(No Model.) 4 Sheets—Sheet 1.

W. ROBINSON.

RADIAL CAR TRUCK.

No. 444,181. Patented Jan. 6, 1891.

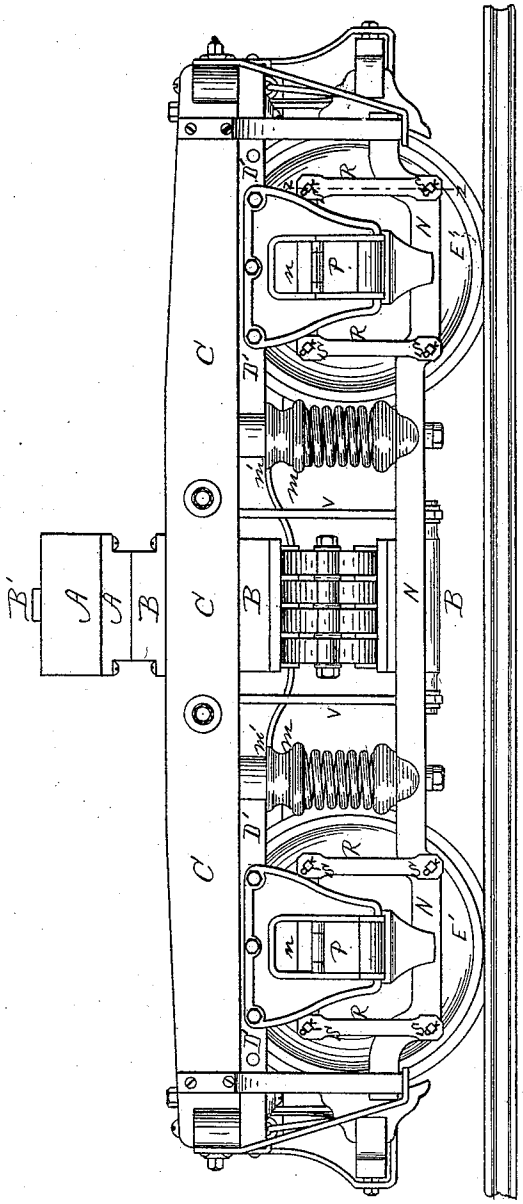

Fig. 1.

WITNESSES

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Henry W. Williams

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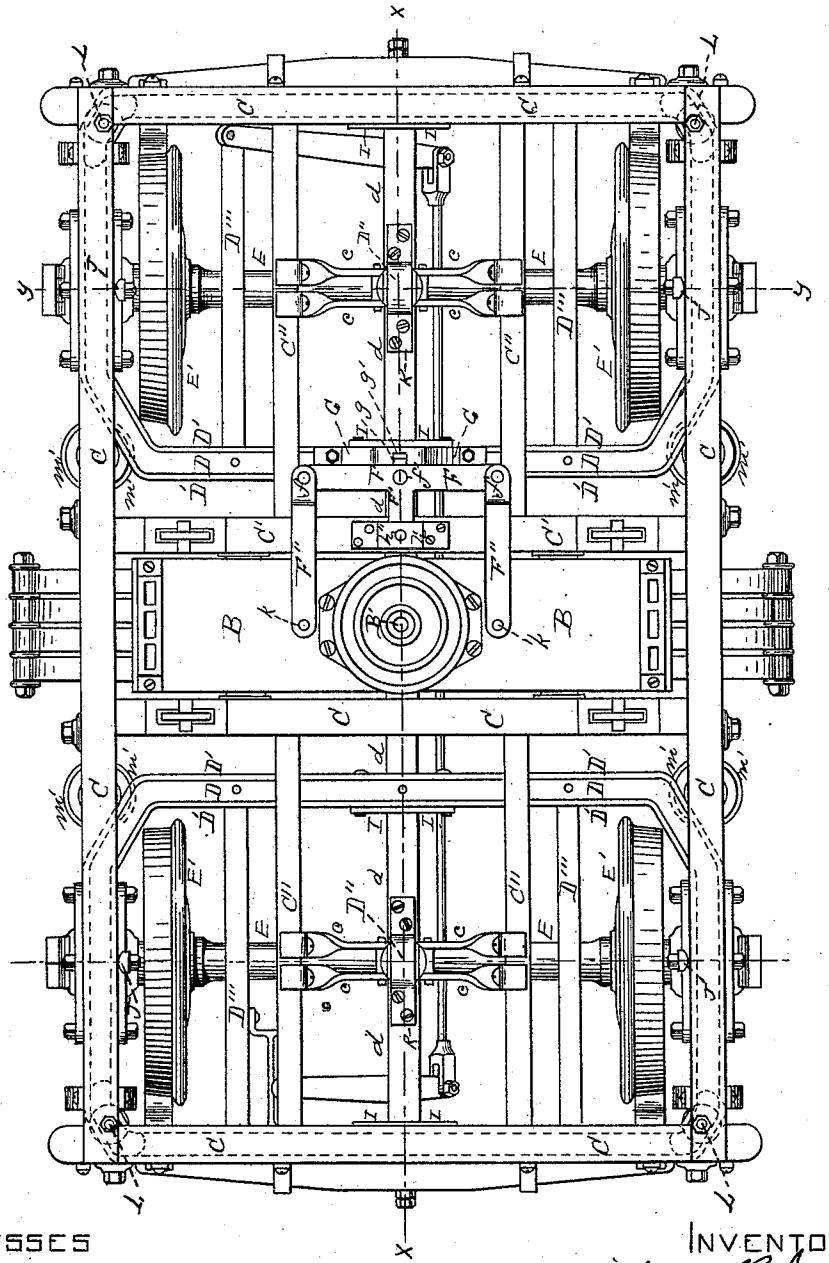

Fig. 2.

WITNESSES

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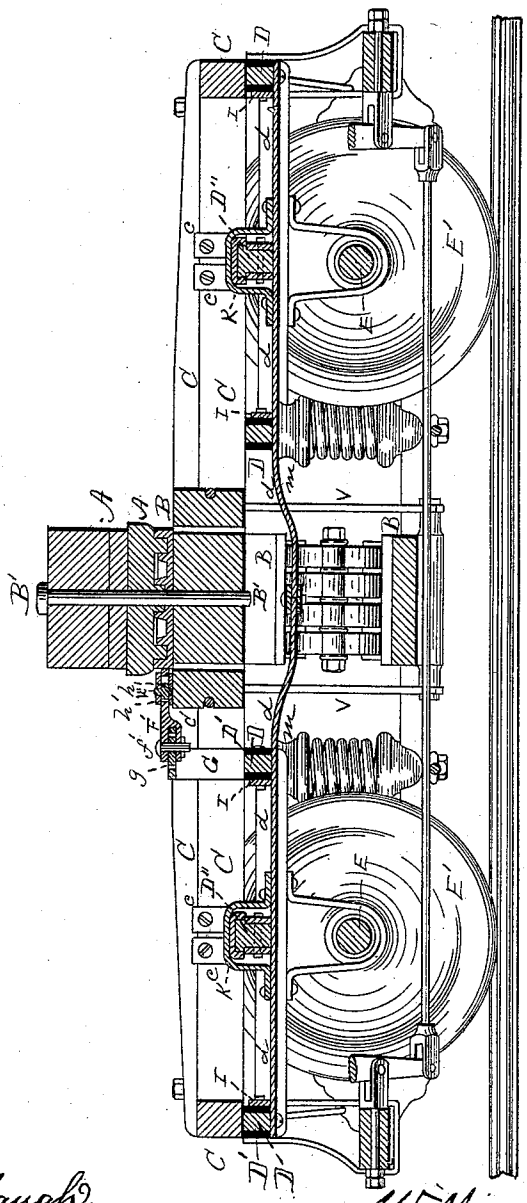

Fig. 3.

WITNESSES

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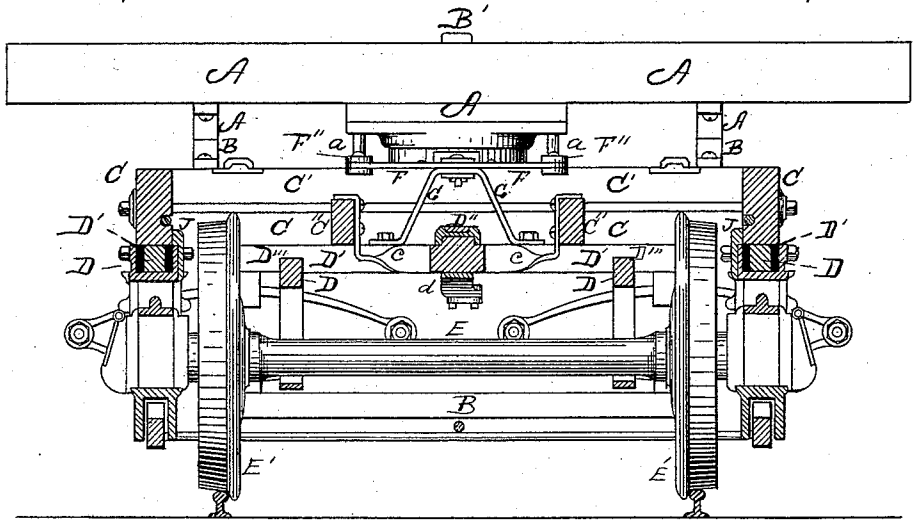

Fig. 4.

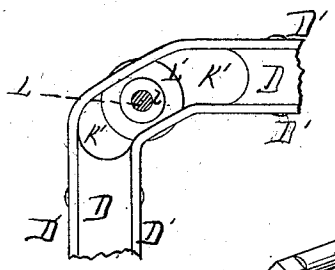

Fig. 5.

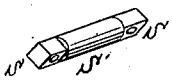

Fig. 8.

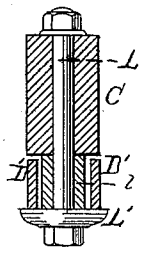

Fig. 6.

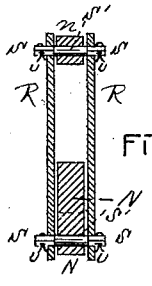

Fig. 9.

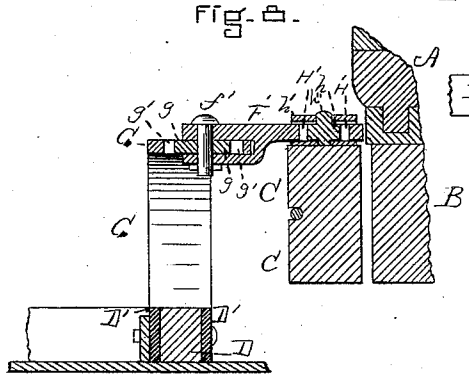

Fig. 7.

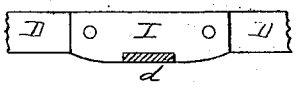

Fig. 10.

WITNESSES

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Henry W. Williams

UNITED STATES PATENT OFFICE.

WILLIAM ROBINSON, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE ROBINSON RADIAL CAR TRUCK COMPANY, OF PORTLAND, MAINE.

RADIAL CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 444,181, dated January 6, 1891.

Application filed February 6, 1884. Serial No. 119,904. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ROBINSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Radial Car-Trucks, of which the following is a specification.

In the accompanying drawings, in which similar letters of reference indicate like parts, Figure 1 is a side elevation of a radial car-truck embodying my improvements. Fig. 2 is a plan view of the same with the body-bolster removed. Fig. 3 is a longitudinal vertical section on line *x*, Fig. 2. Fig. 4 is a transverse vertical section on line *y*, Fig. 2. Fig. 5 is a plan view (enlarged) of one of the corner-supports. Fig. 6 is a transverse vertical section of the same. Fig. 7 is a longitudinal section (enlarged) of the radiating mechanism. Fig. 8 is a detached view of the bolt *s s'*, enlarged. Fig. 9 is an enlarged section on line *z*, Fig. 1, of a pair of the links R. Fig. 10 is an elevation of one of the strengthening-plates I.

A represents the body-bolster rigid with the car-body, to which bolster is centrally pivoted at B' the swing-bolster B, swung in the usual manner on hangers V in the main truck C and forming a part of the same.

D D are the supplemental trucks or wheel-frames, centrally pivoted at D'' to the main truck C.

E E are the axles, and E' E' the wheels.

A radiating lever, composed of the horizontal bar F and the stem F', has its fulcrum secured to the transom-bar C' of the main truck at *h''*. The outer portion of said lever engages adjustably at *f'* with a projecting bar or frame C, rigidly secured to the supplemental truck. The horizontal links F'' are pivoted at *f* to the outer ends of the bar F of said radiating lever and the pins *a*, Fig. 4, rigidly secured to the car-frame or body-bolster A, pivotally engage the inner ends of the said links F'' at *k*. By this arrangement it is evident that the car-body, resting on the swing-bolster B, may swing freely with said swing-bolster simply carrying the inner ends of the links F'' to one side or the other without affecting the position of the radiating lever F F' or of the supplemental truck; but when the car-body swivels on the center B' of the swing-bolster the pins *a*, secured to said car-body or body-bolster, as aforesaid, and engaging the inner ends of the links F'', thrust one of said links forward and draw the other backward, thus causing the radiating lever to turn or swivel at its fulcrum *h''*, whereby the outer central portion of said lever at *f'* is carried with that portion of the supplemental truck which it engages to one side of the center line of the main truck— that is to say, the supplemental truck or wheel frame is thus caused to swivel on the main truck at D'', whereby the axle is brought into a radial position. The return of the car-body to its original position of course reverses this process and restores the supplemental truck with its axle to its normal position. When radiation is produced, the center line of the supplemental truck transom-bar *d* forms an angle with the center line of the stem F' of the radiating lever. To allow for this it is necessary to make a slot *g'* in the bar or frame G, in which the pin *f'* (see Fig. 7) may play back and forth. In order to secure a large wearing-surface, I enlarge this slot in all directions and insert therein a block *g*, filling the slot laterally, but leaving a space for longitudinal motion. The pin *f'* passes closely through the lever F F and the block *g* and is keyed in place. The opposite or fulcrum end of the stem F' of the radiating lever is provided with a longitudinal slot H', in which slides a block *h*, pivoted in the plate *h'*, which is rigidly secured to the transom-bar C' of the main truck. By this means allowance is made for any irregular or backward and forward movement of the swing-bolster from wear or other cause.

The main truck C is provided with comparatively thin metallic bars *c*, placed edge up and securely bolted to the longitudinal bars C'' of the main truck. Between the center of each pair of bars *c* is bolted a metallic block or plate, which forms a simple but very rigid bearing or swiveling point for the supplemental truck. The supplemental trucks D swivel at D'' on the main truck C by means of the supplemental-truck transom-bars *d*, being pivotally secured to said main-truck bars *c* by means of straps K or otherwise.

The supplemental transom-bars *d* extend inwardly continuously from the supplemental trucks until they meet and are pivoted or linked together centrally in suitable manner to communicate similar radiation from one supplemental truck to the other. Strengthening-plates I, (see Figs. 2 and 10,) rigidly secured to the supplemental trucks, are notched or grooved, so as to embrace the bars *d*, thus forming a very rigid connection between said bars and the supplemental-truck frame.

The supplemental trucks or wheel-frames, instead of being constructed, as is usual, of solid bars or beams of wood, are made of parallel strips or bands of metal secured together by bolts or rivets and provided with a filling preferably of wood, as shown, but, if desired, of other substance, such as a number of metal blocks at suitable distances apart, thus obtaining great strength with little material. In the drawings the filling is lettered D and the metallic bands D′.

D‴ are safety-beams secured to the supplemental-truck frame and answer the double purpose of rendering said frame rigid, and, by means of safety-straps, of supporting the axle in case of breakage.

Small lugs J project upward from opposite inner ends of the supplemental truck inside the main truck, as shown, or they may be reversed, projecting downward from the main truck, for the purpose of preventing undue lateral strain on the pivotal points of the supplemental trucks. (See Figs. 2 and 4.)

The supplemental trucks, as shown and described, in this invention do not support any weight, but are themselves supported by and their weight depends from the main truck. For the purpose therefore of supporting the corners of the supplemental trucks, especially when the brakes are applied, I provide in the outer corners (see Figs. 5 and 6) slots K′, long enough to accommodate the play or radiation of the trucks, through which slots extend the supporting-rods L, provided with flanges L′, broad enough to lie under the outer bands D′ of the supplemental trucks, said rods being rigidly and firmly secured to the main truck. Blocks *l* are secured to these portions of the rods which lie in the slots K′ and extend a trifle above the wheel-frame D D′, so as to allow the said wheel-frame free play; and for the support of the inner corners I have constructed a flange *m*′ on the spring-seat *m*, on which said corners may rest. (See Figs. 1 and 2.)

Instead of stirrups or single hangers for supporting the equalizing-bar N from the boxes P, I provide the double links R, (see Fig. 9,) secured by means of bolts to the saddles *u*, and together at their upper ends and together at their lower ends, to support the equalizing-bar by similar bolts. The preferable way of making these bolts is shown in Fig. 8, where a bolt is exhibited squared at its ends S and cylindrical at its center S′. The lower bolts may pass beneath or through the equalizing-bar, as desired. Keys U prevent the links from slipping off the bolts.

The lever F F′ is here shown as of T shape for convenience; but it may be of any suitable shape, and while it and its connections constitute a practicable mechanism for the purpose described, I propose using any equivalent mechanical device which may operate equally well or better.

I do not herein claim anything claimed in my application for a patent filed May 12, 1882, Serial No. 61,154.

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

1. In a railroad-car, the combination, substantially as described, with a radial car-truck consisting, essentially, of a main-truck frame, supplemental-truck or axle frames pivotally connected thereto, and a bolster supporting the car-body and swinging bodily within and at right angles to the longitudinal axis of said main-truck frame, of adjustable bars or equivalent mechanical devices flexibly secured to the main truck-frame and to one of the supplemental frames and engaging the car-body, said bars or devices controlling and determining the position of said supplemental and main frames relatively to each other, while permitting the free swinging movement of said swing-bolster relatively to said main frame.

2. In a radial car-truck consisting, essentially, of a main-truck frame provided with a bolster swinging freely therein at right angles to the longitudinal axis thereof, and two supplemental trucks or wheel-frames pivoted thereto, the combination, with said main and supplemental trucks, of a lever or equivalent mechanical device pivotally connected to the main-truck frame and engaging the supplemental-truck frame, and one or more links or bars flexibly connected to said lever and to the car-body pivotally resting on said swing-bolster, substantially as and for the purpose described.

3. The combination, substantially as described, of a main-truck frame, a supplemental-truck or axle frame pivotally connected thereto, adjustable bars or equivalent mechanical devices flexibly secured to the main-truck frame and to the supplemental frame and adjustably engaging the car-body supported by said main-truck frame, said adjustable bars controlling and determining the position of said supplemental and main frames relatively to each other.

4. The combination of the car-body, the swing-bolster, the links, the radiating lever or mechanism, and the supplemental truck, substantially as and for the purpose described.

5. The combination of the frame or bar C, provided with the slot *g*′, and the lever F F′, provided with the bolt *f*′ and sliding block *g*, substantially as and for the purpose specified.

6. The lever F F′, provided with the longitudinal slot H′, embracing the fulcrum-block

h, secured to the main truck, the whole adapted to permit longitudinal adjustment of said lever, substantially as and for the purpose set forth.

7. The combination, with the frame C, secured to the supplemental truck, and the plate h', secured to the main truck, of the lever F F′, its stem F′ being provided at each end with a pivotal block adapted to slide longitudinally in a slot, substantially as and for the purpose described.

8. A car truck or axle frame constructed of continuous parallel plates of metal bent at the corners and having their edges in a vertical position, the space between said plates being provided with a filling of wood or other suitable material, substantially as described.

9. In combination with the supplemental truck having its corner provided with the slot K′, the bolt or rod L, passing through said slot and secured to the main-truck frame, said rod having its lower end provided with the flange or device L′, adapted to support the corner of said supplemental truck, substantially as described.

10. The spring-seat m, provided with the flange or projection m', adapted to support the inner corner of the truck D, substantially as described.

11. The combination, substantially as described, of the supplemental truck D, with the main truck C, the latter provided with flanges or devices L′ m', adapted to adjustably engage the corners of said supplemental truck and to wholly or partly support the weight of the same.

12. The safety-lugs J, secured to the inside of the outer frame of the supplemental truck and projecting somewhat above the bottom of the main-truck frame and close thereto, said lugs being adapted to resist undue side pressure of one truck on the other, substantially as described.

13. The notched plate or brace I, secured to the supplemental truck and straddling the transom d and securing the same rigidly against side movement, substantially as described.

14. The combination, substantially as described, of the main truck C, the supplemental truck D, the lever F, the links F″, and the car-body provided with pins or equivalent mechanical devices a a, adapted to engage said links, for the purpose described.

WILLIAM ROBINSON.

Witnesses:
JOSEPH ISHBAUGH,
HENRY W. WILLIAMS.