

(No Model.)

3 Sheets—Sheet 1.

E. L. CLEVELAND.

CAR TRUCK.

No. 307,017.

Patented Oct. 21, 1884.

Fig. 1.

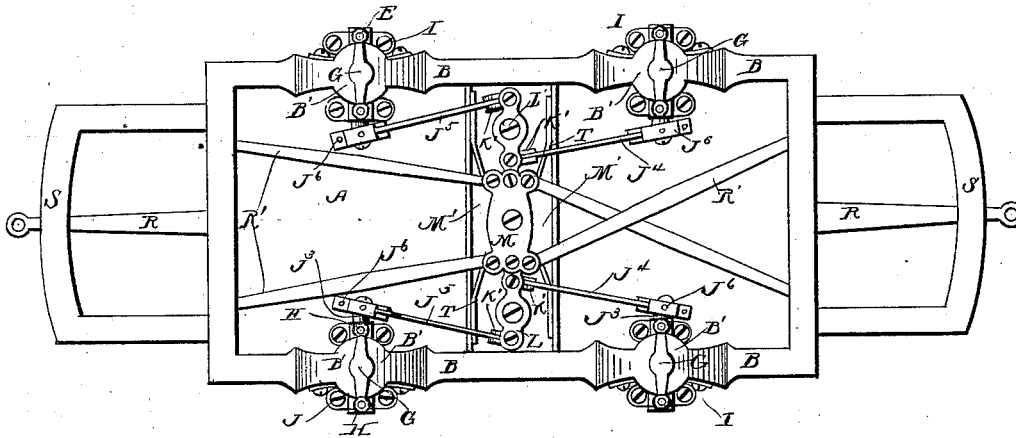


Fig. 3.

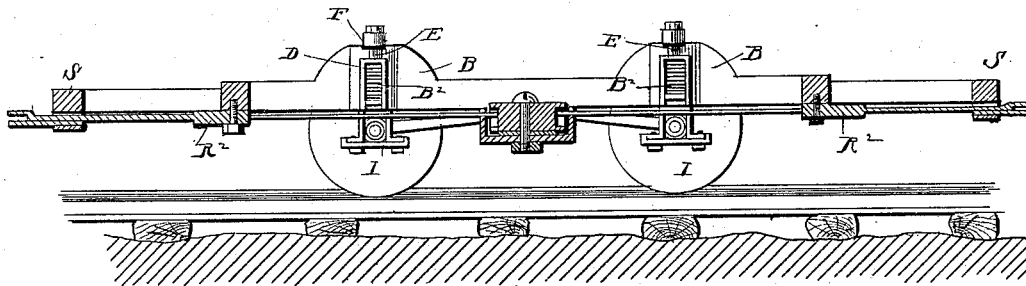
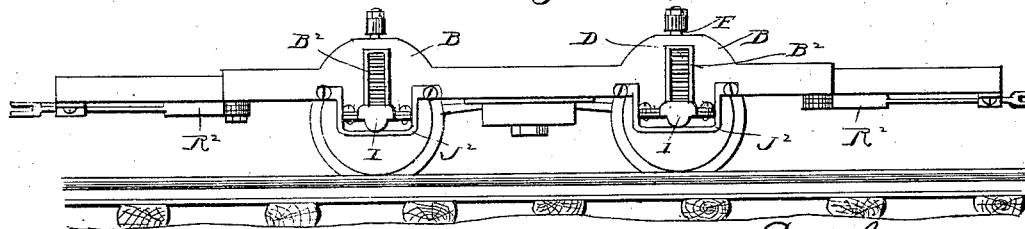


Fig. 2.



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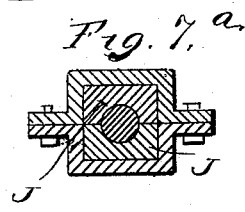
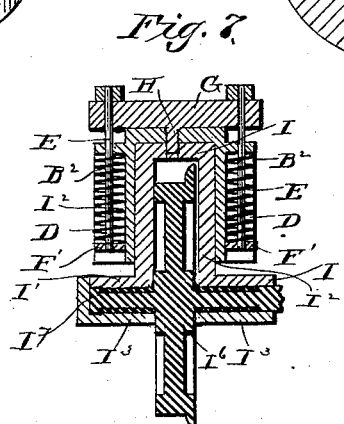
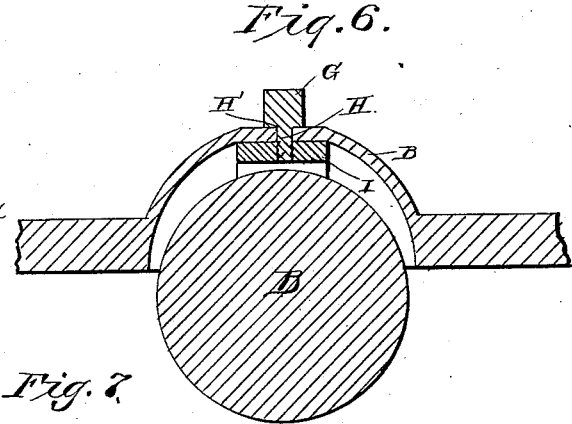
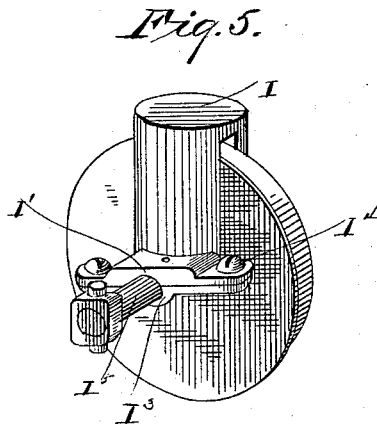
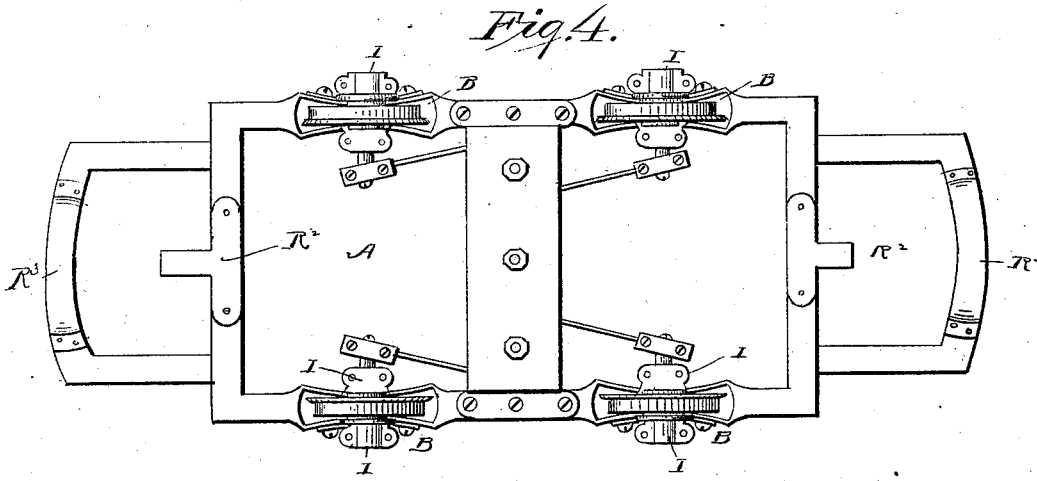
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Fig. 8.

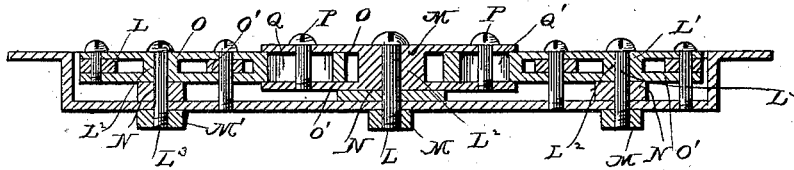


Fig. 9.

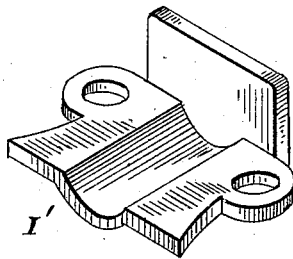
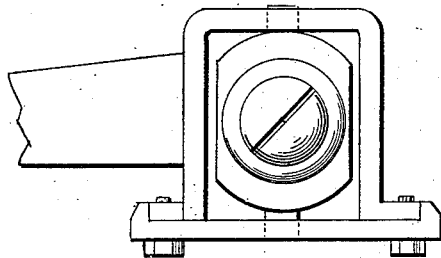


Fig. 10.



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UNITED STATES PATENT OFFICE.

ERASTUS LARNARD CLEVELAND, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR
OF ONE-FOURTH TO MICHAEL PATRICK HOWLEY, OF SAME PLACE.

CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 307,017, dated October 21, 1884.

Application filed July 29, 1884. (No model.)

To all whom it may concern:

Be it known that I, ERASTUS L. CLEVELAND, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Car-Trucks, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to car-trucks designed to automatically adjust themselves to the curves in the tracks of steam-railways and horse-railways, and it has for its object to provide a car-truck of the class referred to that shall possess superior advantages in point of simplicity, cheapness, durability, and general efficiency; and the invention consists in the construction and novel arrangement of parts, as will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings, Figure 1 is a top plan view of a car-truck embodying my improvements. Fig. 2 is a side elevation. Fig. 3 is a vertical longitudinal sectional view of Fig. 1. Fig. 4 is a bottom plan view. Fig. 5 is a detail view of one of the wheels, its axle-bearing, and axle. Fig. 6 is a sectional detail view through one of the pedestals, wheels, axles, and axle-boxes; Fig. 7 is a sectional detail view taken laterally through one of the pedestals and wheels. Fig. 7^a is a detail sectional view of one of the two-part boxes. Fig. 8 is a transverse sectional view near the middle line of the truck. Fig. 9 is a view in perspective of the lower half of one of the boxes, and Fig. 10 is an enlarged view of one of the universal joints of one of the connecting-rods.

Referring by letter to the accompanying drawings, A designates the truck-frame, which is provided with four pedestals, B—one for each of the wheels C. The pedestals B are semicircular in form in the direction of their length, and their middle portions, B', are circular around vertical axes, and are provided on their inner and outer sides with external guide-boxes, B², for the car-springs D, which encircle the vertical rods E of the stirrups F, and are compressed between the tops of the guide-boxes and plates F' on the lower ends of the vertical rods E. The plain vertical walls of the pedestals B flare outwardly from

the circular middle portions, B, so that the wheels can assume the angles that enable them to turn the curves in the track. The cross-bars G of the stirrups F are enlarged at their middle portions, and are provided with depending supporting and guiding rods H, pointed at their lower ends, and passed through vertically-made centrally-located holes H' in the pedestals B, and stepped in countersinks in the axial line of the axle-bearing I.

The axle-bearings I are composed of metal cylinders bifurcated from below upward, and carry the upper halves, I', of the axle-boxes at the lower ends of their arms I². The lower halves, I³, of the boxes are secured to the upper halves, I', by bolts I⁴. The axles I⁵ are turned down to form the hubs I⁶ and the collars I⁷ on the ends of the axles. The two parts of the boxes are provided with internal shoulders, J, provided with concave faces, and these shoulders J meet and encircle the reduced portions of the axles I⁵, and the collars and hubs bear against the ends of the shoulders. This arrangement of parts prevents lateral motion of the axles in their bearings and lessens the friction on the hubs. Hangers J³ are bolted to the outer faces of the pedestals, pass under the axle-boxes, and limit the upward movement of the truck-frame. The inner ends, J², of the axles project through the axle-boxes, and the connecting-rods J⁴ J⁵ are secured to said inner ends by universal joints J⁶, the other ends of said connecting-rods J⁴ being pivoted between lugs K upon the ends of short arms K', the other ends of said short arms K' being pivoted between the upper and lower lever-plates of the oscillating levers L L', and at the outer ends of the same. The connecting-rods J³ are connected in a similar manner between the inner ends of the lever-plates of said oscillating levers L L', as shown. The oscillating levers employed in this connection are all fulcrumed in a transverse bed or box, M', at the middle of the truck-frame.

Between the oscillating levers L L', I provide a third oscillating lever, M.

The levers L, L', and M consist of an upper plate, O, and a lower plate, O', each, separated by a boss, L², and their fulcrums L³ are passed down through the plates and bosses,

and project through the bottom of the bed M, and are secured in place by nuts M'. Washers N are interposed between the lower lever-plates of the oscillating levers and the bottom of the bed M to lessen the friction. The inner ends of the levers L L' are connected to the intermediate lever, M, by pivot-bolts P, passed down through the lever-plates of the intermediate lever, M, and through slots Q in the neck-pieces Q' of the levers L and L'.

When the mechanism is applied to horse-cars, draft-bars R and auxiliary connecting-rods R' are employed, to enable the team to operate the levers through the connecting-rods J¹ J² to change the angles of the wheels to cause them to properly follow the curves of the track. - The auxiliary connecting-rods R' are connected to the intermediate lever, M, and to oscillating levers R² on the under faces of the front and rear sills of the truck-frame, and the draft-bars are rigidly connected to the oscillating levers R², and their forward ends have lateral play in guards R³, secured to the under face of the transverse platform-sills S.

The team is hitched to the whiffletrees, which are connected directly to the draft-bars, and as the team turns the curves of the track, the auxiliary connecting-rods R' assist in changing the angles of the wheels, and thus, in connection with the flanges of the wheels, operate the levers and connecting-rods for this purpose.

In steam-cars the draft-bars and auxiliary connecting-bars are not necessary, as the power of the locomotive is sufficiently great to cause the flanges of the car-wheels to operate the connecting-rods J¹ J², and the oscillating levers L, L', and M, and thus turn the wheels at the curves of the track.

It will be observed from the foregoing description of the construction of the axles and pedestals that should an axle be broken the wheel will not leave the rail, but will remain in the pedestal until the train or car can be stopped.

When the mechanism is used on horse-cars, springs T are employed to return the oscillating levers L L' M to their normal positions—*i. e.*, to cause the wheels to travel on the straight portions of the track.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination, with the truck-frame provided with the pedestals, as described, of the bifurcated axle-bearings carrying the wheels and axles, and the spring-operated stirrups working in guides at the sides of the pedestals, and having their cross-bars stepped in countersinks in the upper ends of the axle-bearings, substantially as specified.

2. The combination, with the truck-frame provided with the pedestals having the stirrup-guides, of the bifurcated axle-bearings carrying the upper halves of the axle-boxes at the lower ends of their arms, the shouldered axle-boxes, the wheels with the axles reduced between the collars and hubs, and the connecting-rods J¹ J², connected to the axles by universal joints, and pivoted to the connected oscillating levers L, L', and M, substantially as specified.

3. The combination, with the truck-frame having the pedestals provided with stirrup-guides, of the spring-operated stirrups, the bifurcated axle-bearings, the wheels secured to the axle-bearings by sectional axle-boxes, the connecting-rods J¹ J², connecting the inner ends of the axles to the oscillating lever L L', the connected oscillating levers, L, L' and M, and the auxiliary connecting-rods R', connected to the oscillating lever M, and to the levers R², provided with the draft-bars R, substantially as specified.

4. The combination, with the truck-frame of the pedestals made semicircular in the direction of their length, and having circular middle portions with stirrup-guides at their sides, the spring-operated stirrups, bifurcated axle-bearings, sectional axle-boxes, car-wheels, and oscillating levers fulcrumed in a bed at the middle of the truck-frame, and connecting-rods J¹ J², provided with universal joints, and connecting the inner ends of the axles to the oscillating levers L, L', and M, substantially as specified.

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

ERASTUS LARNARD CLEVELAND.

Witnesses:

J. B. MCCALLEY,
J. B. RICHARDS.