No. 738,840. PATENTED SEPT. 15, 1903.

E. PECKHAM.

CAR TRUCK.

APPLICATION FILED MAR. 28, 1901.

NO MODEL. 2 SHEETS—SHEET 1.

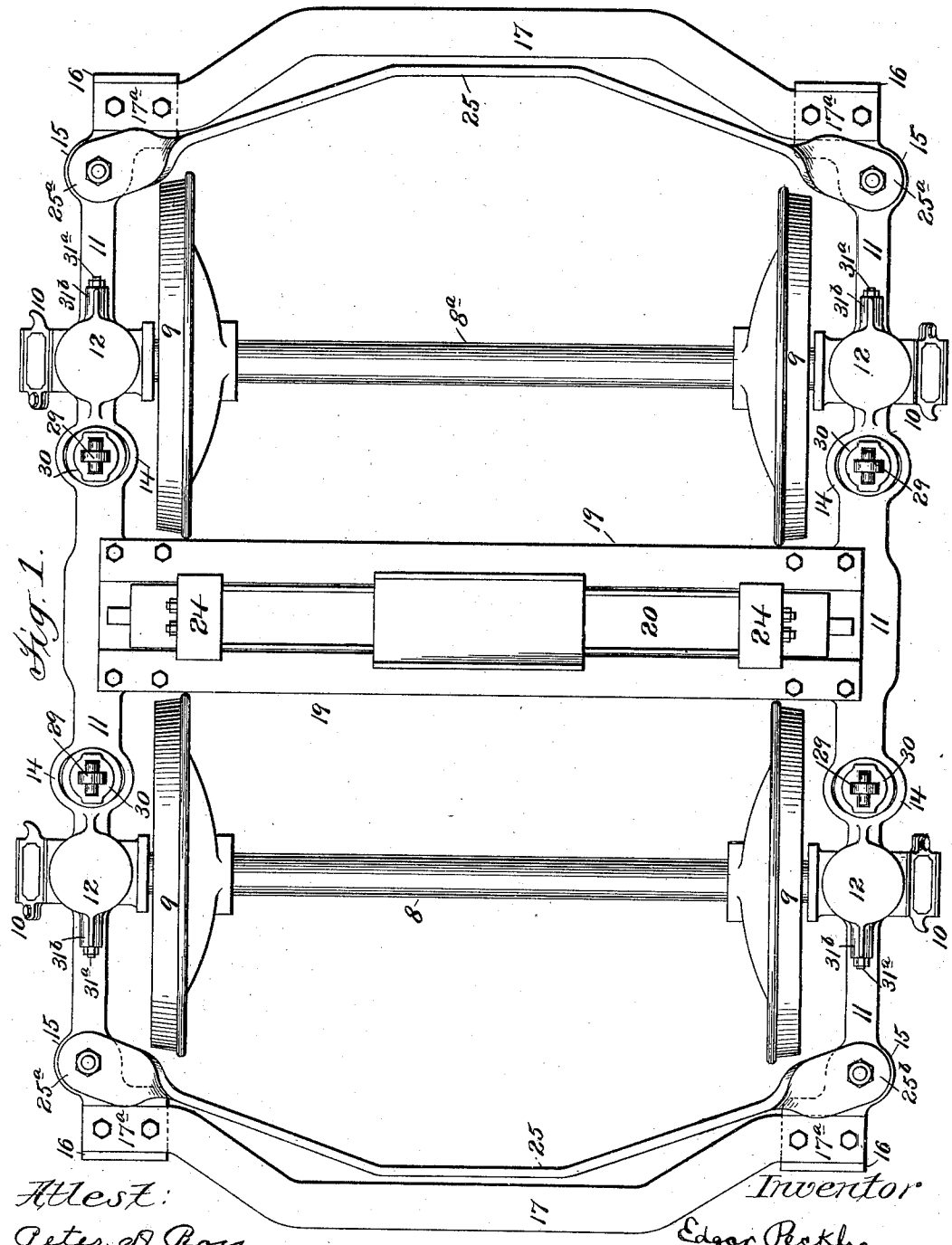


Fig. 1.

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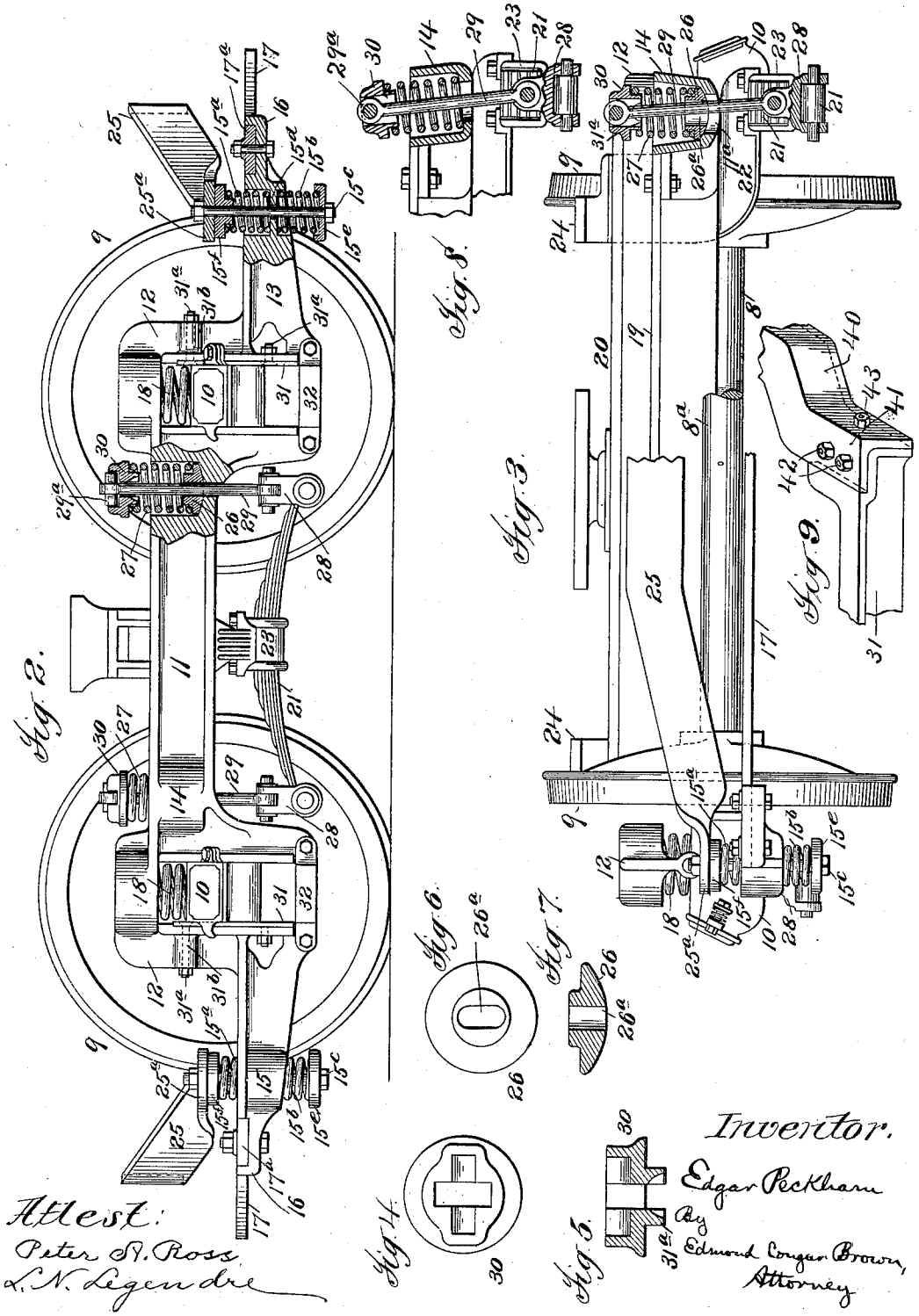
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NO MODEL. 2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

EDGAR PECKHAM, OF NEW YORK, N. Y.

CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 738,840, dated September 15, 1903.

Application filed March 28, 1901. Serial No. 53,333. (No model.)

To all whom it may concern:

Be it known that I, EDGAR PECKHAM, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Car-Trucks, of which the following is a specification.

My invention relates to car-trucks, and particularly to that class of trucks called "double" trucks, which are used for supporting long car-bodies, one truck being placed under each end of the car.

The object of my invention is to provide a truck suitable more especially for heavy car-bodies in high-speed service.

It is constructed with a short wheel-base and embodies a center-bearing swing-bolster, whereby a certain amount of transverse movement of the car-body with reference to the truck structure is permitted, so that shocks and sudden lateral movements of the truck structure are conveyed more gradually to the car-body than would otherwise be the case. It is also provided with a low-down end construction adapted to swing under the side steps of an open-car body without requiring the same to be mounted high upon the truck and with other features, all hereinafter particularly described, intended to improve trucks of this type and to obtain utility, strength, and endurance, as well as the maximum degree of easy riding.

My invention covers a number of features of truck construction, all of which I consider of great value and which tend to carry out the object of the invention. The most important features, however, may be stated to have reference to the construction of the side frames; to the construction of the end bars; to the manner in which such frames and bars are connected together at their ends, whereby great strength and rigidity are afforded; to the peculiar conformation and construction of the end projections, whereby a low-down end projection is obtained of sufficient strength to safely support the free end of the motor hung outside the axle; to the solid truss construction of the end projections of the side frames, whereby the weight of the motors may be safely supported; to the provision of spring-pockets in the end projections for receiving springs to elastically support the motor-sustaining bar, and to various other matters, all of which are hereinafter particularly described.

My improvements are illustrated in the accompanying drawings, which are made a part of this specification, and wherein like features are indicated in the several views by like numerals of reference.

In the drawings, Figure 1 is a plan view of a truck in which my improvements have been embodied. Fig. 2 is a side elevatian of Fig. 1, with certain portions in section. Fig. 3 is an end view, the right-hand portion thereof being partly in section and on a plane considerably beyond the end of the truck, so as to illustrate better certain features of my invention. Fig. 4 is a plan view of the coil-spring cap, and Fig. 5 is a vertical section of the same. Fig. 6 is a plan view of the bearing located in the bottom of the spring-pocket of the side frame of the truck, and Fig. 7 is a vertical section of the same. Fig. 8 is a sectional view of a modified form of said spring-pocket and contiguous parts. Fig. 9 is a perspective view of a modified form of end construction.

Referring now to the drawings, 8 8^a indicate the axles of the truck, 9 the wheels, and 10 the axle-boxes.

The truck-frame is a composite structure and is placed outside the wheel-gage. The side frames of the truck are of novel construction and are designed to afford compactness and strength. The side frames, one at each side of the track, comprise short central pieces 11, connecting the yokes or pedestals 12 and being formed integral therewith, and the end projections 13, preferably in the form of a truss and being cast integral with the outer limbs of the pedestals. These end projections are made of considerable vertical depth to afford strength, and they are as low down toward the track as it is practicable to have them in order that they may readily clear the side step of a car-body mounted not unduly high upon the truck. The intermediate member 11 of the side frame is provided with spring-pockets 14 in close proximity to the pedestals. The end projections 13 of the side frames are provided with spring-pockets 15, located near the ends of the said end projections. At the extreme ends of the end pro-

jections there are provided enlarged offsets or shoulders 16, integrally formed with the end projections and fitted with depressions transverse of the length of the side frames. These depressions (indicated in section in Fig. 2) are adapted to receive the ends of the end beams that connect the side frames together, such beams being indicated at 17 and being flat, as shown, and being bent out and away from the axles, so as to provide space for the motors, which are sleeved on the axles. It will be seen that by means of these enlarged lateral offsets or shoulders projecting inwardly from the ends of the end projections of the side frames there is provided an enlarged and extended support for the end beams, whereby the strain upon the truck-frame is reduced to a minimum and a strong and durable structure is provided. These enlarged offsets or shoulders may be extended to any desired length and their shape may be changed so long as the construction remains such that extended shoulders are provided by which the end beams are supported. A modified form of end construction is shown in Fig. 9 and will hereinafter be more particularly described.

The side frames are supported by their pedestals outside the wheel-gage on the journal-boxes 10 in the usual manner by springs 18 on top of the journal-boxes between the journal-boxes and the top members of the pedestals, which cushion the side frames on the journal-boxes.

At the center of the length of the truck between the wheels the side frames 11 are connected together by the transoms 19, which serve to guide the bolster 20 in its vertical movements and also to prevent it from having any appreciable movement in the direction of the length of the truck. The transoms 19 also serve to brace the truck and add to its rigidity. The bolster (indicated at 20) is provided with a center bearing, at which point the car-body is adapted to be swiveled to the truck. The bolster is connected at each end to the semi-elliptic springs 21, which are supported at each side of the truck just below the side beams 11 by means of the link connections with the side beams, as will be presently explained. The connection between the bolster and the semi-elliptic springs at each end will be seen best in Fig. 3 and comprises the chair 22, bolted at its lower end to the encircling bands 23 of said springs and projecting upwardly inside the side frames of the truck and being connected at its upper end to the bolster 20. It is understood, of course, that there is a chair 22 at each side of the truck. At the top of the chairs 22 are the rub-plates 24, which serve the usual function of a support for the car-body only when it unduly tips in rounding curves or otherwise. It may be here remarked that the construction of the bolster and its mode of connection with the semi-elliptic springs forms no part of my present invention.

Each of the spring-pockets 15, formed in the end projections 13 of the side frames just back of the depressions in the enlargements 16 of the end projections, comprises a partition and spiral springs above and below this partition, the partition being centrally perforated to permit the passage of a bolt, which serves to secure the end of the motor-supporting bar 25 in place. The spring-pocket is indicated generally by 15. The upper spring in the pocket is marked 15^a, the lower spring 15^b, the bolt 15^c, and the partition in the pocket 15^d. (See Fig. 2.) The lower spring is seated on a washer 15^e, held by said bolt 15^c, while at the top of the upper spring is a cap 15^f, having a projection on its lower surface which enters the spring, said cap serving as a bearing-surface for the end 25^a of the motor-supporting bar 25. The bolt 15^c passes through the cap 15^f and through the end 25^a of the motor-supporting bar, and by the nuts on the ends of the bolt 15^c the parts are held together with the proper tension on the springs within the spring-pocket. By placing the springs above and below the partition 15^d in the spring-pocket provision is made for both upper and lower strains that may be imparted to the motor-supporting bar 25 by the operation of the motor. It will be observed that the motor-supporting bar has flat ends that are bolted onto the spring-caps of the springs in the pockets and that between the ends of said bar its long section is in a vertical plane. This motor-supporting bar is also, as seen in Fig. 1, bent or inclined from its ends away from the axle with a straight central portion. The object of this is to provide for the necessary space for the motor, whose nose is supported by said bar.

The end beams 17 of the truck-frame are flat, as seen in Fig. 1, and they are bent from their ends outwardly or away from the axle with a central straight portion and for the same reason as that stated for bending the motor-supporting bar. The ends 17^a of the end beam 17 are straight as well as flat and are bolted in the depressions of the offsets 16 of the end projections of the side frames. They are then at right angles to the length of the said end projections.

A modified form of end construction is shown in perspective in Fig. 9, the ends only of the side frames and end beams being shown. In this modification the end projection 13 of the side frame is provided with a shoulder or offset, as in the form just described, but instead of being provided with a groove or channel as before it has merely a depressed step. The end beam 40 is an angle-bar. It is bent so that its middle part lies well forward out of the way of the motor; but its ends 41 are straight and at right angles to the side frame. The upper or horizontal section of the angle-bar fits into the depressed step at the extreme end of the end projection 13 in the shoulder or offset thereof, and the lower or vertical section of the angle-bar abuts closely against

the end of the said end projection. The end projection and the angle-bar are attached together by vertical bolts 42 and a horizontal bolt 43.

Referring now more particularly to Figs. 2 and 3, the pockets 14 in the beam 11 are practically cylindrical in form and have concave bottoms conforming to the lower surface of the bearing-pieces 26, located within the pockets and upon which bearing-pieces the equalizer-springs 27 rest. Each bearing-piece 26 is provided with an elongated slot 26^a, a similarly-formed slot 11^a being made in the bottom of the pocket. The ends of the semi-elliptic springs are jointed to the knuckles 28, which in turn are pivoted to the links 29, the pivot between the knuckle and the link extending lengthwise of the truck, and thus permitting the link to swing transversely of the truck. The link 29 extends through the slots in the pocket and the bearing-piece 26 and through the spring that is seated on said bearing-piece, and the link and the spring are connected together by providing on the upper end of the link the pin or cross-head 29^a, which is adapted to seat in a depression in the spring-cap 30. (See Figs. 4 and 5.) In practice it is found that the spring-cap 30, which serves as a support for the cross-pin in the top of the link 29, effectually prevents said cross-pin from working loose. Spring-cap 30 is provided with a boss 30^a on its under surface, which fits into the coiled spring 27. By means of the bearing 26 and spring-cap 30 the coiled spring 27 is supported in a position to do its work efficiently. The swinging of the links 29 and the movements of the truck will tend to slightly move the bearing 26, and consequently the coiled spring 27 will readily conform to the varied conditions due to the movements of the truck and car-body.

A somewhat-modified form of the construction just described is shown in Fig. 8. In this modification the pockets 14 are slightly inclined and the bottoms thereof are flat and are not horizontal. The bearing-piece 26 is in this modification of this construction dispensed with.

There are marked advantages in supporting the links which sustain the semi-elliptic springs upon which the bolster rests on springs which are mounted on the side beams, as greater freedom of movement is secured and all binding of the operative parts is avoided. The construction affords an elastic cushion between the upper end of the link and the side beam, thus cushioning the load on the side beam between the upper end of the link and its point of attachment to the bolster-supporting springs. Besides, the link connections between the semi-elliptics and the truck-beam are of greater length when the link is supported, as in the present instance, at a distance above the upper surfaces of the side beams. For an easy riding flexible construction the extension of the equalizer-springs 27 above the upper surfaces of the truck-beam has been found in practice to be quite essential.

It is obvious that by lengthening the suspending appliances by supporting the upper end of the link 29 on top of the coiled spring 27 and extending the latter above the top surface of the side beam there is imparted to the bolster an easier swing and a movement altogether relieved of that rigidity which would follow if the links sustaining the semi-elliptics were suspended directly from the metal of the side beams. Another advantage of placing the equalizer-springs 27 in the side beams of the truck and suspending the links from said springs is that the bolster is more easily and quickly returned to a central position when deflected therefrom, because an abnormal position assumed by the bolster will compress the said equalizer-springs more on one side than on the other, and the conditions changing the natural tendency of the abnormal compression of such springs is to return the bolster to its central position and without shock or jar.

Between the axle-boxes 10 and one of the side members of the pedestal 12 I provide a wearing-piece 31. This device is adapted to save the pedestals from wear, and thus prevent looseness between the journal-boxes and the pedestals or yokes. The wearing-piece 31 is secured by bolts 31^a passing through the limb of the pedestal. When the wearing-piece 31 becomes worn, so as to allow too much play to the journal-boxes, the bolts 31^a may be removed and a sheet of material of suitable thickness inserted between the wearing-piece 31 and the limb of the pedestal. The repairing-pieces 32 across the bottoms of the pedestals are of the ordinary construction and serve the usual function.

I am aware that it is not new in truck construction to provide a swing-bolster supported at each end by semi-elliptic springs occupying a position beneath the side frames or beams of the truck structure, the ends of these semi-elliptic springs being supported by links from the side beams of the truck, and I do not claim that feature broadly, my invention, so far as that feature of the truck is concerned, being limited to the novel manner of suspending the links at the ends of the semi-elliptic springs to the side beams.

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

1. In a car-truck, a side frame comprising pedestals, a beam connecting said pedestals together near their tops and provided with pockets near the pedestals, and end projections provided with spring-pockets, and also with offsets having depressions therein at right angles or substantially so to the length of the side beams.

2. In a car-truck, the combination with the side frames having end projections provided with spring-pockets, of a motor-supporting bar having its flat ends supported by springs

arranged in said pockets, the long section of said motor-supporting bar between its ends being arranged vertically and the said bar being bent outwardly away from the axle to provide room for the motor.

3. In a car-truck, the combination with the side frames comprising low-down end projections, provided at their ends with offsets having depressions therein at right angles or substantially so to the length of the side frames, of a flat bar end beam connecting the side frames together at their ends, the long section of the said beam being in a horizontal plane and the ends of said beam riveted or bolted in the depressions of said offsets and said beam bent outwardly away from the axles to provide room for the motors.

4. In a car-truck, the combination with side frames provided at their ends with lateral offsets, of an angle-bar end beam secured to and connecting the side frames together at their ends.

5. In a car-truck, the combination with side frames provided at their ends with offsets having depressed steps, of an angle-bar end beam the ends of the upper or horizontal plane or part of which fit into said depressed steps and the ends of the lower or vertical plane or part of which are applied to the ends of said side frames, the said end beam being secured to said side frames and connecting the same together at their ends.

6. In a car-truck, the combination with side frames provided at their ends with offsets having depressed steps, of an angle-bar end beam the ends of the upper or horizontal plane or part of which fit into said depressed steps and the ends of the lower or vertical plane or part of which are applied to the ends of said side frames, the said end beam being secured to said side frames and connecting the same together at their ends, and being bent outwardly away from the axles to provide room for the motor.

7. In a car-truck, the combination with the end projections of the side frames of the truck, provided with spring-pockets, of springs within said pockets, caps 15^f seated within the upper springs, a motor-supporting bar having its ends seated on said caps, and bolts connecting the springs, caps, and ends of the motor-supporting bar.

8. In a car-truck, the combination with the end projections of the side frames of the truck, provided with spring-pockets and perforated partitions within said pockets, of springs 15^a and 15^b above and below said partitions, washers 15^e on which the lower springs are seated and caps 15^f having projections entering the top springs, the motor-supporting bar 25 the ends of which are supported by said caps, and bolts and nuts holding the springs in place and the ends of said motor-supporting bar on said caps.

9. In a car-truck, the combination with the side frames having low-down end projections of truss form and provided at their ends with offsets having depressions therein in a plane at right angles or substantially so to the length of the side frames, of beams connecting the side frames together at their ends, the ends of said beams being riveted or bolted in said depressions of the offsets and the central portions of said beams being bent outward from the truck-axles, and transoms connecting the side frames together between the wheels.

10. In a car-truck, an elastic support for the upper end of the bolster-spring-suspending link, consisting of a pocket in the side beam, a coiled spring seated in said pocket, and a cap adapted to rest upon the top of said coiled spring and having a depression in its top surface in which is seated the cross head or pin of the suspending-link.

11. In a car-truck, an elastic support for the upper end of the bolster-spring-suspending link, consisting of a pocket in the side beam, a coiled spring seated in said pocket, and a cap having a projection on its bottom which enters the top of the said coiled spring and a depression in its top surface in which is seated the cross head or pin of the suspending-link.

12. In a car-truck, an elastic support for the upper end of the bolster-spring-suspending link, consisting of a pocket in the side beam, a slotted bearing-piece in the bottom of said pocket and having a semispherical base which conforms to the shape of the bottom of the pocket, a coiled spring seated on said bearing-piece, a cap having a projection on its bottom which enters the top of the said coiled spring and a depression in its top surface in which is seated the cross head or pin of the suspending-link.

13. In a car-truck, the combination with the bolster-spring-suspending link and the pocket in the side beam of the truck, of a coiled spring seated in the said pocket and projecting above the top surface of the side beam, and a cap adapted to rest upon the top of said coiled spring and having a depression in its top surface in which is seated a cross head or pin of the suspending-link.

14. In a car-truck, the combination with the bolster-spring-suspending link and the pocket in the side beam of the truck, of a coiled spring seated in the said pocket and projecting above the top surface of the side beam, and a cap having a projection in its bottom which enters the top of the coiled spring and a depression in its top surface in which is seated a cross head or pin on the suspending-link.

15. In a car-truck, the combination with the bolster-spring-suspending link and the pocket in the side beam of the truck, of a slotted bearing-piece in the bottom of said pocket having a semispherical base which conforms to the bottom of the pocket, a coiled spring seated on said bearing-piece in the pocket and projecting above the top surface of the side beam, and a cap having a projection on its bottom which enters the top of the coiled

spring and a depression in its top surface in which is seated a cross head or pin on the suspending-link.

16. In a car-truck, the combination with the beam connecting the pedestals of the side frame together and provided with pockets near the pedestals, of coiled springs seated in said pockets, suspension-links passing through perforations in the bottom of said pockets and through the said springs and provided at their upper ends with cross heads or pins, and caps adapted to rest upon the tops of said springs and having depressions in their top surfaces to receive the cross heads or pins of the links.

17. In a car-truck, the combination with the beam connecting the pedestals of the side frame together and provided with pockets near the pedestals, of coiled springs seated in said pockets, suspension-links passing through perforations in the bottoms of said pockets and through the said springs and provided at their upper ends with cross heads or pins, and caps having projections on their bottoms which enter the tops of the coiled springs and depressions in their top surfaces to receive the cross heads or pins of the links.

18. In a car-truck, the combination with the beam connecting the pedestals of the side frame together and provided with pockets near the pedestals, of bearing-pieces in the bottoms of said pockets, the bases of said bearing-pieces conforming to the bottoms of said pockets and said bearing-pieces being slotted and the bottoms of said pockets perforated, coiled springs seated on said bearing-pieces within the pockets, suspension-links passing through the slots in the bearing-pieces and the perforations in the bottoms of the pockets and through the coiled springs and provided at their upper ends with cross pins or heads, and caps having projections on their bottoms which enter the tops of the coiled springs and depressions in their top surfaces to receive the heads or cross-pins of the links.

19. In a car-truck, the combination with the beam connecting the pedestals of the side frame together and provided with inclined spring-pockets near the pedestals, of coiled springs seated in the said pockets, suspension-links passing through perforations in the bottoms of said pockets and through the said springs and provided at their upper ends with cross heads or pins, and caps having projections on their bottoms which enter the tops of the coiled springs and depressions in their top surfaces to receive the cross heads or pins of the links.

20. In a car-truck, the combination with the beam connecting the pedestals of the side frame together and provided with inclined spring-pockets near the pedestals, of coiled springs seated in the said pockets, suspension-links passing through perforations in the bottoms of said pockets and through the said springs and provided at their upper ends with cross heads or pins, and caps adapted to rest on said coiled springs and having depressions on their top surfaces adapted to receive the cross heads or pins of the links.

21. In a car-truck, the combination with side frames provided with pockets near the pedestals, the bolster arranged between the pairs of wheels, and semi-elliptic springs connected to the ends of the bolster outside of the wheel-gage and depending beneath the side beam, of links connected to the ends of the semi-elliptic springs and extending through the pockets in the side beams, coiled springs arranged in said pockets, and caps adapted to rest upon the tops of said coiled springs and having depressions in their tops in which are seated the cross heads or pins of the links.

22. In a car-truck, the combination with the side frames provided with pockets near the pedestals, the bolster arranged between the pairs of wheels, and semi-elliptic springs connected to the ends of the bolster outside of the wheel-gage and depending beneath the side beam, of links connected to the ends of the semi-elliptic springs and extending through the pockets in the side beams, coiled springs arranged in said pockets, and caps adapted to rest upon the tops of said coiled springs and having depressions in their tops in which are seated the cross heads or pins of the links.

23. In a car-truck, the combination with the side frames provided with pockets near the pedestals, the bolster arranged between the pairs of wheels, and semi-elliptic springs connected to the ends of the bolster outside the wheel-gage and depending from the said beam and beneath the same, of links connected to the ends of the semi-elliptic springs and extending through the pockets in the side beams, coiled springs arranged in said pockets, bearing-pieces with semispherical bottoms supporting the springs in the pockets, and caps having projections entering the tops of said coiled springs and having depressions in their top surfaces in which are seated the cross heads or pins of the links.

Signed at New York, in the county of New York and State of New York, this 25th day of March, A. D. 1901.

EDGAR PECKHAM.

Witnesses:
W. L. MURRAY,
EDMOND CONGAR BROWN.