

No. 751,835.

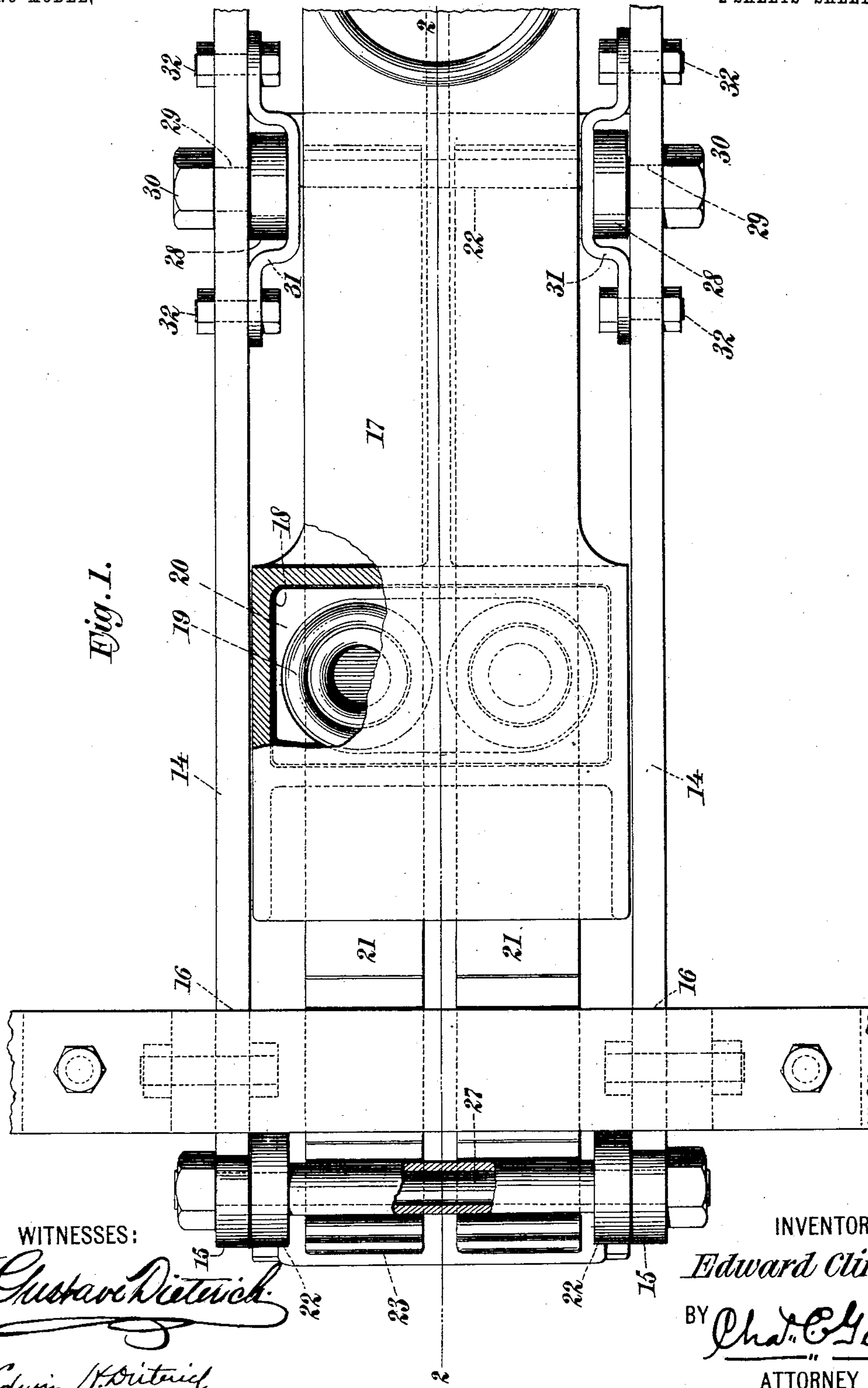
PATENTED FEB. 9, 1904.

E. CLIFF.
ELECTRIC CAR TRUCK.

APPLICATION FILED NOV. 21, 1903.

NO MODEL,

2 SHEETS—SHEET 1.



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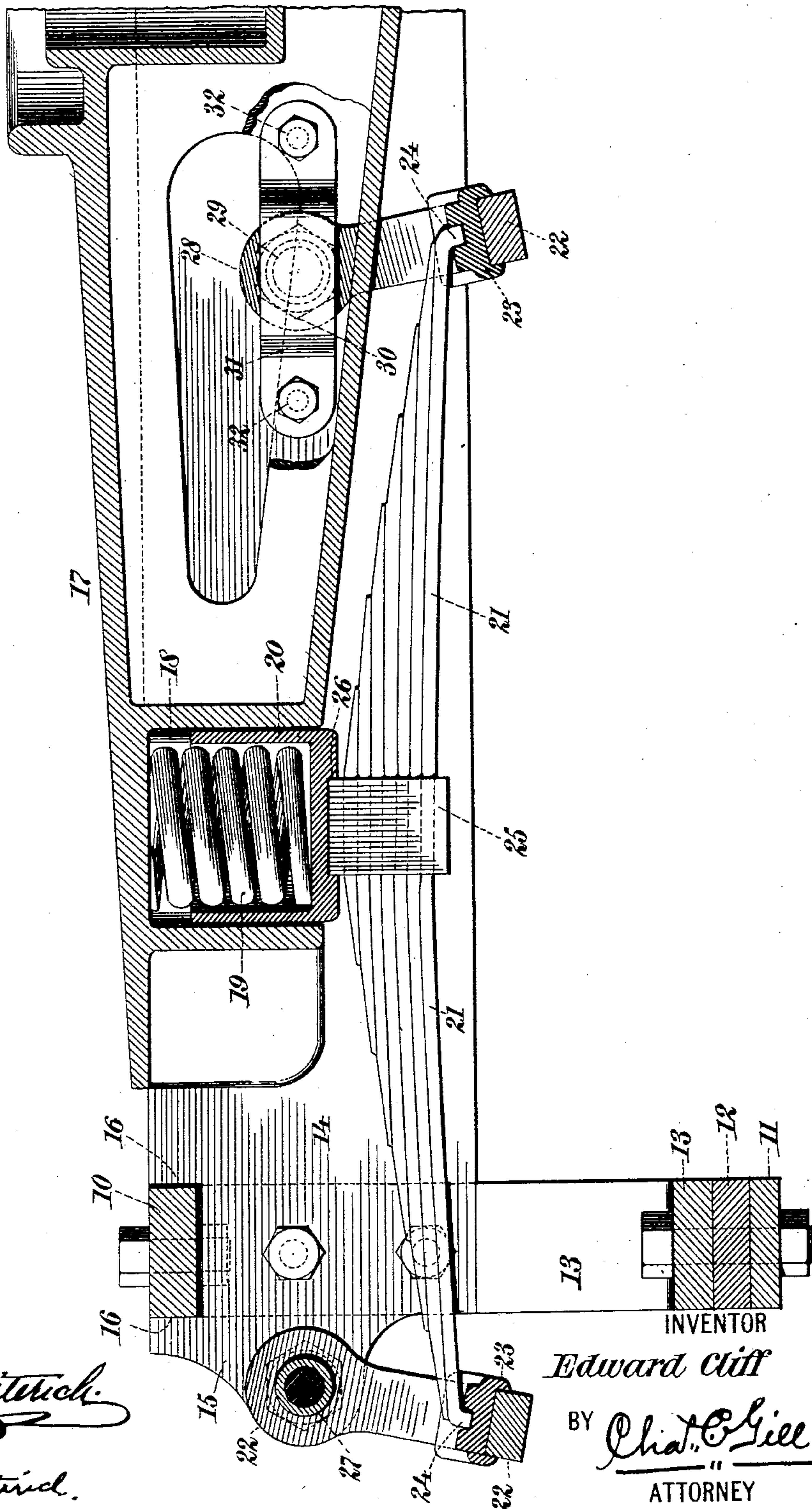
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2 SHEETS—SHEET 2.

Fig. 2.



WITNESSES:

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EDWARD CLIFF, OF EAST ORANGE, NEW JERSEY.

ELECTRIC-CAR TRUCK.

SPECIFICATION forming part of Letters Patent No. 751,835, dated February 9, 1904.

Application filed November 21, 1903. Serial No. 182,074. (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 East Orange, 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 the like; and it consists in the novel features, arrangements, and combinations of parts hereinafter described, and particularly pointed out in the claims.

The present invention pertains more particularly to improvements in the car-truck made the subject of Letters Patent of the United States No. 738,773, granted to me September 15, 1903.

The present invention resides more particularly in a novel construction and arrangement of the bolster and supporting-springs therefor, and these features of the invention will be fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which—

Figure 1 is a top view, partly broken away, of one longitudinal half of a car-truck constructed in accordance with and embodying the invention; and Fig. 2 is a longitudinal section of same on the dotted line 2 2 of Fig. 1.

In the drawings, 10 designates the upper longitudinal bar of the side frame of the truck; 11, the lower bar of same; 12, the arch-bar of same, and 13 a U-shaped frame secured by bolts at the center of the side frame and to the upper and lower bars thereof, the whole being substantially as illustrated in my aforesaid Letters Patent, with the exception that in the present instance the upper bar 10 is a plain flat bar in lieu of being of the angle-iron formation illustrated in my aforesaid Letters Patent.

The side frames of the present truck are not in themselves claimed in this application and may be of any suitable or usual form and construction, and the said side frames are connected by parallel transom-beams 14 14, which are secured at their end portions to the U-

shaped frame 13 and extend outwardly beyond the sides of the side frames, the outwardly-extending portions of said transoms being in the form of extensions 15, whose outline is illustrated in Fig. 2. The upper outer portions of the transoms are provided with a three-sided recess 16 to engage the lower and both vertical sides of the upper bar 10 of the side frames, this recess 16 serving to very materially strengthen the truck structure and relieve the stress exerted by the transoms from the bolts by which the transoms are secured to the side frames.

The bolster 17 may in its general construction be of any suitable character, and the said bolster is adapted to have its usual movements intermediate the transoms 14 and in the present instance is formed at its ends with the spring-chambers 18 to receive the coiled springs 19 and caps 20, the said chambers 18 being closed at their upper ends and open at their lower ends and the said caps 20 being open at their upper ends and closed at their lower ends and fitting upon the said springs 19. In the present instance I provide at each end of the bolster an elongated spring-chamber 18, two springs 19, and an elongated spring-cap 20, because in the preferred embodiment of the invention I employ two springs 21 of the elliptic variety, one of said springs 21 being below each of the springs 19 and serving to receive the cap 20. Each of the springs 19 may be formed of one or more coils, as may be required, and when more than one coil is desired I will set one of the coils within the other coil, as shown in Fig. 1. The bolster 17 will preferably be cast in one integral piece, as shown.

The springs 21 may be either whole or half elliptic and at their center will be engaged by the cap 21 for the springs 19, so that in the employment of the truck there shall be present the combination of a quick-acting coiled spring 19 and a slow-acting leaf-spring 21, the springs 21 preferably extending transversely of the truck-frame and between the transoms 14. The ends of the spring 21 are preferably, though not necessarily, mounted upon saddles 22, pivotally suspended from the transoms 14

and carrying recessed cast blocks 23, receiving the downwardly-bent ends 24 of the main leaf of the springs 21, so that said springs may have the action defined in my aforesaid Letters Patent for the springs therein identified by the numeral 49. The springs 21 are provided with bands 25, which engage a recess 26, formed in the closed ends of the cap 20. The upper end of the outer saddle 22 is secured by a bolt 27 between the extensions 15 of the transoms 14, and the upper ends of the two vertical arms of the inner saddle 22 are designated by the numeral 28 and are secured to the transoms 14 by bolts 29, which pass through the transoms 14 and have applied upon their outer ends the nuts 30, while upon their inner ends the said bolts 29 are formed integrally with or have secured thereto the straps 31, which, as more fully illustrated in Fig. 1, have their end portions bent outwardly to engage the inner faces of the transoms 14, to which they are secured by bolts 32, the purpose of the straps 31 being to enable the securing of the inner saddles 22 in a very efficient and durable manner. The straps 31 are not required for the outer saddles 22, because the bolt 27 for the outer saddles may extend entirely across the space between the transoms 14, while the inner saddles 22 are in many cases necessarily held by short bolts by reason of the fact that a long bolt would interfere with the proper movement or construction of the bolster 17.

In respect of the spring arrangement for the ends of the bolster 17 I shall therefore employ a coiled spring and a leaf-spring, the latter being either a whole or a half elliptic, and in the employment of this combination of the coiled and leaf springs I secure a very easy riding truck, which is the purpose of this portion of my invention, the coiled spring 19 being a quick-acting spring and the leaf-spring a slow-acting spring, and the two together affording an easy-riding motion in the truck, which is not to be attained in the employment of either the coiled spring or the leaf-spring alone.

I deem it highly desirable in many classes of electric-car trucks to employ the semi-elliptic springs 21 illustrated and to mount the ends of these semi-elliptic springs upon pivoted saddles 22, so that the advantages of this mounting of the semi-elliptic springs defined in my aforesaid Letters Patent may be attained in the present truck; but I do not limit my invention in every instance to the employment of the pivoted saddles 22 nor to the employment of semi-elliptic springs 21 as distinguished from whole elliptic springs. For illustration, in lieu of employing semi-elliptic springs 21 I may employ whole elliptic springs of the character shown in Letters Patent No. 700,172, granted to me May 20, 1902, and I may substitute roller-bearings, as shown

in said Letters Patent of May 20, 1902, for the ends of the springs in lieu of employing the saddles 22 hereinbefore described, the roller-bearings permitting of the transverse movement of the elliptic spring with the bolster.

One very desirable feature of the preferred embodiment of my invention is, as shown, that the coiled spring is in operative connection with the center of the spring 21, and the best results are attained when the said springs are thus arranged.

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

1. In a car-truck, a bolster, and spring-supports for the ends thereof, said spring-supports each comprising a leaf-spring of elliptic character and a coiled spring at the center thereof; substantially as set forth.

2. In a car-truck, a bolster, and spring-supports for the ends thereof, said spring-supports each comprising a leaf-spring of elliptic character and a coiled spring at the center thereof, said leaf-spring extending transversely of the truck; substantially as set forth.

3. In a car-truck, a bolster, and spring-supports for the ends thereof, said spring-supports each comprising a leaf-spring of elliptic character and a coiled spring in operative connection therewith, said leaf-spring extending transversely of the truck, combined with means supporting the ends of said leaf-spring and permitting said spring to have an endwise movement with said bolster; substantially as set forth.

4. In a car-truck, a bolster, and spring-supports for the ends thereof, said spring-supports each comprising a leaf-spring of elliptic character and a coiled spring in operative connection therewith, said leaf-spring extending transversely of the truck, combined with the pivoted saddles receiving the ends of said leaf-spring; substantially as set forth.

5. In a car-truck, the bolster, and spring-supports for the ends thereof, said spring-supports each comprising a leaf-spring of elliptic character and a coiled spring mounted thereupon, said coiled spring receiving the bolster, and the bolster being provided with a chamber to pass upon said coiled spring; substantially as set forth.

6. In a car-truck, a bolster, and spring-supports for the ends thereof, said spring-supports each comprising a leaf-spring of elliptic character, an inverted cap mounted upon said leaf-spring, and a coiled spring within said cap and engaging said bolster, said bolster having a chamber to receive said coiled spring and the sides of said cap; substantially as set forth.

7. In a car-truck, the bolster formed at its ends with the spring-chambers, and spring-supports for the ends of said bolster, said spring-supports each comprising a leaf-spring of elliptic character, an inverted cap mounted

thereupon and adapted to said spring-chamber, and a coiled spring mounted in said cap and receiving said bolster; substantially as set forth.

5 8. In a car-truck, a bolster having the elongated spring-chamber formed in its ends, and spring-supports for the ends of said bolster, said spring-supports each comprising a plurality of leaf-springs of elliptic character, and
10 coiled springs corresponding in number with said leaf-springs, and housed in the chamber of said bolster; substantially as set forth.

9. In a car-truck, a bolster having spring-chambers formed in its ends, spring-supports
15 for the ends of said bolster and each comprising a plurality of leaf-springs of elliptic character, a cap mounted upon said leaf-springs and opening upwardly, and coiled springs corresponding in number with said leaf-springs
20 and held within said cap, said cap being adapted

to the chamber formed in said bolster, and said coiled springs receiving the weight of said bolster; substantially as set forth.

10. In a car-truck, a bolster, and spring-supports for the ends thereof, said supports 25 each comprising a semi-elliptic leaf-spring, combined with the pivoted saddles for the ends of said springs, the transoms to which said saddles are pivoted, and the bolts having the straps for the inner saddles, said bolts pass- 30 ing through said transoms and said straps at their ends being secured to said transoms; substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 20th day 35 of November, A. D. 1903.

EDWARD CLIFF.

Witnesses:

ARTHUR MARION,
CHAS. C. GILL.