

No. 614,161.

Patented Nov. 15, 1898.

E. CLIFF.

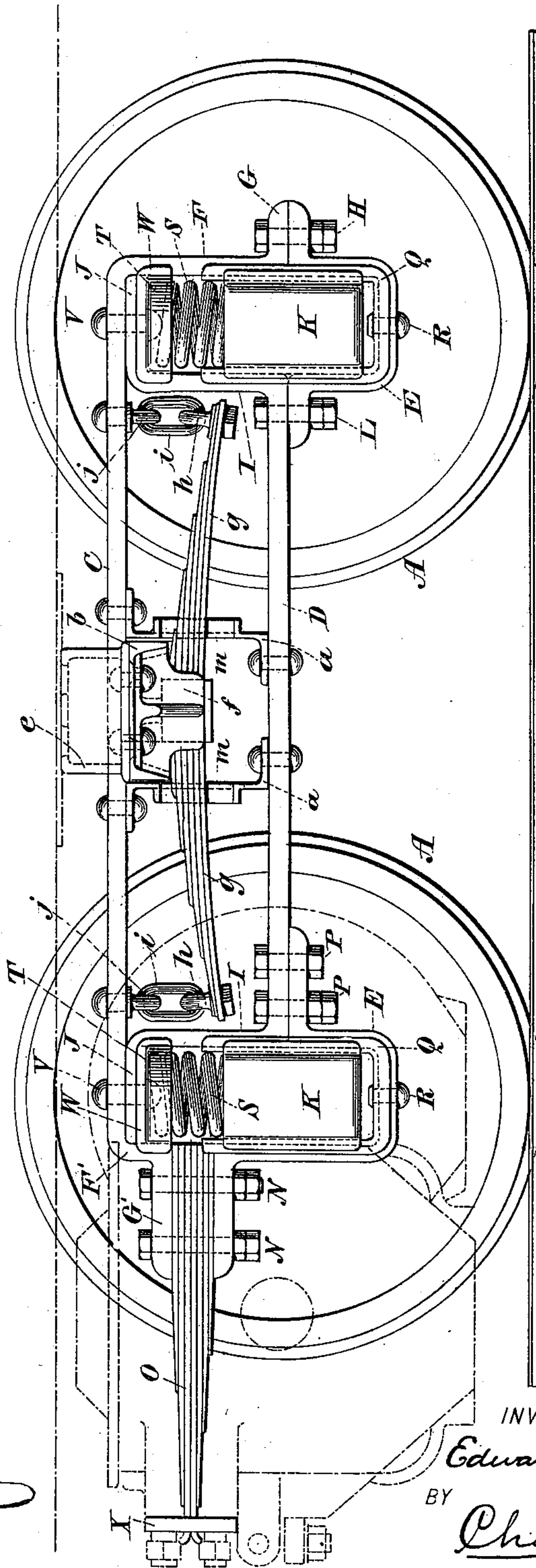
ELECTRIC CAR TRUCK.

(Application filed Aug. 24, 1898.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



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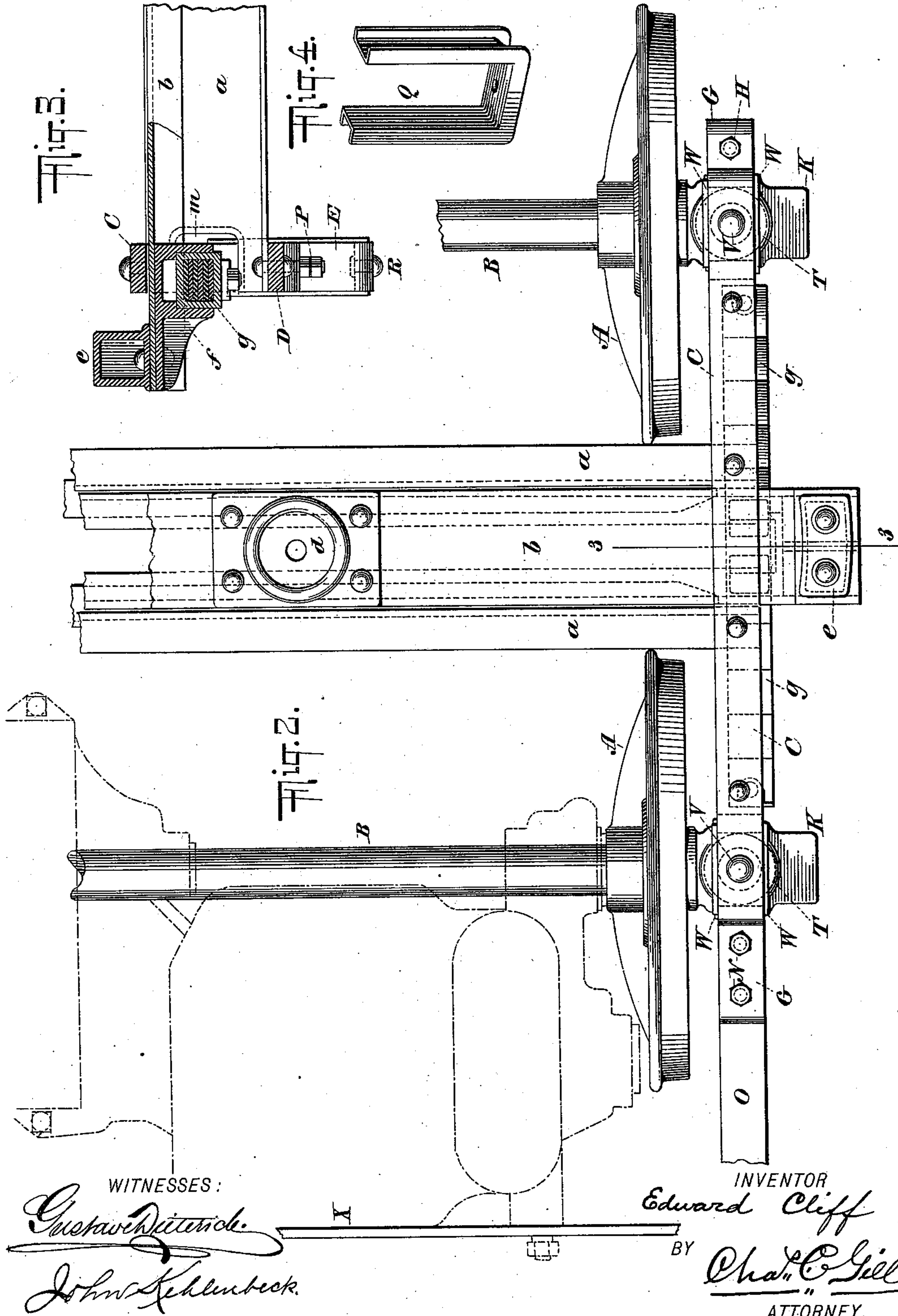
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UNITED STATES PATENT OFFICE.

EDWARD CLIFF, OF NEWARK, NEW JERSEY.

ELECTRIC-CAR TRUCK.

SPECIFICATION forming part of Letters Patent No. 614,161, dated November 15, 1898.

Application filed August 24, 1898. Serial No. 689,420. (No model.)

To all whom it may concern:

Be it known that I, EDWARD CLIFF, a citizen of the United States, and a resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Electric-Car Trucks, of which the following is a specification.

The invention relates to improvements in trucks for electric cars; and it consists in the novel features and combinations of parts hereinafter described, and particularly pointed out in the claims.

The invention is presented in this application as embodied in a car-truck having novel sideframes, pedestal-frames, bolster and motor supports, all of which will be fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a car-truck constructed in accordance with and embodying the invention, the electric motor and its parts and the lower portion of the car-body being indicated by dotted lines. Fig. 2 is a top view, partly broken away, of the same. Fig. 3 is a central vertical transverse section of a portion of the same on the dotted line 3 3 of Fig. 2, and Fig. 4 is a perspective view of a portion of the pedestal.

In the drawings, A designates the usual supporting-wheels, and B the axles therefor.

The side frames of the truck are formed from the bars C D, the ends of which, together with the additional bars E, form the main pedestal-frames. The upper bar C at its ends extends downward to form the pedestal-frame members F F', and thence turns outward to form the horizontal bars or extensions G G', through which pass the bolts H N, respectively, by which the outer ends of the bars E, constituting the lower pedestal-frame members, are secured in place. At its right-hand and left-hand ends the lower bar D turns upward to form the pedestal-frame members I, and thence turns outward directly below the upper bar C and forms at its ends the bars or extensions J, which are in close contact with the lower surface of the bar C, to which they are secured, the bars J C thus forming double thicknesses of metal directly over the axle-boxes K. The lower pedestal-frame members E are substantially of U

shape and at their outer ends are connected by bolts to the outer horizontal portions of the upper bar C, while at their inner ends the pedestal-frame members E are secured by bolts to the lower bar D. The outer end of the right-hand pedestal-frame member E is secured to the bar or extension G of the bar C by means of the bolt H, and the inner end of the right-hand pedestal-frame member E is secured to the lower bar D by means of the bolt L. The outer or left-hand end of the left-hand pedestal-frame member E is connected to the portion G' of the upper bar C by means of the bolts N N, which in addition to connecting the said left-hand member E with the upper bar C, secures between the facing portions of said parts, at each side of the truck, the spring O, composed of several layers and extending horizontally outward from and in line with the sides of the truck. The inner or left-hand end of the left-hand pedestal-frame member E is secured to the lower bar D by means of the bolts P.

Within each main pedestal-frame formed by the bars C D E is applied the U-shaped frame Q, which is flanged at its opposite edges to fit upon the vertical side surfaces of the pedestal-frames and furnishes the rubbing-surfaces for the axle-boxes K. The frame Q constitutes a removable feature and will hold itself in place by reason of its flanged edges. The frame Q may, however, be connected to the lower pedestal-frame member E by means of the bolt or rivet R. The lower portions of the frames Q extend downward below the lower bar D of the side frame, about one half of the height of the frames Q being above the lower edge of the side frame and the other half thereof being below the lower edge of the said frame and snugly fitting the lower pedestal-frame members E, which are suspended below the lower edge of the said side frame.

Above the axle-boxes K are provided the usual springs S, whose upper ends are within the inverted sockets T, which are held in place by the bolts or rivets V, which extend downward through those portions of the bars C D located directly above the axle-boxes. The sockets T are formed with the flanges or gibs W, which fit upon the adjacent surfaces of the opposite sides of the pedestal-frames and serve to center said sockets and prevent

any turning or twisting action in the same. The sockets T, having the gibs W, are of known construction and function in this art.

The springs O, which extend from and in line with the side frames of the truck, are connected at their outer ends by the bar X, to which the motor and its parts are connected, as indicated by the dotted lines in Figs. 1 and 2, this motor and its connected parts being of the usual known form and construction and adapted for the driving of the left-hand axle B. The springs O contain several layers and gradually taper in outline toward their outer ends, the ends of the two inner layers of the springs O being passed through apertures in the bar X and then turned from one another, as illustrated in Fig. 1, for the purpose of securing the bar X in place. The bar X connects the spring O at one side of the truck with a like spring located at the other side of the truck, and thus the bar X is correspondingly supported at its ends by means of the springs O, and the latter at their inner ends are secured between adjacent facing portions of the side frames by the same bolts N which secure the left-hand lower pedestal-frame member E to the left-hand end of the top bar C.

The upper and lower bars C D of the side frames are connected together and the side frames are connected to one another by means of the transom-beams *a a*, which extend transversely across the truck and are in the present instance in the form of Z-beams, whose flanges are by means of rivets or bolts secured to and between the upper and lower bars C D.

The transom-beams *a a* receive between their upper edges the vertical sides of the bolster *b*, which in the present instance is in the form of a channel-beam, whose edge flanges turn downward between the vertical web portions of the transom-beams *a* and whose upper surface is about on the same level with the upper flanges of said transom-beams. The central portion of the bolster *b* is provided with the center-plate *d*, and the ends of said bolster extend outward beyond the sides of the truck and are provided upon their upper surfaces with the rub-irons *e* and upon their lower surfaces with the castings *f*, which are secured to the bolster *b* by bolts or rivets and inclose the opposite sides of the center portion of the side springs *g*. The springs *g*, as shown in Fig. 1, are of elliptic order and carry at their ends the eyes *h*, to which the links *i* are applied, and which links at their upper ends are held by the eyes *j*, secured to the upper bar C. The ends of the bolster *b* are supported directly upon the central portion of the springs *g*, and said bolster will therefore in use be adapted to have a yielding vertical movement between the transom-beams *a* and also a sliding motion between said beams, being at all times supported upon the springs *g*. The casting *f* at each end of

the bolster *b* is in the form of a box to receive the opposite sides of the springs *g*, as shown in Figs. 1 and 3, and thence extends outward to the end of said bolster and is co-extensive in width with said bolster, whereby the outer portions of the bolster *b* are of double thickness directly below the rub-irons *e*, which will preferably be in the form of hollow boxes having apertures in their upper ends and secured by bolts or rivets below said apertures to said bolster *b* and casting *f*.

The ends of the transom-beams *a a* extend outward to the outer edges of the bars C D of the side frames, and the springs *g* are suspended from said side frames, and hence the outer vertical end edges of the said transom-beams are formed with the recesses *m*, within which the springs *g* are permitted to have their necessary freedom of movement without obstruction. The recesses *m* are encompassed by a flange, as indicated in Figs. 1 and 3.

The side and pedestal frames composed of the bars C D E possess great strength and durability and are capable of withstanding the strain to which car-trucks are subjected. The side frames and pedestal-frames, constructed as above explained, are especially adapted to withstand all of the usual strains which come upon them in use, and in addition possess the conveniences of being readily repaired and of affording suitable housings and rubbing-surfaces for the axle-boxes K, springs S, and sockets T. The frames Q may be readily applied to and removed from the side frames, and when the boxes K are to be removed it is only necessary that the bars E and frames Q (after the securing-bolts have been removed) be drawn downward directly from the pedestal-frame members. The frames Q take the wear occasioned by the vertical movement of the axle-boxes and extend the longevity of the frames.

The transom-beams *a a* extend outward, as above described, to the outer edges of the bars C D, and hence said transom-beams are utilized to their fullest capacity in affording the proper strength and rigidity to the side frames.

The springs *g* are directly suspended from the bars C, and by reason of the eyes *h j* and links *i* said springs are given the greatest possible appropriate freedom and latitude of action without any danger of straining or distorting any of the parts of the truck-frame. The eyes *h j* and links *i* afford entirely secure means for maintaining the springs *g* and the weight which will come upon said springs, and at the same time the said eyes and links constitute universal joints at the ends of the springs *g*, and consequently allow said springs to yield in the proper manner during the practical use of the truck.

The bolster *b*, constructed and arranged as described, is of great strength and efficiency and coöperates with the springs *g* in taking the load and in yielding with the car-body

under the conditions to be met during the practical use of the truck. The truck is a swiveling truck, and hence the bolster *b* is provided with the apertured center-plate *d*.

5 As above described, the springs *O* carry the transverse bar *X*, and to this bar are connected the usual electrical appliances. The springs *O* extend outward from the end of the truck-frame and not only supply the supporting-
10 bar *X*, but insures the weight of the electric parts being thrown directly upon the adjacent axle *B*. The springs *O*, if found necessary to suit particular instances, may be extended from both ends of the side frames;
15 but under the present ordinary conditions of use it would usually only be necessary to extend the springs *O* from one end of the side frames of each truck, as illustrated in the drawings.

20 The truck as a whole has been devised with the view of securing great strength, durability, and efficiency, coupled with convenience of manufacture and use.

In an application filed by me concurrently
25 herewith for Letters Patent for improvements in passenger-car trucks are claimed the side frames and pedestal-frames presented in this application, and said parts are not therefore separately claimed herein.

30 What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a car-truck the side frames, combined with the springs *O* extending from the ends thereof and supporting the transverse bar for
35 the electric apparatus; substantially as set forth.

2. In a car-truck the side frames having the springs *O* extending from the ends thereof and composed of several layers, combined
40 with the supporting-bar carried by the outer ends of the said springs; substantially as set forth.

3. In a car-truck the side frames having upper and lower members, and the springs *O*
45 secured by bolts between facing portions of said members, said members being also connected to one another by said bolts, combined with the supporting-bar carried at the outer

ends of said springs for the electric apparatus; substantially as set forth. 50

4. In a car-truck the side frames having the upper and lower bars and lower pedestal members, combined with the springs *O* secured between the ends of said upper bars and said
55 pedestal members by bolts, said bolts also connecting said upper bars and lower pedestal members together, combined with the supporting-bar at the outer ends of said springs; substantially as set forth.

5. In a car-truck the side frames comprising the upper and lower bars, the transom-
60 beams connecting said side frames and said bars, and extending outward to the outer vertical edges of said side frames, combined with the springs *g* suspended from the upper bars
65 of said side frames and entering recesses in the ends of said transom-beams, and the bolster located between said transom-beams and resting upon the said springs; substantially
70 as set forth.

6. In a car-truck the side frames comprising the upper and lower bars, and the parallel transom-beams at their ends secured between and to said upper and lower bars, combined with the bolster located between said
75 transom-beams and below said upper bars, and the springs suspended from the side frames and receiving the ends of said bolster; substantially as set forth.

7. In a car-truck the side frames comprising the upper and lower bars, and the parallel transom-beams at their ends secured between and to said upper and lower bars, combined with the channel-beam bolster whose
80 edge flanges pass downward between said transom-beams, and the springs suspended by links from said side frames and receiving the ends of said bolster; substantially as set
85 forth.

Signed at New York, in the county of New
York and State of New York, this 22d day of
August, A. D. 1898. 90

EDWARD CLIFF.

Witnesses:

CHAS. C. GILL,
E. JOS. BELKNAP.