

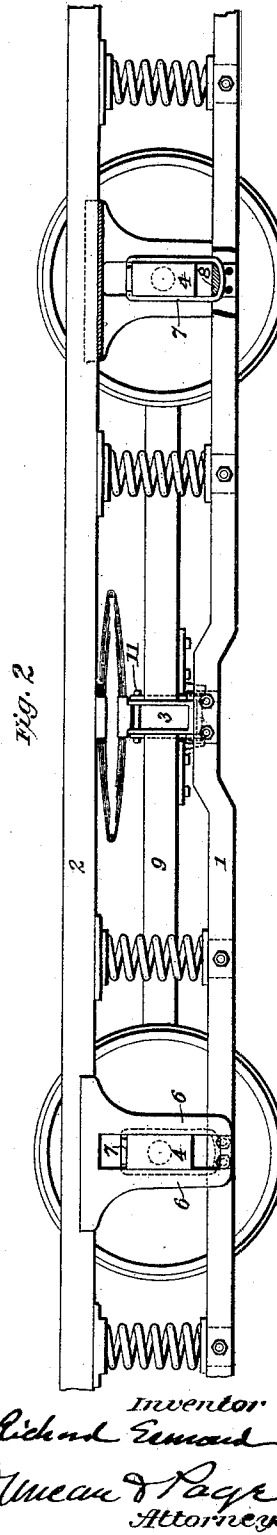
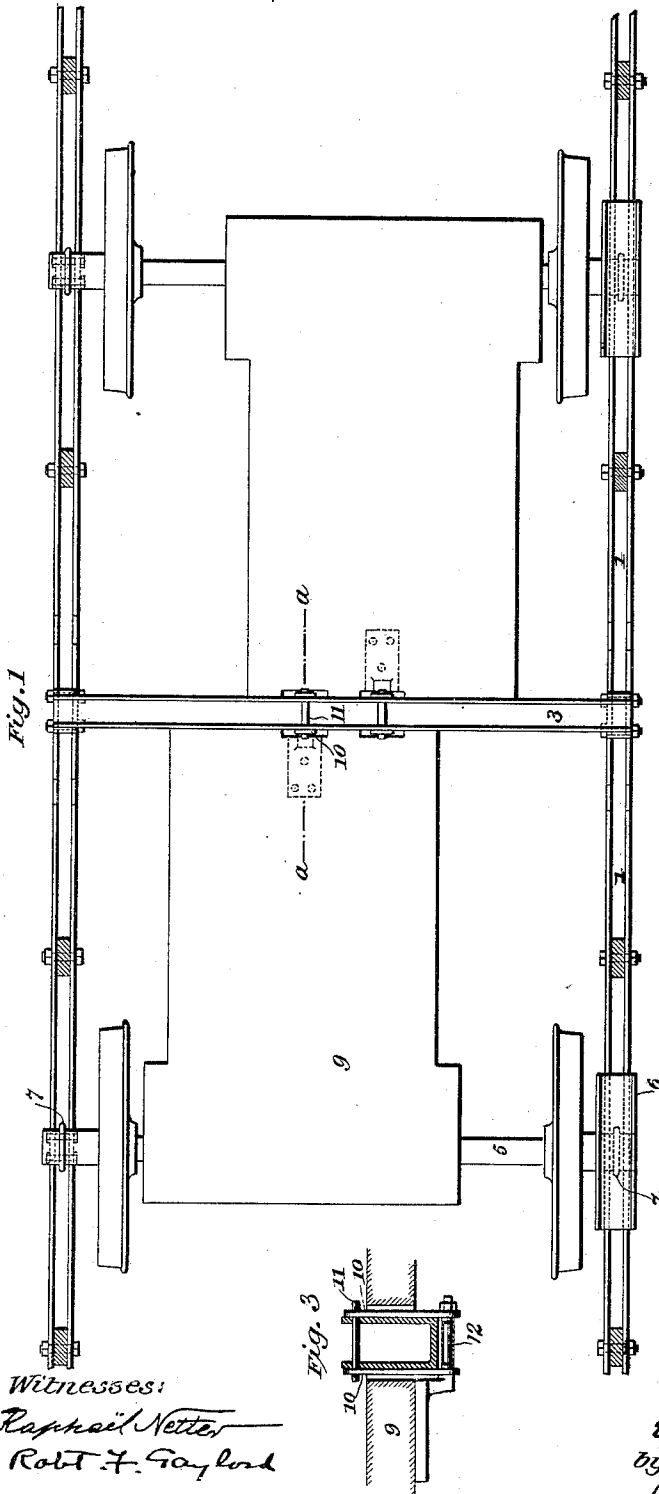
(No Model.)

E. R. ESMOND.
CAR TRUCK.

5 Sheets—Sheet 1.

No. 465,660.

Patented Dec. 22, 1891.



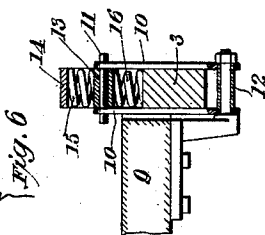
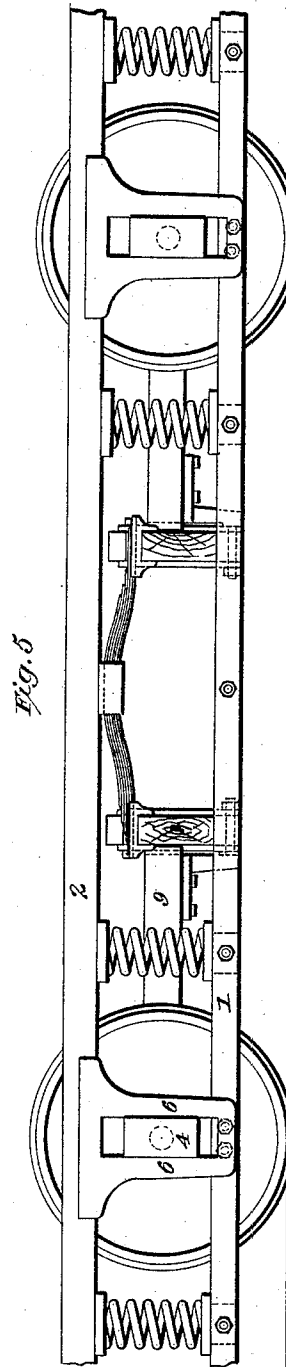
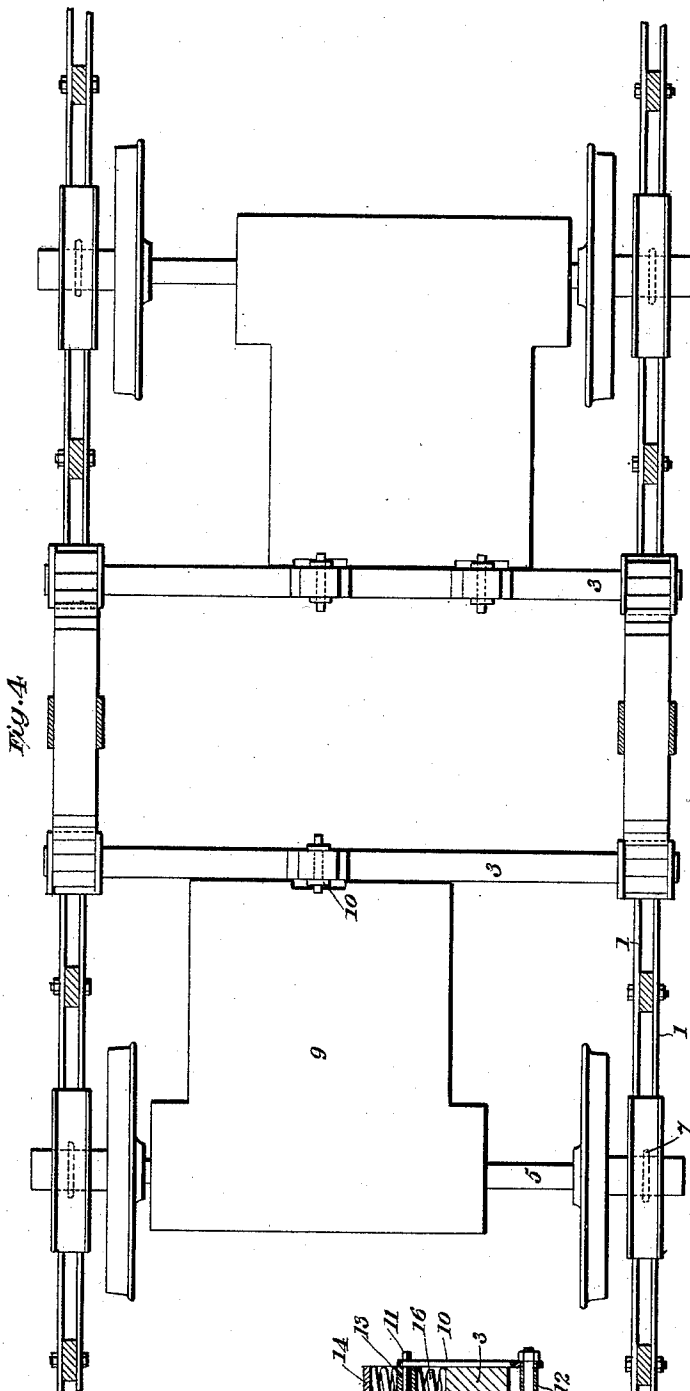
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5 Sheets—Sheet 2.

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CAR TRUCK.

No. 465,660.

Patented Dec. 22, 1891.



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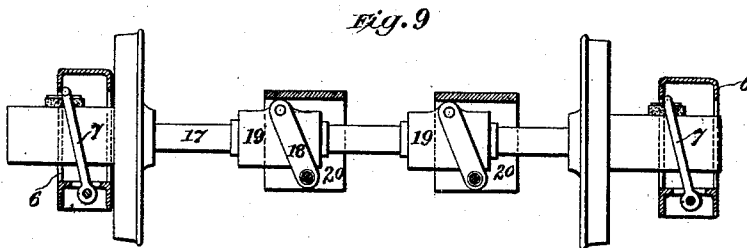
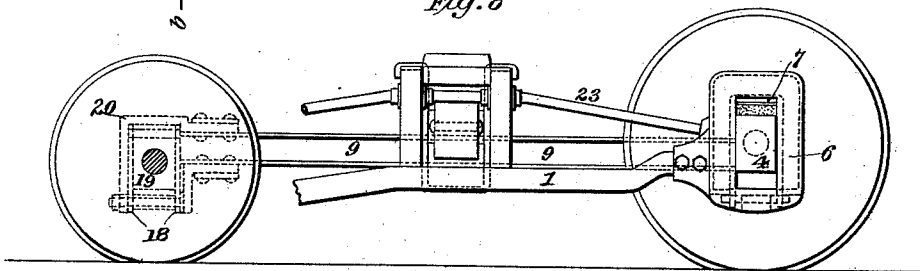
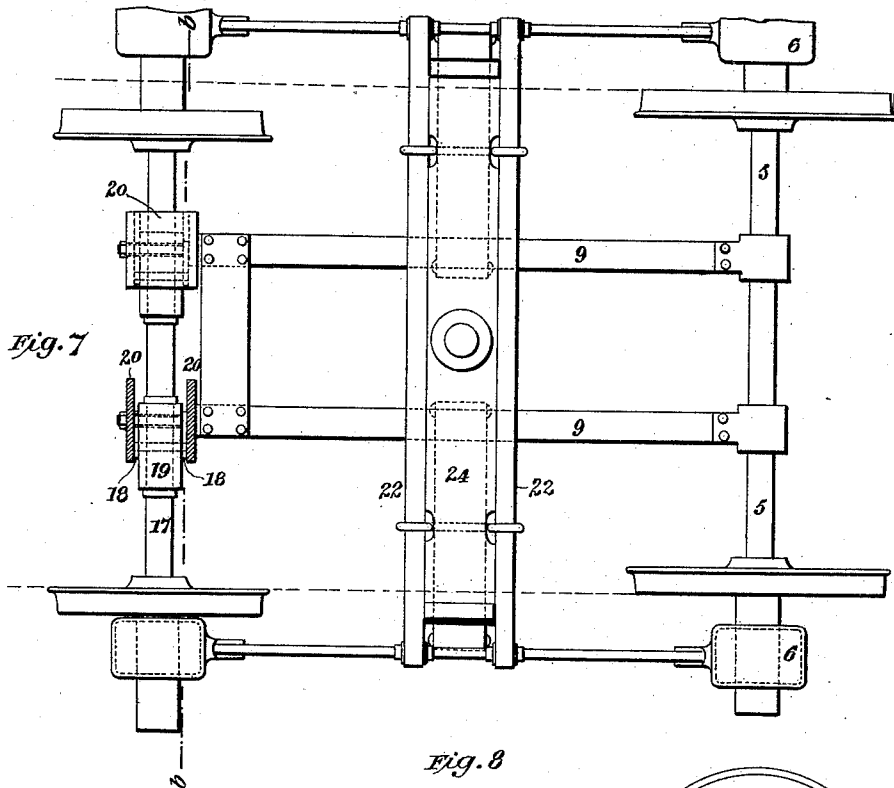
(No Model.)

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5 Sheets—Sheet 3.

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5 Sheets—Sheet 4.

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Fig. 10

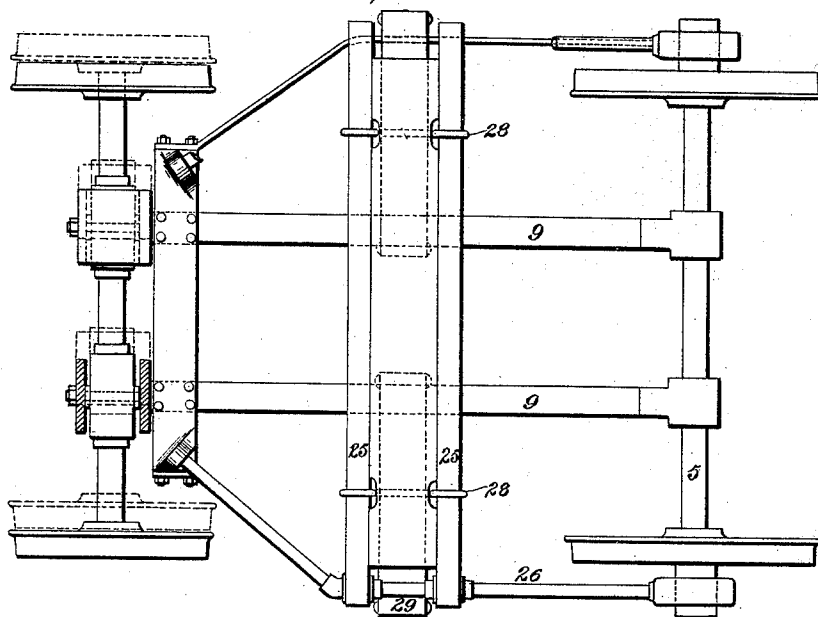


Fig. 11

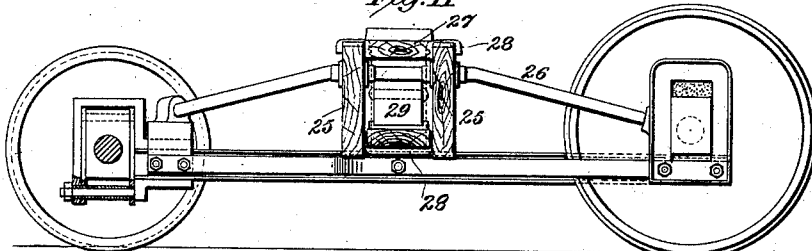
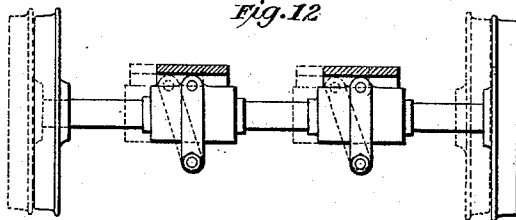


Fig. 12



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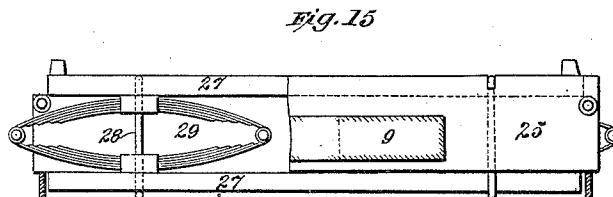
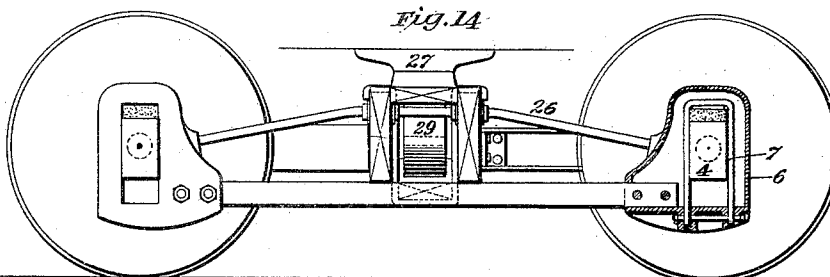
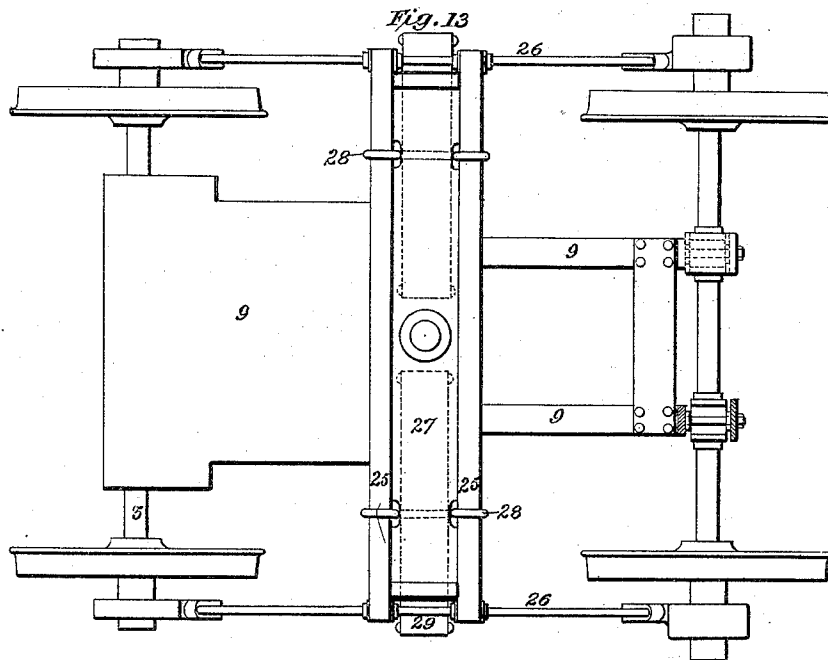
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5 Sheets—Sheet 5.

E. R. ESMOND.
CAR TRUCK.

No. 465,660.

Patented Dec. 22, 1891.



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UNITED STATES PATENT OFFICE.

ERNEST RICHARD ESMOND, OF NEW YORK, N. Y.

CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 465,660, dated December 22, 1891.

Application filed April 30, 1891. Serial No. 391,130. (No model.)

To all whom it may concern:

Be it known that I, ERNEST RICHARD ESMOND, of the city, county, and State of New York, have invented certain new and useful Improvements in Car-Trucks, of which the following is a description, reference being had to the accompanying drawings.

This invention relates to a new and improved method of attaching a motor, grip, or other power or propelling frame to a car-truck; and it embodies in part a new and useful application of certain of the improvements of my United States Patents No. 238,280, dated March 1, 1881, and No. 247,814, dated October 4, 1881. In the said patents are shown and described means whereby the axles or axle-boxes of a car or car-truck are free to move laterally relative to the truck or car, but are restrained from having longitudinal motion relative thereto. This relation of the axles to the load they carry is effected by arranging the axle-boxes between forward and rearward pedestals projecting downwardly from the truck-frame or car-body to below the axle-boxes and connecting the pedestals and boxes by links closely held between them and pivotally secured at the bottoms of the pedestals and tops of the axle-boxes. By this construction the axles have free lateral motion relatively to the load, (as well as their usual vertical motion, usually against suitable springs,) but are rigid with the load in the line of travel. This results in many advantages, as to the wear and tear of the wheels and wheel-gearing and in the respect of the freedom of jar and shock to the car or load that are now well understood.

The essential object of my present invention is to provide means whereby the propelling-frame of a car or car-truck may have lateral motion relatively to the car or truck or truck-frame and yet be restrained against longitudinal motion relatively thereto.

The invention consists, generally, in a car or car-truck having a propelling-frame attached thereto by links, housings or abutting parts being arranged between the truck-frame or car and the propelling-frame in such manner that the frames can have lateral motion relatively, but are held rigid with each other longitudinally.

Referring to the drawings in detail, Figure

1 is a plan view of the lower part of a car-truck carrying two motor-frames, which frames are attached to the truck-frame in accordance with my invention. Fig. 2 is a side elevational view of the truck-frame, and Fig. 3 is a detail section on plane *a a* of Fig. 1.

The truck-frame in the present instance consists of the lower side bars 1, car-sills or truck-wheel pieces 2, and one or more cross-bars 3, attached at each end to the side bars 1. Suitable springs are arranged between the sills and side bars.

4 indicates the axle-boxes, 5 the axles, and 6 the pedestals, horns, or housings, which depend from the wheel-piece or sill 2 and loosely engage the sides of the bars 1 and bear against the axle-boxes on their front and rear faces. The links 7 pivotally engage the blocks 8 between the two side parts of the bars 1 and pass over the axle-boxes, upon the tops of which they have a pivotal bearing. By these means the entire truck-frame is suspended on and attached to the axle-boxes by laterally-movable links, and sudden endwise motion of the axles is not rigidly resisted by the truck-frame or the load upon it.

9 is the propelling-frame—that is, it is the frame upon which may be carried a motor or the means for attaching the truck or its axles to a source of power, like a cable-grip and other similar devices. Whatsoever be the source of power, my improvements include a frame separate from the truck-frame or car, through which propelling-frame the motive power is transmitted to one or more of the axles, and which frame I will therefore designate by the general term of “propelling-frame.” This propelling-frame is pivotally secured at its front end to one of the axles in any suitable manner. The rear end of the propelling-frame is supported from the cross-bar 3 by a link or links 10, the upper ends of which are attached to the cross-bar by pivot-bolt 11, while their lower ends are pivoted on the wrist-pin 12, secured to the frame 9. In the drawings two motor-frames are shown, each frame secured at one end to one axle and at its other end hung from the cross-bar 3 common to both. It will now be plain that by thus attaching the propelling-frame to the car or truck-frame either can have motion laterally without affecting the other, while both must move rig-

idly together so far as longitudinal motion is concerned, and therefore all tendencies to strain, torsion, or racking as between the two frames or as between the car and the propelling-frame are obviated. When the wheels of the axle directly driven by the propelling-frame strike ordinary and slight lateral variations in the track, such axle and the propelling-frame can easily move laterally and follow such variations without having to positively or abruptly meet the vertical or gravity resistance of the superimposed load. When the propelled axle-wheels enter a curve, the axle and propelling-frame can move laterally to the car to follow the track, while the car tends to follow the tangent thereto, the action of the axle still being such, by reason of the links and link-housings between the load and the propelling-frame, that power is applied to the car body or load with regularly-increasing force to cause it to swing to and follow the desired line of movement—that is, the movement of the axle laterally is against the line of gravity of the load and increases resistance to the same in proportion to the movement of the axle laterally to the load, or vice versa, the resisting action being spring-like, yet effected by the positively-acting link connections. It will then be seen that the propelling-frame and driven axle are as yielding and elastically related to the load when relative lateral movement is considered as when relative vertical movement is taken into account, and so all forms of sudden action of the load upon the propelling-frame by reason of the movement of the load to the frame are prevented.

On Sheet 2 I show in Figs. 4, 5, and 6 a plan and side view of a truck or sills of a car-body and a detail section of one of the cross-bars of the same in substantially the same general form and arrangement as in the figures of Sheet 1. Here, however, the two propelling-frames are shown as hung at their rear ends from separate cross-bars 3, thus permitting a space between the motors for batteries or other mechanism. Also, as seen in Fig. 6, I mount the upper link-pivot 11 at the rear ends of the propelling-frames in a block 13, which is carried in an appropriate frame 14 and between two springs 15 and 16. This method of hanging these links permits the rear end of a propelling-frame to have a slight vertical movement, which may be desired to provide a yielding or elastic relation of the power connections to the axle.

On Sheet 3 I show a general plan view, Fig. 7, of a propelling-frame entirely supported on the axles, Fig. 8 being a side view with parts of the frame cut away, and Fig. 9 being a section of the same on plane *b b* of Fig. 7. Here the propelling-frame 9, composed of two longitudinal bars, is attached to the axle 5, as before, and the truck-frame 1 for those views is hung on the axle-boxes 4 by links 7, as in the views of the other sheets. At their opposite ends the propelling-frame bars 9 are

hung to the other axle 17 by links 18, which are pivoted at their upper ends to the boxes 19, within which the axles turn, and at their lower ends to the housings 20, which are rigid with the bars 9. These axle-boxes have motion with the axle, the links lie flat and close to the sides of the boxes, and the housings bear close against the links on the front and rear sides of the boxes. The side bars 1 of the truck-frame are attached by journal-boxes (as contradistinguished from "axle-boxes" arranged between the wheels) 21 to the axle 17. Preferably this attachment is made by links, as in the other cases of journal-boxes described. 22 are bolster-bars carried on the side bars 1 and provided with suitable braces 23. Between these bars is supported the bolster 24, 25 being the king-pin, which engages the end of the car carried on the bolster.

On Sheet 4, Figs. 10, 11, and 12 are views similar to Figs. 7, 8, and 9—that is, Fig. 10 is a plan view of a propelling-frame, Fig. 11 an elevation of the same in partial section, and Fig. 12 a section through the link-housings of the frame where it has axle-box connections with one axle. Here the bolster-bars 25 and their side braces 26 are rigidly attached to and carried on propelling-frame 9, and the axle 5 is rigid as to lateral motion with the propelling-frame and the braces 26. The bolster 27 is, however, hung between the bars 25 on links 28, springs 29 being interposed between its upper and lower parts, all as in the usual manner. This bolster carries the car on one end thereof, and in the structure illustrated by Figs. 10, 11, and 12 it represents the car (or a truck-frame) relative to which the power-frame has lateral motion by reason of the link attachments between the two, as well as lateral motion relative to the other axle.

On sheet 5, Fig. 13 is a plan view of another form of propelling-frame having laterally-acting link attachments to a car or the bolster of a car, Fig. 14 being a side elevation of the same and Fig. 15 a side view of the bolster, with one of the bolster-bars partly sectioned away. In this case the propelling-frame is attached by link-housings to one axle and is rigid with the other axle and with the bolster bars and braces. The whole system has motion with one axle laterally and relatively to the other axles and to the car or load carried on the swinging bolster, which bolster constitutes the truck-frame, as before.

I claim—

1. The combination, in a car-truck, of a truck-frame, a propelling-frame attached to the truck-frame by links, and housings holding the propelling-frame longitudinally rigid to the truck-frame, but permitting lateral motion relatively of the frames.

2. The combination, in a car-truck, of a truck-frame, a propelling-frame attached by links to the truck-frame, and housings holding one or more of the links longitudinally

rigid in relation to the truck-frame, but permitting them to move laterally thereto.

3. The combination, in a car-truck, of a truck-frame, a propelling-frame attached at one end to the truck-frame by a link and at the other end to one axle, which is attached to the truck-frame by links, and housings holding the frames longitudinally rigid, but permitting them to have lateral motion relatively.

4. The combination, in a car-truck, of a truck-frame suspended on one of its axles by link connections, a propelling-frame supported at one end on said axle and at the other end from the truck-frame by link connections, and housings inclosing two or more of said link connections, so as to permit lateral but not longitudinal movement of the power-frame and truck-frame relatively.

5. The combination, in a car-truck, of a truck-frame, a propelling-frame hung upon one of its axles by link connections, a motor-

frame rigid at one end with said axle and at its other end attached to the other axle by a link, and housings between the frames, where- by the frames are relatively longitudinally rigid, but free to have motion laterally.

6. In combination, the axle 5, linked to the truck-frame, the propelling-frame 9, the bar 3, and the link 10, attaching one end of the said frame to bar 3, substantially as and for the purpose set forth.

7. In combination, with axle 5, attached to the truck-frame by links and link-housings, the propelling-frame on said axle, the bar 3, and the link 10, pivoted to said propelling-frame and to the block 13, elastically supported on the bar 3, substantially as and for the purpose set forth.

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