

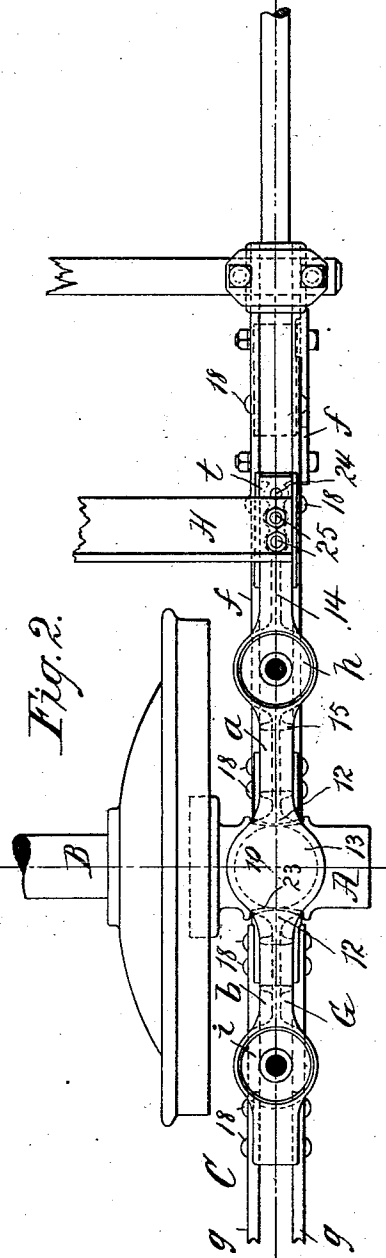
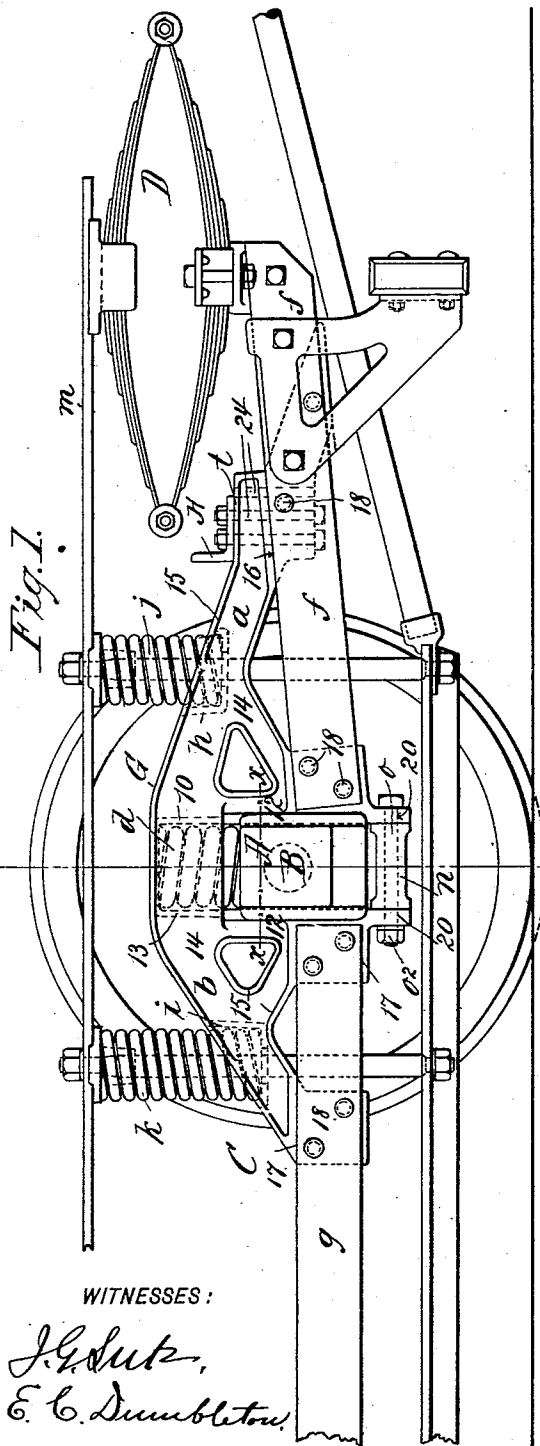
(No Model.)

2 Sheets—Sheet 1.

E. N. RICHARDS.
TRUCK FOR RAILWAY CARS.

No. 571,932.

Patented Nov. 24, 1896.



(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

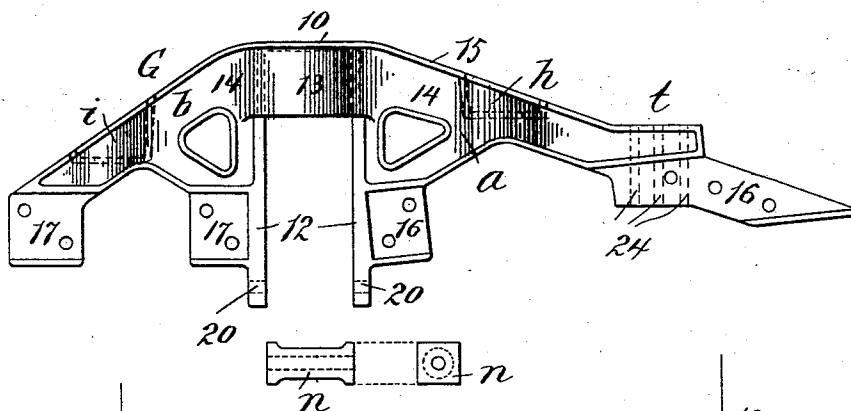


Fig. 4.

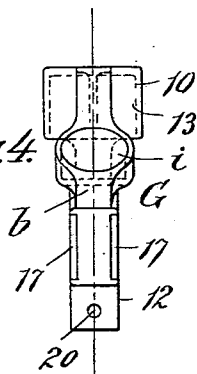


Fig. 5.

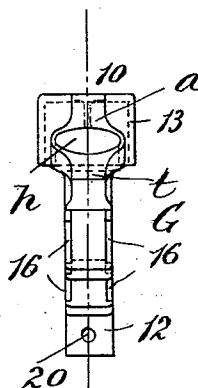
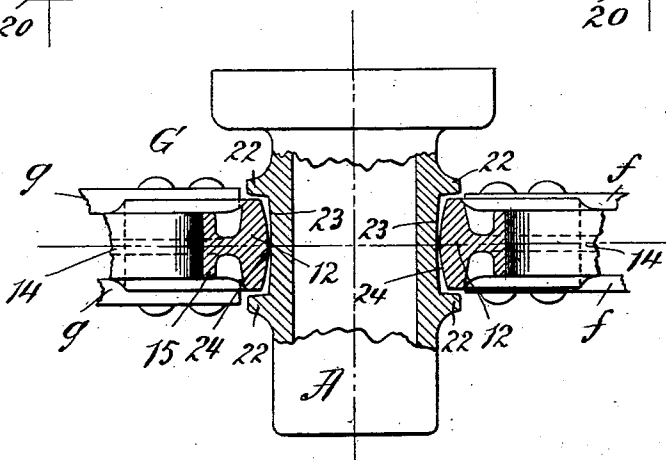


Fig. 6.



WITNESSES:

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UNITED STATES PATENT OFFICE.

EDWARD N. RICHARDS, OF SPRINGFIELD, MASSACHUSETTS.

TRUCK FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 571,932, dated November 24, 1896.

Application filed April 15, 1896. Serial No. 587,624. (No model.)

To all whom it may concern:

Be it known that I, EDWARD N. RICHARDS, a citizen of the United States, and a resident of Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Trucks for Railway-Cars, of which the following is a specification.

This invention relates to improvements in trucks for railway-cars, more especially those employed for electric-railway cars; and the objects of the invention are to provide means in what is known as the "yoke-frame" or "truck-frame" for comprising therein a trussed construction which will enable the truck-frame to be carried well above the track, and which will also enable the end car-supporting springs to be mounted farther from the journal-boxes of the truck than has heretofore been considered safe and practicable in this description of truck; to provide spring-supports for the car which are of improved arrangement and capable of more satisfactory action, and to means whereby to mount the brake-shoes on the truck in variable positions according as to whether a larger or smaller car-wheel is employed.

The invention consists in constructions and combinations of parts, all substantially as will hereinafter fully appear, and be set forth in the claims.

The improvements in an electric-motor truck are illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of an end portion of the truck, sufficiently showing the present improvements. Fig. 2 is a plan view of the same. Fig. 3 is a side elevation merely of the yoke, and Figs. 4 and 5 are elevations at opposite ends thereof. Fig. 6 is a cross-sectional view, on a larger scale, taken about on the line *x x*, Fig. 1.

In the drawings similar letters of reference represent corresponding parts in all the views.

In this truck-frame, in which the yoke constitutes members of a truss of which the side beams of the truck-frame are also members, such side beams have the approved locations at about the level of the journal-boxes, no members of the trussed yoke-frame depending much, if any, below such level, and truss-forming members of the yoke also serve

to maintain certain of the car-supporting springs, and, referring to the drawings, A represents the journal-box receiving the outer end of the car-wheel axle B, and C represents in a general way the truck-frame, it being manifest to those familiar with this art that the present improvements are more specially applicable to a "single" truck, that is, a four-wheeled truck, in which the car-body is sustained by and above one truck-frame. Of this truck-frame C, G represents the yoke, which comprises the U-shaped central portion (consisting of top 10 and depending separated members 12 12 to embrace the journal-box) and the downwardly-inclined forward and rearward extensions *a* and *b*. The top of the yoke is formed with the inverted cup 13 for receiving therewithin the yoke-cushion *d*, which rests on the top of the journal-box and yieldingly supports the yoke therefrom. The yoke extensions *a* and *b* are formed by central webs 14, laterally ribbed, as seen at 15, and the yoke extensions have at their outer and inner faces the sidewise depressions 16 16 and 17 17 for the reception of pairs of flat bars *f f* and *g g* of rolled iron or steel, termed the "yoke-bars," the boundary-webs forming efficient rests for the edges of these bars and for the ends thereof which are in proximity to the journal-box. The yoke-bars are secured in their seats or depressions therefor by the transversely-applied rivets 18. The sidewise seats 16 16 are arranged on an upward and forwardly inclining line, so that the parallel yoke-bars *f f* have a forward upward inclination, whereby the forward ends thereof which extend in advance of said seats are about level with the top of the journal-box, a height proper for the support of the elliptic spring D.

The yoke extensions *a* and *b* have intermediate between their ends and the depending members 12 12 the upwardly-opening circular steps or seats *h i* for the reception of the car-supporting spiral springs *j k*, on the tops of which latter rests the sill-plate *m*. (Shown only in Fig. 1.) The base of the spring-seat *h* is somewhat higher than the base of the seat *j*, so that provision is made for a shorter spiral spring forward of the journal than to the rear thereof.

The extremities of the depending members

12 at the central part of the yoke are, as indicated at 20, perforated horizontally in a longitudinal line, as is also the somewhat stocky removable interposed bar *n*, and the bolt *o* and its nut *o*² detachably confine the said bar *n* in its position shown in Fig. 1.

Especial reference being had to the partial horizontal sectional view, Fig. 6, it will be perceived that the sides of the journal-box have the vertical ribs 22 22 separated by a distance approximately that of the transverse dimension of the thickened portion of the depending yoke members 12, between which said members are entered, and that the surfaces 23 23 of the journal-box are slightly concave, as generated on a radius greater than that which develops the convexity at 24 of the adjacent walls of the yoke-pendants. This is to ease the action between the box and yoke-frame as curves are being rounded, the grinding and destructive effect heretofore disadvantageously experienced at this part of the truck and between the wheel-flanges and track being obviated, while at the same time that practical proximity between the embracing portions of the yoke and the box which is required is not lessened.

The paired bars *g g*, portions only of the length of which are shown, are of course understood as connecting a similar yoke riding a journal-box of the other wheel at the same side of the truck, and the cross-girder or angle-beam *H* constitutes the transverse portion of the truck-framing outside of the wheels.

The forward yoke extension *a* at some distance in advance of the rim of the car-wheel is thickened, and has the widened level top rest *t*, the said thickened top portion having a series of vertical perforations, as indicated at 24 24 24, through which by one or two bolts 25 to confine the cross-girder *H*. By removing the bolt, or the two bolts, as preferably used, the girder may have its position nearer or farther from the center of the axle-box *A*, so that the brake-shoe which may be mounted on a given truck-frame may have its proper position to coöperate with a thirty or a thirty-three inch car-wheel relative to the journals of which the truck-frame may be mounted.

The yoke supported on the journal-box in substantially the usual way by its inclined extensions *ab*, in combination with the yoke-bars *f* and *g*, secured thereto, and also by the bar *n*, constitutes a trussed yoke-frame structure adjacent each journal-box which is of great strength, stiffness, and rigidity, and especially so strengthens the portions of the yoke-bars which protrude forwardly of their connection with the yoke, and on which the end supporting-springs are sustained, that even when such springs are unusually far from the journals, as very desirable whereby to reach near the end of the car to prevent more effectually the tilting, the thrust on such protruding end portions of the yoke-frame

becomes immaterial and is without danger of breaking down such end portions.

The elliptic springs in my truck are designed to support the principal weight of the car when running light, the increased load coming latterly for compression on the spiral springs *j k*. Elliptic end supporting-springs are rather lazy in their reaction, and my purpose in having the shorter spiral spring *j* in advance of the journal, which is quicker in its reaction than the longer spiral spring *k* at the rear, is to act as an auxiliary to the elliptic, whereby when the end of the car becomes tilted down to return it level more quickly than would result were spring *j* similar in reaction to spring *k*.

I am aware that trussed yoke-frames have been devised, resulting in a manner to stiffen the extremities of the yoke-bars; but in such structures as known to me heretofore devised by others it has not been practicable to use the approved form of arched yoke as truss members and to combine with portions of the yoke other truss members which are essential portions of the truck-frame, whereby all parts of the "independent truck-frame" are above or as near the level of the journals as is found most advantageous in an electric-motor truck of this general class.

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

1. In a car-truck frame the combination with a yoke having an inverted-**U**-formed central part and a downwardly and forwardly inclined yoke extension, *a*, of a yoke-bar having a connection with a depending member of the central part of the yoke, extending therefrom forwardly and upwardly and also connected with the forward extremity of the yoke extension, extending in advance of said extremity, the elevated advanced extremity of said bar having a car-supporting spring mounted thereon substantially as described.

2. In a car-truck frame, the combination with the yoke having the central inverted-**U**-shaped portion and the extension *a* extending from the top of the central portion, downwardly and forwardly, the said extension and a depending member, of the central portion having the opposite side rests 16 16, of the yoke-bars *ff* set in and secured to said rest-provided portions of the yoke, substantially as and for the purposes set forth.

3. In a car-truck frame the combination with the yoke having the central inverted-**U**-shaped portion and the extensions *ab* inclined from the top of the central portion, said extensions and the depending members of the central portion of the yoke having the opposite side rests, 16 16, 17 17, with marginal ribs or shoulders, of the yoke-bars *ff* and *gg* set in, and secured to, said rest-provided portions of the yoke, substantially as described.

4. In a car-truck a yoke having a central inverted-**U**-shaped portion, and extensions

a b projecting from the top of said central portion downwardly forwardly and rearwardly, and having intermediately the upwardly-opening spring-seats *h* and *i*, the former one having its base higher than the latter, substantially as described.

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10
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5. In a car-truck, a truck-frame mounted on the journals and carrying at its end an elliptic spring and spiral springs mounted on the truck-frame forward and to the rear of the journal-box, the forward one being shorter and of quicker reaction than the rearward one, combined with a sill or sill-plate resting on all said springs, substantially as and for the purpose set forth.

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25
6. In a car-truck in combination, the journal-box, the yoke having the inverted-U-formed central part and the downwardly-inclined forward and rear extensions projecting longitudinally from the top, having the spring-steps *h* and *i* at different heights, the longitudinal yoke-bars *f* and *g* connected to the depending member of said central part of the yoke and also connected with the extremities of the yoke extensions, an elliptic spring on the forward end of the yoke-frame,

the respectively short and longer spiral springs *j* and *k* in said seats *h* and *i*, and the sill or sill-plate resting on said spiral and elliptic springs, substantially as described and for the purposes set forth. 30

7. In a car-truck of the character described, in combination, a yoke having a forward yoke extension *a* provided with a rest *t* the yoke at this portion being constructed with several vertical holes, 24, the cross-girder H supported on said rest *t* and one or more bolts passed through the said girder and through a portion only of said vertical holes, all whereby said girder which may be utilized as a brake-support can have its position at various distances from the car-wheel axle to accord with different-sized car-wheels, substantially as described. 35 40

In testimony that I claim the foregoing as my invention I have signed my name in presence of two witnesses. 45

EDWARD N. RICHARDS.

Witnesses:

WM. S. BELLOWS,
N. M. BELLOWS.