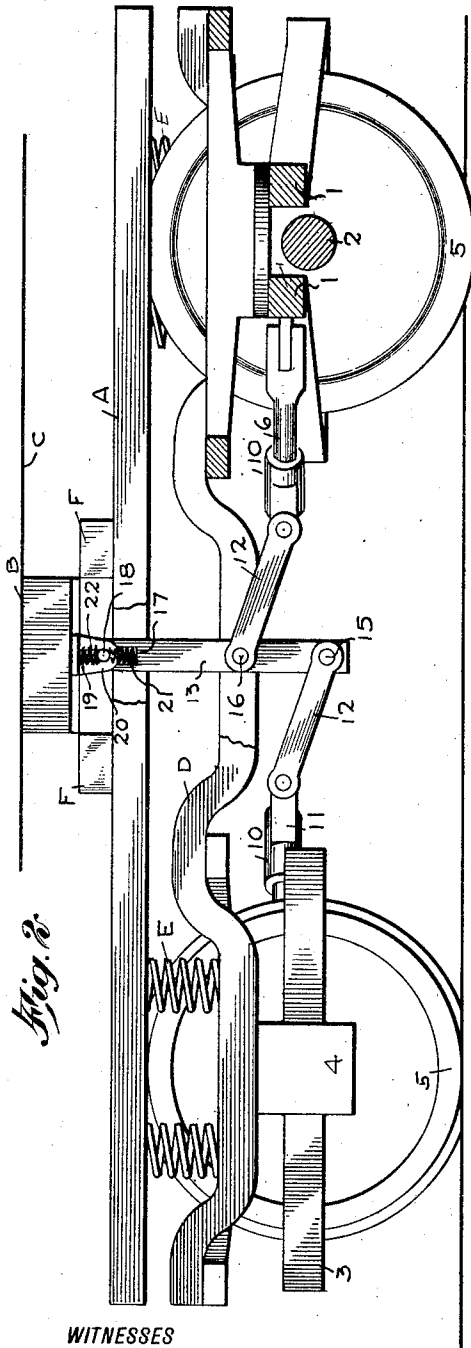
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 Carlyle A. Lincoln  
 BY *[Signature]*  
 ATTORNEYS

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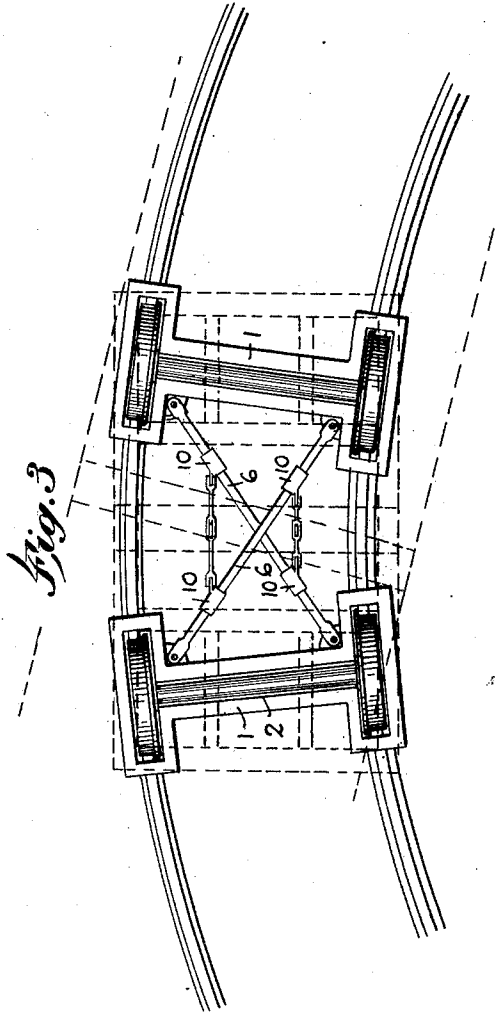
Patented Sept. 12, 1911.

2 SHEETS—SHEET 2.



*Fig. 2.*

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*Fig. 3.*

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# UNITED STATES PATENT OFFICE.

CARLYLE AUSTIN LINCOLN, OF WAYNE, MAINE.

CAR-TRUCK.

1,003,277.

Specification of Letters Patent. Patented Sept. 12, 1911.

Application filed December 20, 1910. Serial No. 598,330.

To all whom it may concern:

Be it known that I, CARLYLE A. LINCOLN, a citizen of the United States, and a resident of Wayne, in the county of Kennebec and State of Maine, have invented a new and Improved Car-Truck, of which the following is a full, clear, and exact description.

The object of my invention is to provide trucks for railroad cars, constructed and arranged to dispose the axles of the wheels in a radial position upon the curved sections of the track in order to eliminate friction at these curves.

A further object is to so arrange the trucks that any obstruction upon the track would not tend to cause the wheels to leave the roadbed.

A further object of my invention is to provide new and novel means for controlling the angular relation of the wheels with reference to each other and with reference to the body of the car.

A further object is to provide a simple, efficient and durable construction for accomplishing the purposes above set forth.

With the above and other objects in view, as will more fully hereinafter appear, the present invention consists in certain novel details of construction and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims.

I attain these objects by rigidly connecting the wheels of the truck by crossed braces, and between these crossed braces on each side I construct a controlling mechanism comprising a pendulum arm, to which are pivoted controlling arms, pivotally connecting the pendulum arms with the wheel frames of the trucks.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view looking down upon a set of trucks embodying a preferred form of my invention; Fig. 2 is a side elevation, partly in section, on the line 2—2 of Fig. 1, looking in the direction of the arrow; and Fig. 3 is a plan view of my truck arranged in accordance with the present invention and showing the same in its disposition on a curved section of the roadbed.

In the preferred embodiment of my invention here disclosed, I have shown a superstructure or platform A having parallel disposed platform bolsters F transversely across the body of the truck, above which is pivoted a car bolster B, which in turn supports a car body C, both constructed substantially in accordance with the form of car structures now in common use. Brace bars D are disposed substantially as shown in Fig. 2, and carry springs E, upon which is supported the superstructure or framework A, in the manner common with trucks of this general description.

My invention relates more particularly to the mechanism whereby the axles of the truck are angularly-disposed with relation to each other, and radially disposed with reference to the radii of the curved section of the roadbed. This mechanism comprises a journal-box supporting-frame 1, extending parallel with the axles 2, and provided at each end with rectangular framing sections 3, in the outer end of which and axially disposed with reference to the axles 2 are journal boxes 4 to receive the bearing extensions of the axles 2 for wheels 5. The frames 1 and 3 and journal boxes 4, together with the axles 2 and wheels 5, constitute separable and distinct structures from the truck frame formed by the superstructure A and brace bars D, but all of this mechanism is supported pivotally at G in the truck within the limits of the superstructure.

The frames 1 and their containing parts are each located one in front and the other in the rear of the bolster B, and are connected together by tie rods 6, 6, which extend from brackets 7 in each of the inner corners between the frames 1 and 3, and extend diagonally across to the bracket in the corner of the opposite frame 1. The rods 6 are attached to the bracket 7 by pivots 8, so as to permit the rods to swing horizontally. These rods 6 cross at the center so that the distance between the diagonal corners of the two swinging frames is maintained constant, while by reason of the fact that the rods 6, 6, are not connected where they cross, the two frames are permitted to swing so that the corners of the side of the frame may be separated or removed each from the other. The constant and equal length of the rods 6 operates to compel a spread of the wheels on one side of the median line of the completed truck, pro-

portioned to the contraction of the wheels on the opposite side of the said truck. Hence, when in passing a curve, the pair of wheels in advance is crowded to conform to the radii of the curve, the following wheels and axle supporting the same are caused to similarly conform to the radii of the said curve by the connecting rods 6, 6.

Disposed toward end of the rods 6, 6, and between the pivotal points 8 and the point where the rods cross, are fixed collars 10 having ears 11 projecting at an angle from the direction of said rods, so as to bring each pair of ears 11 on each side of the longitudinal medial line, in alinement. Pivoted vertically at one end to the ears 11 are controlling arms 12, the other ends of which are pivotally connected to a swinging arm 13, which arm is in turn pivoted to the bolster B in a manner hereinafter described. These pivoted arms constitute the mechanism for controlling the angular relation of the wheels. While but one of these controlling mechanisms will be described in detail, it is to be understood that this arrangement is duplicated on both sides of the longitudinal median line through the device. The controlling arms 12 are pivoted to the pendulum arm 13, one a suitable distance above the other, so that as the front wheels of the forward truck approach a curve, the wheels will respond to the curve, and through the medium of the connecting rods 6 will push one end of the following truck outward from the transverse median line, and will draw the other end inward toward this line, as shown in Fig. 3. As this connection is rigid, the angular disposition of the rear wheels will correspond exactly to the angular disposition of the forward wheels. This movement will tend to swing the pendulum arm 13 by pushing the pivotal point 15 forward, as shown in Fig. 3, and pushing the pivotal point 16 to the rear. This action is possibly due to the fact that this pendulum arm 13 is freely swung from the bolster B. To admit of this free swing, the upper end of the pendulum arm is slotted, as shown at 17, and carries a pin 18, which projects through the slot 17 and through alined slots 19 on a pair of brackets 20 depending from the bolster B, and between said brackets the upper end of the arm 13 is inserted. Disposed both above and below the pin 18 and holding the same in position are coiled springs 21 and 22. It will thus be seen that by this construction not only is the arm 13 free to swing as a pendulum, with the pin 18 as a pivot, but due to this spring connection between the car body and the trucks, any jar on the trucks is taken up by the springs 21 and 22, thereby relieving the bolster and car body from any sudden jar on the trucks.

With the construction herein disclosed, it will be seen that when the truck progresses

forward on the track to take a curve, the front wheels will begin to respond to the curvature, and are swung out of alinement with the car; and due to the action of the rigid connecting rods 6, the pendulum arm 13 is swung out of its normal perpendicular position, thereby causing the arms 12 to expand on one side and to contract on the opposite side, thereby bringing the rear axle of the truck in the radius of the curve of the roadbed. The arms on the outside expand, while those on the inside of the curve contract, as the arm 13 swings in opposite directions. It will thus be seen that in passing a curve, the different axles are always brought in exact radial position; and it will be seen that friction arising from the rigidity of the truck frames now in common use, will be largely reduced, if not entirely eliminated.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matters contained herein in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language used in the following claims is merely intended to cover all the generic and specific features of the invention herein described and all statements of the scope of the invention, which, as a matter of language, might be said to fall therebetween and that materials, sizes and relativities of parts are non-essential, except as called for in the claims.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. In a car construction, a truck comprising a pair of axles spaced apart, a supporting frame about each of said axles, crossed rods connecting said frames, a car body pivotally supported on said truck, a pair of pendulum arms movably pivoted on opposite sides of said car body, and controlling arms extending in opposite directions from, and having one end of each pivoted at different points to, said pendulum arm, and having the opposite end of each pivoted to said crossed rods, whereby when one of said axles responds to a curve in the roadbed the other will take the same relative position.

2. A car truck comprising a plurality of spaced-apart axles provided with carrying wheels, a plurality of crossed tie rods connecting the said axles on opposite sides, and a controlling mechanism attached to said tie rods.

3. In a car truck comprising a pair of axles pivoted to the truck and provided with carrying wheels, a plurality of crossed

tie rods connecting the said axles on opposite sides of a line drawn between the pivots of said axles, and a controlling mechanism connecting said tie rods and comprising a pendulum arm free to be swung by the movements of said cross-arms.

4. A car truck comprising a centrally-pivoted main truck frame, a plurality of single axle truck frames pivoted to said main frame and provided with journal boxes for the carrying wheels thereof, a plurality of tie rods pivotally attached to said truck frames and at diagonally opposite portions thereof, and a controlling mechanism disposed between said crossed rods.

5. A car truck comprising a centrally-pivoted main truck frame, a plurality of single axle truck frames pivoted to said main frame, a plurality of tie rods pivotally attached to said single axle truck frames and at diagonally opposite portions thereof, a swinging pendulum arm, and controlling arms connecting said pendulum arm with said tie rods.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CARLYLE AUSTIN LINCOLN.

Witnesses:

B. F. BRADFORD,

C. M. LOVEJOY.

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