

No. 656,885.

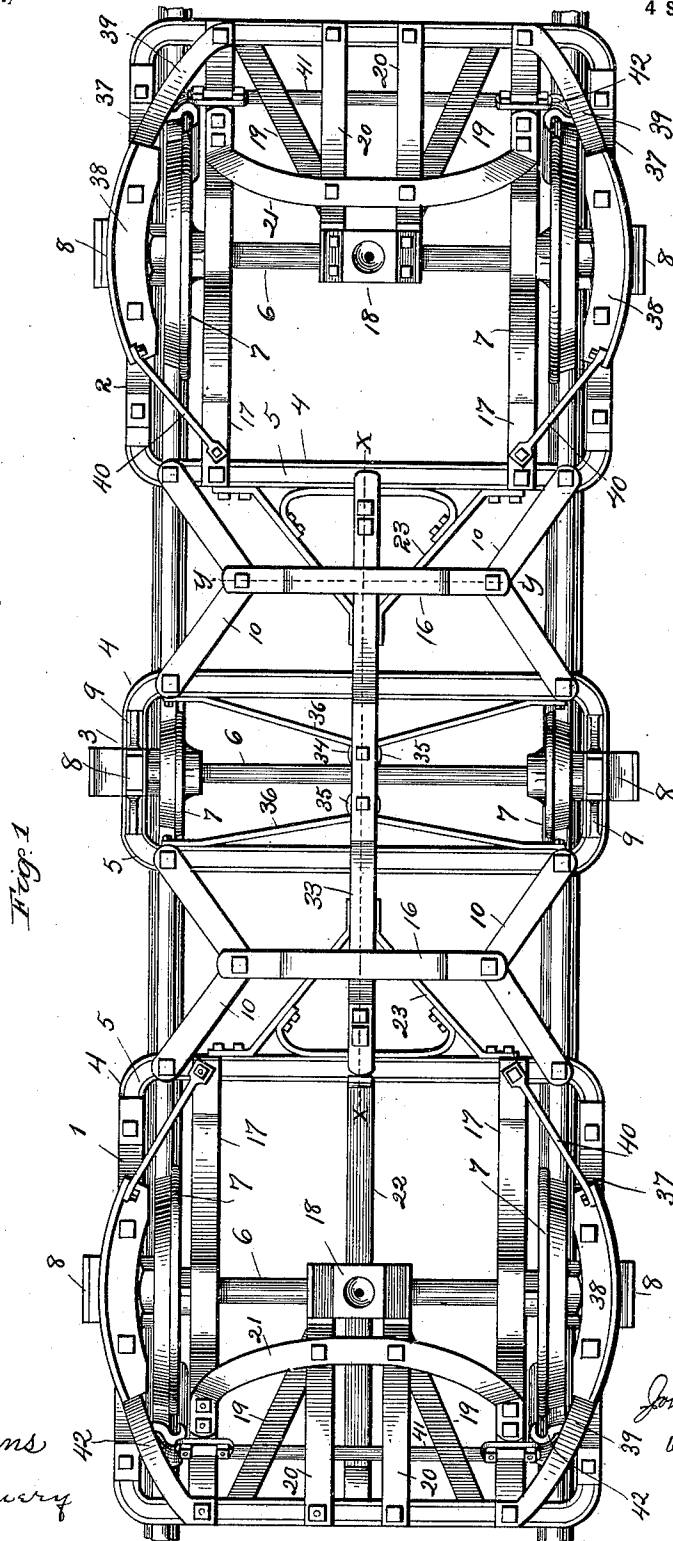
Patented Aug. 28, 1900.

J. P. FAYE.
RADIAL CAR TRUCK.

(Application filed Mar. 17, 1898. Renewed Jan. 26, 1900.)

(No Model.)

4 Sheets—Sheet 1.



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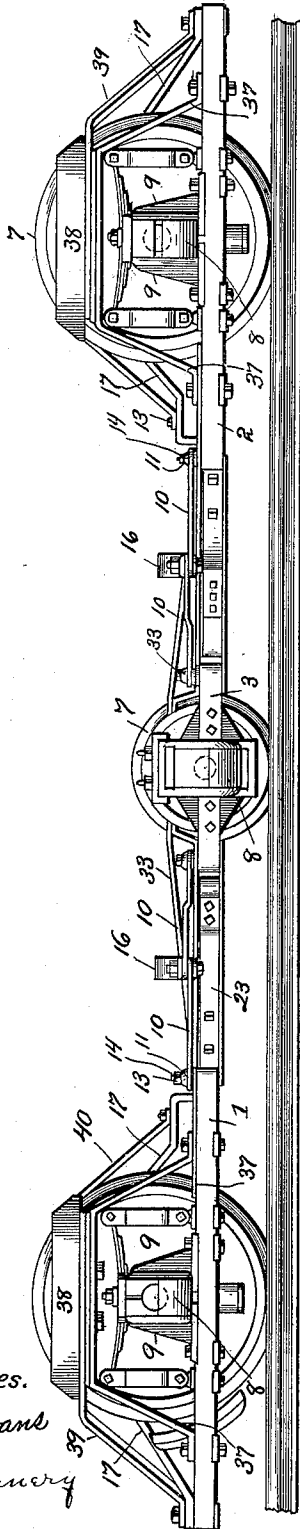
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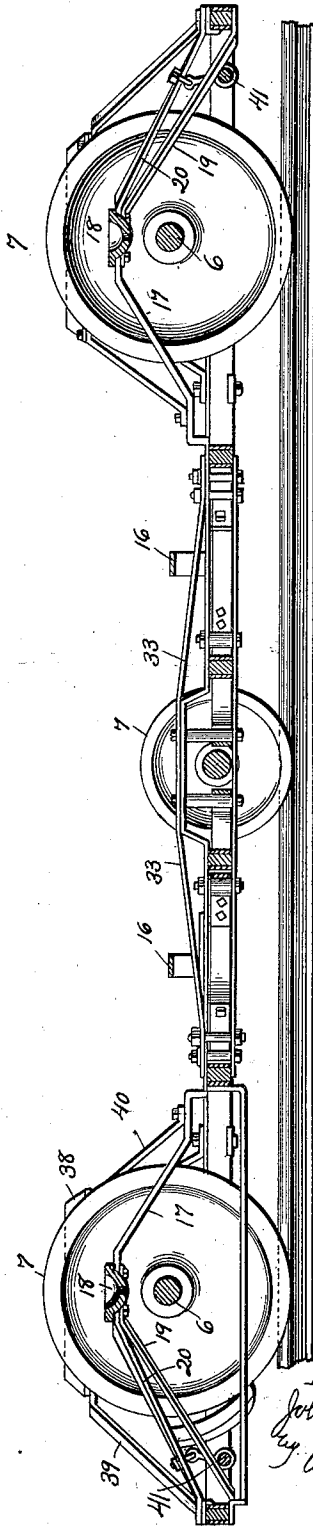
Fig. 2.



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Fig. 3.



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Fig. 4.

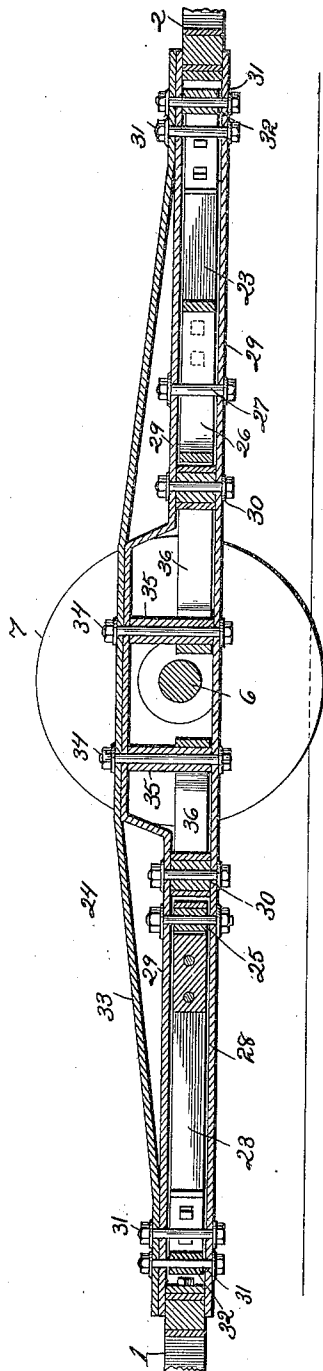


Fig. 5.

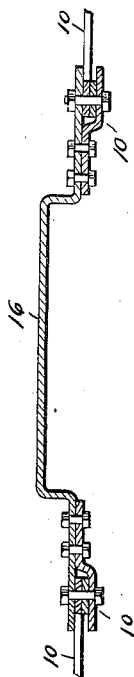


Fig. 7.

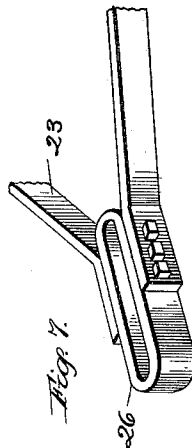
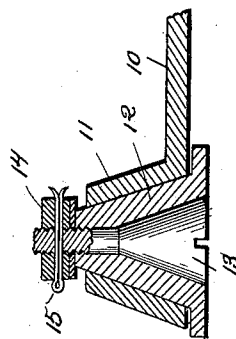


Fig. 6.



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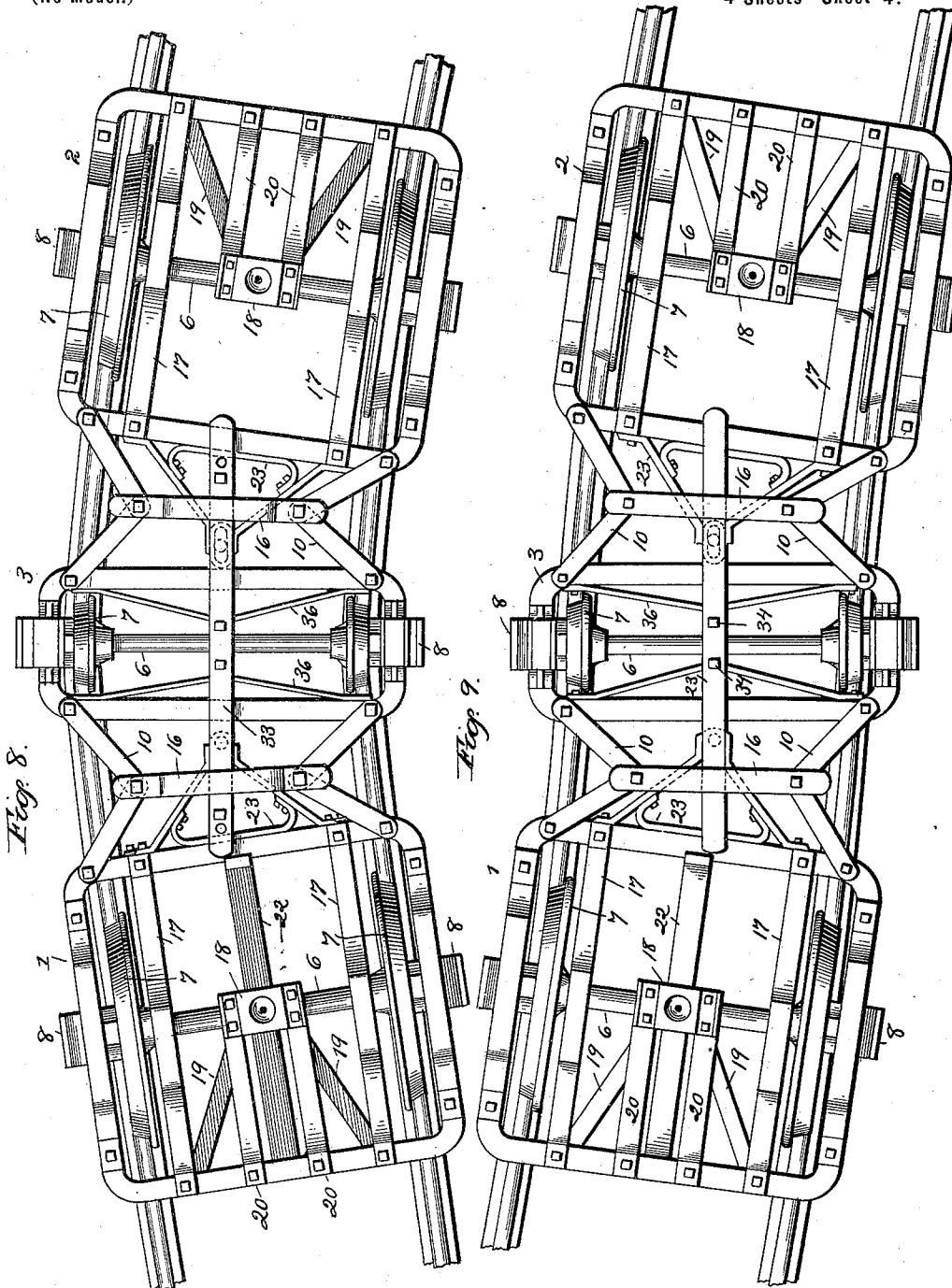
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4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

JOHN P. FAYE, OF BINGHAMTON, NEW YORK, ASSIGNOR TO THE NATIONAL CAR TRUCK COMPANY, OF PORT BYRON, NEW YORK.

RADIAL CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 656,885, dated August 28, 1900.

Application filed March 17, 1898. Renewed January 26, 1900. Serial No. 2,914. (No model.)

To all whom it may concern:

Be it known that I, JOHN P. FAYE, a citizen of the United States, residing at Binghamton, in the county of Broome and State of New York, have invented certain new and useful Improvements in Radial Car-Trucks; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates generally to railway-car trucks, and particularly to that type of trucks, commonly known as "radial" trucks, in which the axles become radial to curves in the tracks over which the car passes and resume their parallel positions on straight portions of the tracks; and it has for its object to provide a truck of the type named the axles of which are adapted to automatically take radial positions on curves whatever their radius be and to readily and without binding of the wheel-flanges on the rails pass over short reverse curves, such as are found in the tracks of street-railways, and also to provide a truck having a greatly-increased wheel-base for street-cars, and particularly for electric street-cars; and it consists of the parts and combinations of parts hereinafter described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a plan view of my improved truck; Fig. 2, a side elevation of the same; Fig. 3, a central longitudinal vertical section through the truck; Fig. 4, an enlarged detail vertical section on the line *x x*, Fig. 1, of the middle truck or section, showing its connection with the end trucks; Fig. 5, a detail section on the line *y y*, Fig. 1; Fig. 6, a detail view of the cone connection; Fig. 7, a detail perspective of one of the connections between the middle and end trucks; Fig. 8, a plan view of the truck, showing the same in the position it assumes in rounding a curve; and Fig. 9, a similar view showing the truck on a short reverse curve.

Similar numerals refer to similar parts throughout all the views.

The truck includes three sections or truck-frames, of which the numeral 1 indicates that one of the end truck-frames upon which is

mounted the motor when electricity is the motive power, 2 the other end truck-frame, and 3 the middle truck-frame. The three frames 1, 2, and 3 are preferably constructed of metal bars 4, having wooden beams 5 interposed and rigidly bolted therebetween by any desired number of bolts passing through the plates and beams. It is evident, however, that the frames may be wholly of metal, either pressed or cast to the desired shape, if found more desirable or convenient. Each of the frames 1, 2, and 3 is provided with an axle 6 and a pair of wheels 7, said axles being suitably journaled in boxes 8, mounted in pedestals 9, secured to the side sills or wheel-pieces of the frames, the wheels of the end truck-frames being of the usual or any desired size, while those of the middle truck are preferably of less diameter.

The middle truck-frame 3 is connected to the end truck-frames by means of the toggle-levers 10, there being one pair of toggle-levers at each side of the truck, between the middle and end truck-frames. The bars forming the toggle-levers are pivotally connected to the truck-frames by means of cone-shaped cups 11, formed on their ends, which fit down on or over conical projections 12, which are cast on the frames, into and through which bolts 13, having conical heads, project, said bolts being threaded to receive a nut 14, which is secured in place by a split key 15, passing through the nut and bolt, as best shown in Fig. 6. While the arrangement and construction of the connection between the levers and the frames just described is preferred, as it provides a secure and easy working joint and one that has given entire satisfaction in practical operation, still I do not desire to be limited to such precise and exact construction and arrangement of parts, as it is evident that a working joint may be made by simply passing bolts through the levers and frames. Each pair of toggle-levers at one side of the truck is connected to the pair at the opposite side by means of a bar 16, which is pivotally connected to said levers and serves the purpose of transmitting the power applied to one pair of levers at one side of the truck to the pair at the opposite side in order to force them outwardly. Thus when the truck is

rounding a curve the lever on the inner side will be forced to assume an angle whose acuteness will depend on the sharpness of the curve by the frames of the middle and end trucks being brought closer together, and thus through the bar 16 forcing the opposite pair of levers outward or more nearly into alignment, and consequently forcing the outsides of the truck-frames farther apart, so as to more readily enable the axles thereof to assume positions radial to the curve. The bar 16 also serves to prevent the bars of the toggle-levers maintaining a position of direct alinement end to end should the degree of a curve over which the truck is passing be such as to bring them into such position. The rod also prevents the levers from remaining buckled outward if they should happen to assume such position.

Tie bars or braces 17 are arranged to connect the front and rear sills or beams of the end truck-frames, and the center plates 18 of said trucks are supported by the bars 19 and 20 from the front sills, which bars are also braced by the curved bars 21 from the braces 17. In order to support the motor when the truck is applied to an electric car, a bar 22 is secured to the front and rear sills or beams of the front truck 1, on which the motor may be placed and secured in any desired manner. It will be observed that the arrangement of the different braces is such that a motor may be conveniently mounted on the truck, while at the same time the mounting of the same does not interfere with the operation of the truck or in any manner lessen its strength or durability.

The end truck-frames 1 and 2 are swiveled through their center plates 18 to the car-body, said center plates being arranged directly above the centers of their axles, and the middle truck-frame 3 is entirely independent of the car-body and carries none of the weight thereof.

It is customary to bring the wheel-centers of street-cars drawn by animals closely together in order to enable the cars to pass the sharp curves common on city railroads. This leaves considerable overhanging weight, which, owing to the slow speed at which the cars travel, does not materially affect their stability; but when the cars are moved by electric or other than animal power the speed is greatly increased, and if the wheel-centers are close together, as in cars drawn by animals, a disagreeable and dangerous rocking or oscillation of the car is occasioned by the overhanging weight and there is a great liability of the car leaving the track, especially on curves, and necessitating the passing of curves at a greatly-reduced rate of speed in order to insure the car remaining on the track. With an increased wheel-base or a largely-increased distance between wheel-centers, as provided by my improved truck, and the capability of its axles to take automatically-radial positions on curves, the car

may be run at a high rate of speed around curves as safely and as easily as on straight portions of the track. When the car enters a curve, the middle or center truck 3 moves transversely and causes the end trucks 1 and 2 to swivel around their centers, so that their axles assume positions radial to the curves.

It will also be observed that a car equipped with my improved truck can pass over short or sharp reverse curves as readily as over ordinary or single curves, owing to the peculiar connection between them.

A further connection is made between the middle or center truck and the end trucks by means of yoke-irons 23, bolted to the frames of the end trucks and entering between the bars of the reach 24, and one of said yoke-irons being pivotally connected to said reach by means of a bolt 25 passing therethrough, as shown, so that said end frame can swivel or swing on the arc of a circle the center of which is said bolt, while the other yoke-iron carries an oblong link 26, bolted rigidly between the ends of the yoke-iron, and is secured to the reach in a similar manner by the bolt 27, but which connection permits of a limited movement of the end truck, to which said iron is attached, back and forth in addition to its swinging motion. The reach consists of the bars 28 and 29, extending across the middle truck, one below and the other above said truck, and secured rigidly to said frame by bolts 30 and having their outer ends connected by means of bolts 31, one of which passes through a thimble 32 to hold the ends of the bars forming the reach the desired distance apart to permit them to embrace the adjacent beams or sills of the end trucks. A truss-rod 33 is attached at each end to the ends of the reach and has its middle portion supported by bolts 34 passing therethrough and through the bars of the reach, the said bolts passing through the thimbles 35, which are firmly held by the brace-bars 36 from the middle frame. The reach serves to steady the middle frame and prevent it oscillating or rocking when in motion. To the end trucks are secured the braces or supports 37, on which is secured the semicircular track 38, on which rollers (not shown) carried by the car-body travel while the end trucks are swiveling in rounding a curve. The track 38 may be and preferably is further braced by the curved braces 39 from the front or outer end of the end trucks and also by the brace-irons 40 from the inner or rear ends of the end trucks. A brake-bar 41 is suitably mounted on each end truck and carries the brake-shoes 42. Any suitable desired method may be employed to operate the brake-bar.

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

1. A car-truck consisting of three frames for the axles and wheels connected together by toggle-levers.

2. A car-truck comprising three frames for

the axles and wheels connected together by toggle-levers and a bar connecting said toggle-levers between the truck-frames.

3. A car-truck comprising three frames for the axles and wheels connected together by toggle-levers, two of which are adapted for swiveling connection to a car-body and the other to have a transverse motion relative the body of the car.

4. A car-truck comprising three frames for the axles and wheels, toggle-levers connecting said frames, bars connecting said toggle-levers, and a reach carried by the middle frame embracing the frames of the end frames.

5. The combination in a car-truck, of three frames for the axles and wheels connected together by toggle-levers, a reach carried by the middle frame adapted to embrace the end frames, and yoke-irons pivotally connected with said reach.

6. A car-truck comprising three sections or

frames each of which is adapted for an axle and pair of wheels, toggle-levers connecting said frames, transverse bars connecting said levers, a reach carried by the middle section or frame and yoke-irons secured to the end frames and pivotally connected to the reach.

7. A car-truck comprising three frames each adapted for an axle, a reach secured to the middle frame and adapted to loosely engage the end frames, yoke-irons secured to the end frames one of which is pivotally connected to the reach and the other pivotally connected therewith and longitudinally movable thereon, and means for loosely or flexibly connecting the end frames to the middle frame.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN P. FAYE.

Witnesses:

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RICHARD WARREN.