No. 656,381. Patented Aug. 21, 1900.

L. C. THOMPSON & F. KIRK.

ANTIVIBRATING CAR TRUCK.

(Application filed Oct. 19, 1899.)

(No Model.)

Fig. 1.

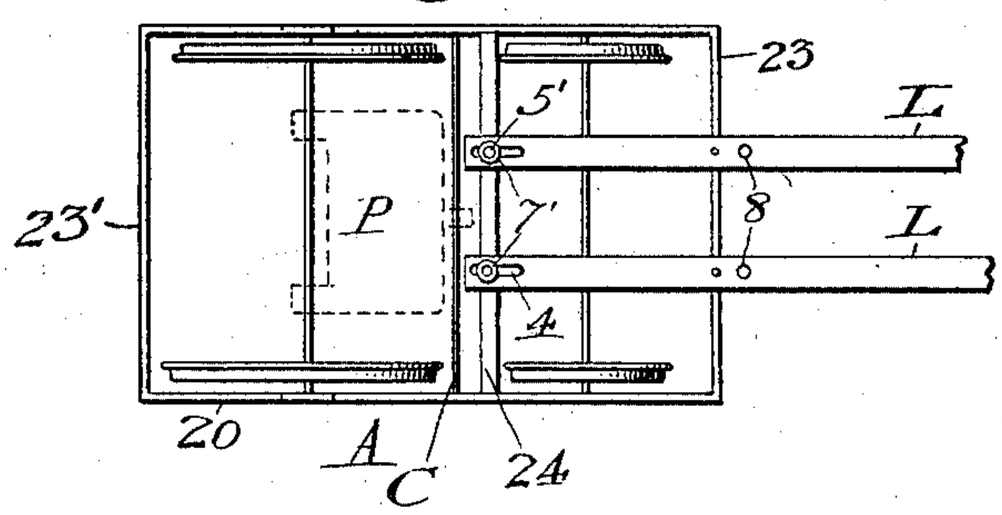


Fig. 2

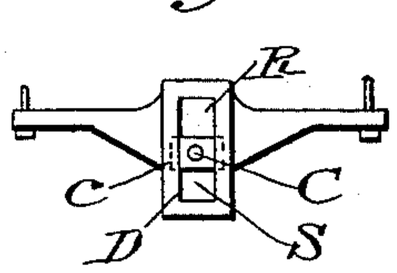


Fig. 3.

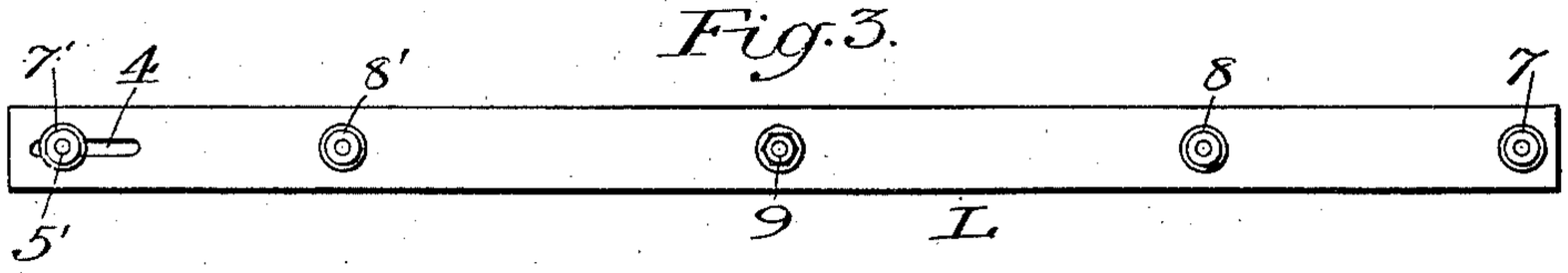


Fig. 4.

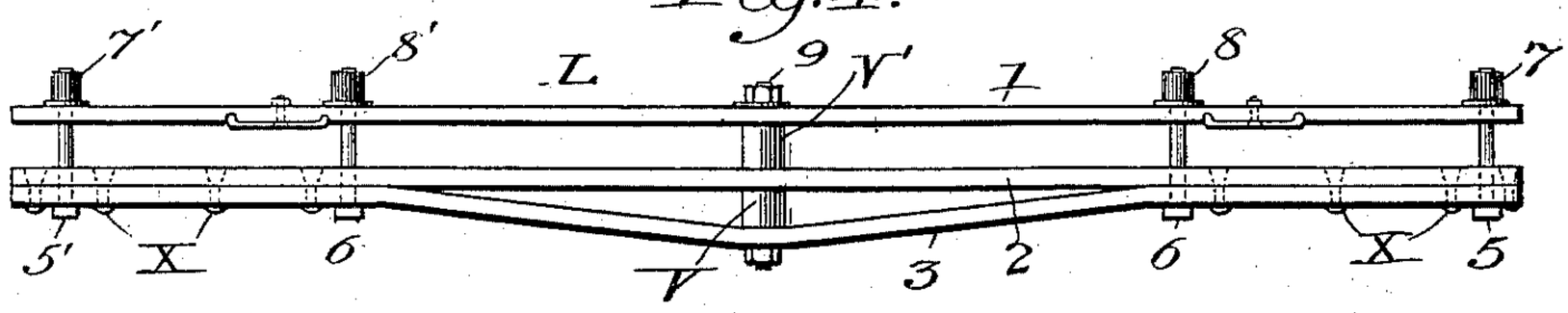
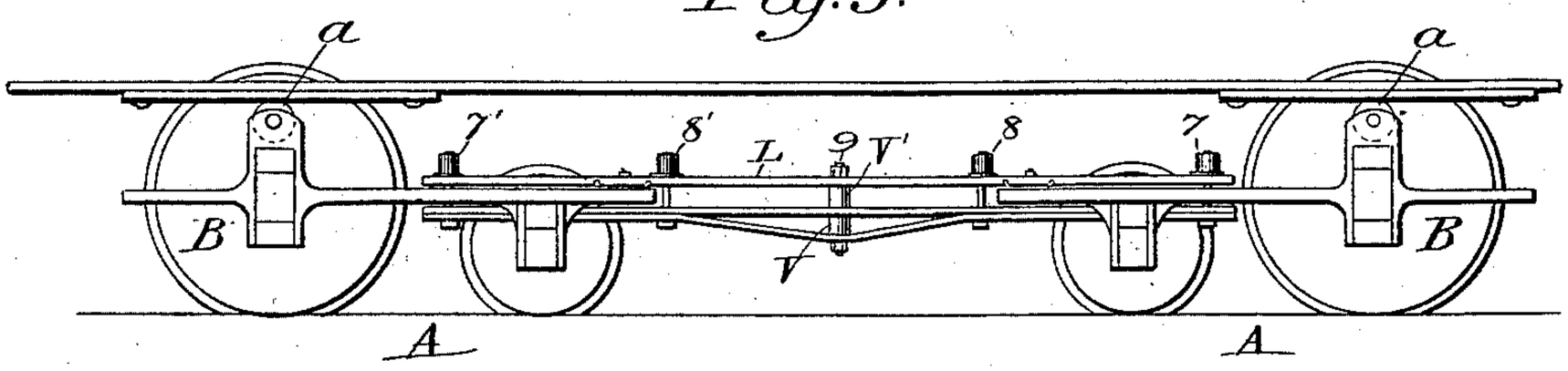


Fig. 5.



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UNITED STATES PATENT OFFICE.

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ANTIVIBRATING CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 656,381, dated August 21, 1900.

Application filed October 19, 1899. Serial No. 734,138. (No model.)

To all whom it may concern:

Be it known that we, LUTHER C. THOMPSON, residing at Cuyahoga Falls, and FRANK KIRK, residing in the city of Akron, county of Summit, and State of Ohio, citizens of the United States, have invented a new and Improved Antivibrating Car-Truck, of which the following is a full, clear, and exact description, that will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, that form a part of this specification.

First. One object of our invention is to sever the circuit of vibration between the car-trucks and the car and to overcome compound friction at the curves of the road and to thereby economize in power.

Second. It is also our object to support the car upon antifriction-rollers located over the journal-boxes of the motor drive-wheels, having radial centers that connect the trucks to the car and bracing the frames by a pair of reaches that receive the vibratory shocks from the armatures and car-wheels, substantially bracing the truck-frames, preventing a derailment of the guide-wheels.

Third. It is our object to prevent a shearing cut of the motor-wheel flanges upon the rails when passing around a curve in the track, thereby obviating friction and reducing the centrifugal force of the car and permitting of a high speed with greater safety.

Fourth. It is also our object to cushion the vibratory shock through the reach connections.

Fifth. It is our object to increase the adhesiveness between the wheels and the rails, enabling the car to ascend and descend grades with greater safety, also obviating compound friction by means of the combination of the various parts, as shown and described.

Sixth. Our invention relates to a pair of four-wheel electric-car trucks, supporting the car upon the motor drive-wheels and bracing the guide-wheels in a manner to receive the vibratory shock generated at the electric motors in connection with the motor-armatures, including the vibration generated by the rapid revolving motion of the car-wheels.

Figure 1 is a top plan view. Fig. 2 is a front elevation of the motor-bar. Fig. 3 is a top view of one of the reaches detached. Fig. 4 is a side elevation of the depression or tension reach. Fig. 5 is a side elevation of the trucks.

Similar characters refer to similar parts throughout the several views.

In carrying out our invention we provide a pair of maximum traction-trucks A, one for each end of the car. Each of these trucks consists of the truck-frame 20, provided with large drive-wheels and small follower-wheels, the axles of said wheels being journaled in the ordinary or any preferred way in the pedestals B. The motors P are geared to the driver-axles in the usual way, the inner or horn end of the motor being supported upon the motor-bar C through the medium of the box *c*, through an aperture in which the horn of the motor projects. Spring-cushions R and S are provided below and above the box *c* in the guideway D, with which the motor-bar C is provided. The truck-frame 20 is provided with the inner end beams 23 and the outer end beams 23′, which serve to connect the side frames together and preserve the parallelism of the frame. A transom-beam 24 connects the side frames together, being secured thereto at a point between the motor-bar C and the follower-axle of each of the trucks.

The weight of the car-body is supported over the pedestals B by the antifriction-rollers *a*, the pivotal points of the truck being located over the center of the driver-axle.

Connecting the transom-beams 24 of the two trucks are the duplex reaches L L. These reaches are each composed of the upper spring-steel bar 1 and the lower trussed bar 2 3, the member 3 being suitably cambered, so that the strut-thimble V may be inserted between it and the member 2. The ends of the members 2 and 3 are rigidly secured together by the rivets X X. The upper member 1 of the reach is secured to the lower truss member by the bolt 9, a spacing-thimble V′ being inserted between the said members to properly separate them. Bolts 5 and 5′ pivotally connect the ends of the reaches to the

transom members 24 of the respective trucks, as shown. One of the bolts, as 5′, however, passes through the slot 4 at the end of the reach, so that the reach may reciprocate slightly to provide for the change of distance between the transom members 24 due to the curving of the respective trucks. Cushion-springs 7 and 7′ surround the upper ends of the bolts 5 and 5′, so that the ends of the bar 1 may yield to the vibratory action of the truck-frame. Supplemental bolts 6 6 and cushion-springs 8 8′ are also provided for connecting the members of the reach, located about midway between the middle and the ends thereof, and when the parts of the truck-frame and reach are assembled these supplemental bolts 8 and 8′ are outside of the end beams 23 of the truck-frame and serve to limit the pivotal action of the truck-frame. Rub-irons are secured to the under side of the upper member 1 of the reach at the point where said member crosses the end beam 23 of the truck-frame.

In assembling reaches and the truck-frames the upper members 1 of the reaches are placed above and the lower members 2 3 are placed below the end beams 23 and transoms 24, and their ends are pivotally secured to said transoms by means of the bolts 5 5′, as shown in Fig. 1. It will thus be seen that any tendency of the inner ends of the truck-frames to rise or of the follower-wheels to become derailed will be resisted by the yielding pressure of the reaches upon the end beams 23 and the transoms 24. Moreover, the supporting of the car-body directly over the driving-axle of each truck permits easier pivotal or swiveling action of the truck, thereby obviating the unnecessary grinding and wear upon the flanges of the driver-wheels and permitting the follower-wheels to subserve the sole purpose for which they are provided—viz., that of acting as guide-wheels for properly carrying the trucks around curves, and thereby preventing derailment.

While we have illustrated and described a particular embodiment of our invention and what may be considered the preferred form, so far as general features are concerned, yet we do not desire to be limited thereto, as many changes and modifications in detail may be made without departing from the spirit of our invention, and all such changes and modifications we desire to cover in our claims.

Having thus described our invention, what we claim as new in an electric-car running-gear, and desire to secure by Letters Patent, is—

1. In a car running-gear, a pair of four-wheel trucks pivoted to the car supporting the car on rollers that interpose between the truck-frame and the car, having duplex reaches that support the frame and rollers in position, as shown and described.

2. In a car running-gear, a pair of four-wheel trucks, connected by a pair of reaches to receive the vibratory shock of the motors and wheels, as shown and described.

3. In a car running-gear, the combination of a pair of frames with a pair of reaches having depression-springs to receive the vibratory shock of the armatures and car-wheels permitting of an adjustment of the car-truck frame in unison with the curves of the track, as shown and described.

4. In an electric-car running-gear, having a pair of four-wheel trucks united by a pair of reaches that are connected to the transoms of each truck-frame and having a bearing upon the end beams at the rub-irons to receive the vibratory shock of the motors and car-wheels and to prevent a derailment of the guide-wheels, as shown and described.

5. In a car running-gear, the combination of a pair of reaches with a pair of four-wheel car-truck frames having transoms that brace and support a pair of reaches and the anti-friction-roller that interpose between the car-truck frames and the car for the purpose of severing the circuit of vibration and preventing the same from entering the car, as shown and described, and for the purpose set forth.

6. In a car running-gear, the combination of the duplex reaches, as constructed and connected with a pair of four-wheel car-truck frames having depression-springs and rub-irons that provide a tension-pressure on the cross-beams to prevent a derailment of the wheels and supporting the antifriction-roller in position under the car, as shown and described.

7. In a car running-gear having frames connected by transoms and end beams rigidly bolted or riveted to the side sections of the frames supporting the weight of the car on the motor drive-wheel, and retaining the guide-wheels upon the track by means of a pair of reaches having depression-springs that receive the motor strain and vibratory shocks resulting from the rapid revolving motion of the armatures and car-wheels as shown and described.

8. In a car running-gear for railroads, the combination of a pair of four-wheel trucks supported by a pair of reaches that receive the vibratory shock from the motors supporting the guide-wheels upon the rails and retaining the antifriction-rollers in position to support the car upon the radial centers, as shown and described.

9. In a car running-gear, the combination of a pair of four-wheel trucks connected by a pair of reaches, having depression-springs that receive the vibratory shock, having said springs retained in position by bolts that pass through said reaches, and connecting the springs in position to afford a depression upon the upper section of the reach, having a slot in the end of the reach-sections to permit of a reciprocating motion at the bolt connections when passing around curves in the track

receiving the vibratory shock when starting or reversing the power and preventing the same from entering the car, as shown and described.

10. In a car running-gear for railroads, the combination of a pair of four-wheel trucks supported by a pair of reaches that receive the vibratory shock from the motors supporting the guide-wheels upon the rails and retaining the antifriction-rollers in position to support the car upon the radial centers, as shown and described.

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