

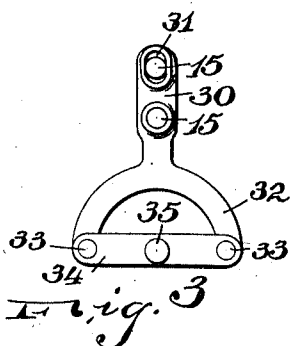
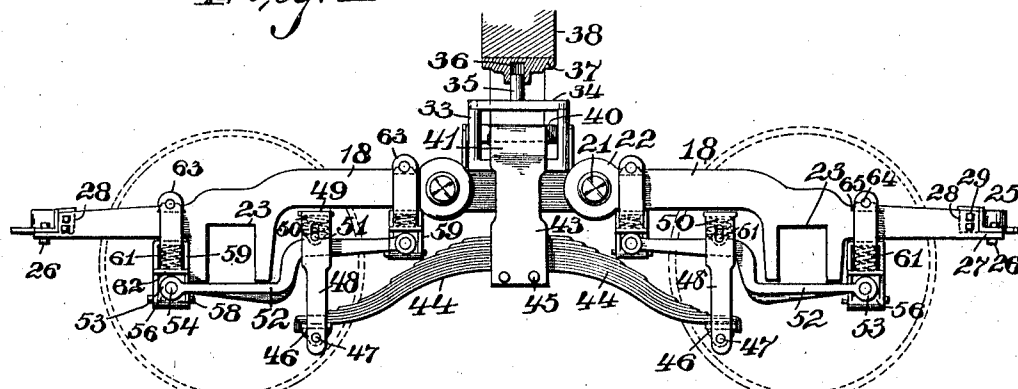
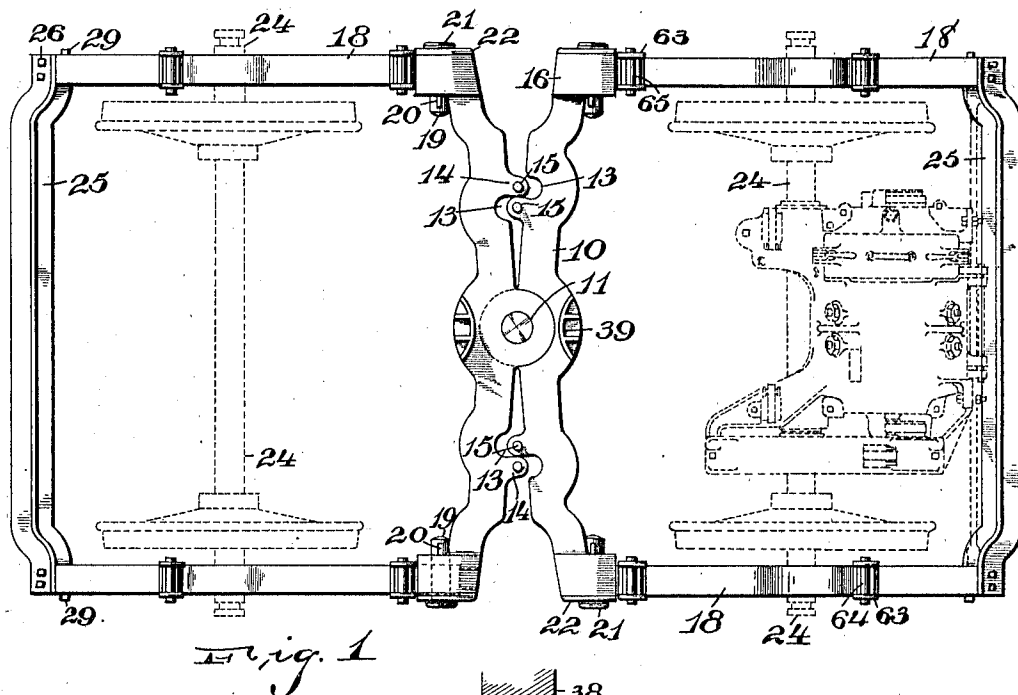
C. H. KNOBBS.
CAR TRUCK.

APPLICATION FILED JULY 14, 1908. RENEWED MAR. 22, 1910.

956,900.

Patented May 3, 1910.

2 SHEETS—SHEET 1.



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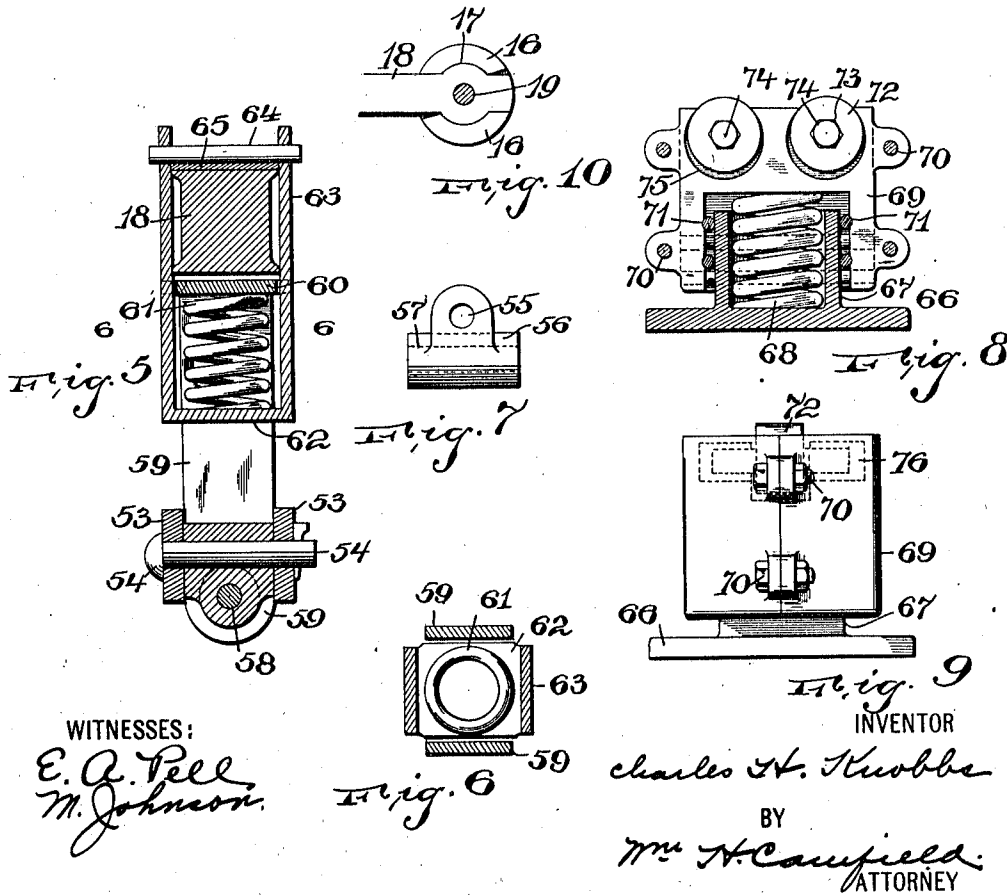
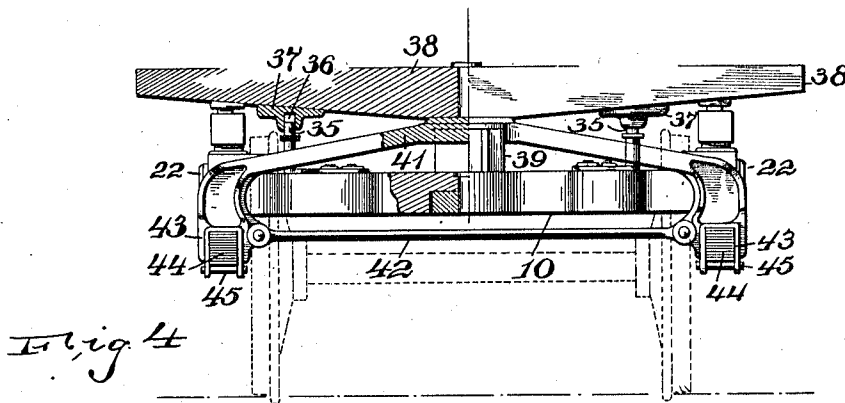
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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

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GEORGE L. HIRTZEL, JR., AND ONE-FOURTH TO ABE J. DAVID, OF ELIZABETH, NEW
JERSEY.

CAR-TRUCK.

956,900.

Specification of Letters Patent.

Patented May 3, 1910.

Application filed July 14, 1908, Serial No. 443,423. Renewed March 22, 1910. Serial No. 551,004.

To all whom it may concern:

Be it known that I, CHARLES H. KNOBBS, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Car-Trucks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

This invention relates to a car-truck made of two members arranged end to end and adapted to have their center bars pivoted so as to swing on each other, the bars being operatively connected with the bolster or with the body of a car body so that an angular relation between the car body and the trucks will cause the members to swing to bring the wheels of the members out of alinement so that they will negotiate a curve with much less friction than trucks with rigid or integral frames. Heretofore, allowance has been made, between the journal boxes and the fittings in the car-frame, to receive the journal boxes so that the boxes could slightly move in the car-truck frame to permit them to be shifted so that the axles would become radial to a distant point, but not sufficient to allow them to become radial to the center of the radius of a curve as small as those used in streets, or as usually used in railroad constructions to alter the direction of the track.

My construction permits the axles to become radial to a common center, which center is that of a radius as small as the curves used in street rail constructions, that is, down to about a radius of thirty-five feet or thereabouts.

The invention is further designed to provide the members with side arms that are pivoted to the swinging center arms and having a limited motion. This arrangement permits each of the members to drop at a sudden inequality of the track, thereby taking a twisting strain from the pivot of the center bars.

Another improvement in this car-truck is the suspension by means of the truck bolster which supports the car body on yokes that fit onto an equalizing member on each side

member of the car-truck, these equalizing levers being suspended in turn from both ends, one end being hung from the side frame between the fitting for the journal box and the center bar, and the other being suspended from the side frame between the fitting for the journal box and the outer end of the truck. These suspending devices have a pivoted connection with the side arms of the truck so as to permit the side arms, on the same side, to move toward and from each other with ease.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a plan of an improved car-truck. Fig. 2 is a side view of the truck, and Fig. 3 is a plan of a detail for swinging the members of the truck in their pivotal relation. Fig. 4 is a section of the truck, but showing the members in elevation, except for a small portion broken away. Fig. 5 is a section of one of the members for suspending the equalizing levers from the side bars of the truck. Fig. 6 is a section on line 6, 6, in Fig. 5, and Fig. 7 is a detail of a clip for connecting the equalizing lever to the suspension device. Fig. 8 is a section, and Fig. 9 is an elevation of antifriction devices adapted to be placed between the ends of the car-bolster and the ends of the car-truck. Fig. 10 is a detail of one of the pivotal connections between a side bar and a center bar of a truck member.

The truck consists of center bars which are pivoted at 11 by means of a suitable pin, and have the recess 13 into which are adapted to fit the projecting fingers 14, each finger having a pin 15 thereon. The recesses and fingers are separated enough to cause a rocking motion, or in other words permitting the center bars to swing, and the pins 15 afford means for causing the swinging of the center bars, as will be hereinafter described. On each end of each center bar is a box 16 having a recess therein, and in each recess fits a lug 17 of the side bars 18, a pin 19 causing the parts to be pivoted, each pin being secured preferably by means of a key 20, and having a head 21 on the other end which holds a cap 22 in place on each box 16, thus insuring the security of the parts. The side bars 18 are provided with fittings 23 for the reception of boxes for the car axles 24, the boxes being placed snugly in the fittings and adapted to fit

tightly therein without any movement horizontally. The ends of the side bars are connected by means of the metallic arms 25 which are secured to the lips 27 by means of bolts 26, and having the lips 28 turned down from the top web of the metallic arms 25 and being secured in place by the bolts 29. The bolts for securing the metallic arms 25 to the ends of the side bars 18 are the only bolts having nuts thereon used in the construction, all the other pivoted portions being pins secured by cotter keys or similar elements.

Fitting over the pins 15 is a lever 30 having a perforation to receive one pin and having a slot 31 to receive the other pin, and having a spread or Y-shaped end, as at 32, so as to avoid the bolster of the truck, as will be hereinafter described, and then being formed into upturned portions 33 with a plate 34 bridging the bolster, and having the pin 35 projecting up therefrom and adapted to enter a socket 36 in a plate 37 secured on each side and underneath the car-bolster 38. It will be obvious that any turning of the car-body, due to the truck striking a curve, will cause a swinging of the lever 30 on each side of the center of the truck, the levers being worked in opposite directions and causing the center bars and consequently the truck members to swing and force one side of the car-truck apart, and the other side of the car-truck together so as to move the axles out of parallel relation and make them radial to the center of the curve, thereby avoiding a great amount of friction which is present when the car axles remain substantially parallel, and saving also a great deal of wear and tear on the flanges of the wheels of the car and also on the rail.

Each of the center bars is preferably provided with a raised curved guard 39, into which fits the central portion 40 of a truck-bolster 41 which then extends down on each side and is connected and strengthened by the tie-bar 42 and forms, on each end, a clip 43, each clip resting on suitable springs 44 held in place by pins 45, each spring extending underneath each side bar on its side of the truck, each end of each spring resting on a block 46 which is pivoted on a pin 47, which pin in turn is supported by strips 48 having a top portion 49 resting on a spring 50 which in turn is pivoted as at 51, each pin resting intermediate of the ends of an equalizing lever 52. Each equalizing lever is made to fit the form of car-truck on which it is employed, but is preferably made Z-shaped, extending underneath the fitting 23 for the box of the axle. The ends of the equalizing lever 52 are preferably forked, each end comprising eyes 53 shown in detail in Fig. 5. A pin 54 passes through the eye 55 and also through a perforation 55 in a clip

56, which clip has a right angled perforation 57 which receives a pin 58, which pin passes through parallel plates 59, which parallel plates are part of a U-shaped member having an end portion 60 which bears against one end of a spring 61, the other end of the spring bearing against the end 62 of another U-shaped member having side pieces 63 which are suspended, pivotally, from a pin 64 resting in a suitable bearing plate 65 in the top of the side bar 18. It will thus be seen from a glance at Fig. 2 that the weight of the car is placed directly on the car-bolster and then on the springs 44, these springs distributing the weight by means of the equalizing lever so that the car is suspended from both sides of the car-truck and also on each side of the center thereof, the equalizing lever depending from the truck from its side frame between the car axle and the center bar, and also from between the car axle and the end of the frame. This removes any supporting weight from the pivotal pin 11, prevents undue friction in turning the truck members, and also provides an easier riding vehicle.

Near each end of the truck-bolster, and resting on the same, are side bearings which comprise a base portion 66 having a well 67 thereon which contains a spring 68. A casing 69, which casing is made in halves and fastened together by the bolts 70, surrounds the well 67 and conceals and protects the spring, thereby making a compact and close structure. Rollers 71, preferably placed at right angles to each other, make the riding between the casing 69 and the well 67 very easy. Suitable rollers 72 are installed with their peripheries projecting from the top of the casing, and the squared portions 73 of the pins 74 prevent the pins from turning in the rollers, but the pins do turn in the bearing blocks 76 which are made of metal to take up the wear, and which can be easily replaced by a separation of the halves of the casing 69, thereby permitting the insertion of a new block. The rollers 72 are concentric to the openings 75 in which they run, whereby the tops are comparatively tight to prevent dust from entering and causing a wear on the bearings, but reducing the friction to a minimum.

Having thus described my invention, what I claim is:—

1. A car-truck comprising two members in swinging relation with a car-body and with each other whereby the axles can be placed out of parallel relation, and means on the opposite sides of the truck and operated from the car-body to automatically cause the members to swing on each other when they swing on the car-body.

2. A car-truck comprising two members in swinging relation to a car-body and with each other, coöperating center bars on the

members to permit the swinging of the members on each other, means on the truck and operated by the movement of the body to cause the members to swing on each other, and a pivoted connection between each member and its center bar to permit a vertical movement of each member on its center bar.

3. A car-truck comprising two members, each member having a center bar, the center bars cooperating to hold the two members in swinging relation horizontally with each other and also with a car body, the members being adapted to swing vertically on the horizontally pivoted center bars.

4. A car-truck comprising two horizontally swinging members pivoted at the center of their adjoining edges, pins in pairs on each side of the pivot, a lever engaging each pair of pins, and a pin projecting from each lever and providing for its manipulation.

5. A car-truck comprising two horizontally swinging members pivoted at the center of their adjoining edges, pins in pairs on each side of the pivot, a lever on each pair of pins, the lever being pivoted on one pin and having a slot to receive and operate the other pin, and means for simultaneously operating the levers to cause the members to swing on each other.

6. A car-truck comprising two swinging members, center bars on the members and pivoted together, each bar having a finger on each side of its center on the face opposed to the other bar, the bars having recesses to receive the opposite fingers, pins on the fingers, a lever for each side of the truck, each lever being pivoted on one pin and operating the other pin on the same side, and means adapted to be operated by the movement of the car-body to swing the levers to cause a swinging of the members.

7. A car-truck comprising two swinging members, center bars on the members and pivoted together, each bar having a finger on each side of its center on the face opposed to the other bar, the bars having recesses to receive the opposite fingers, pins on the fingers, a lever for each side of the truck, each lever being pivoted on one pin and operating the other pin on the same side, a widened end on each lever and projecting toward the car-body, a transverse bar thereon, and a pin on the bar and adapted to be operated by the car-body to cause a swinging of the members.

8. A car-truck comprising two swinging members, center bars on the members and pivoted together, each bar having a finger on each side of its center on the face opposed to the other bar, the bars having recesses to receive the opposite fingers, pins on the fingers, a lever for each side of the truck, each lever being pivoted on one pin and operating the other pin on the same side, a widened end on each lever and projecting

toward the car-body, a transverse bar thereon, a pin on the bar and adapted to be operated by the car-body to cause a swinging of the members, a truck-bolster bridging the center bars, and means for supporting the bolster from the members, the bolster passing through the widened ends of the levers.

9. A car-truck having center bars, side bars projecting from each side of the center bars and pivoted thereto to permit their vertical movement, means for installing an axle in each pair of side bars, and means for supporting a car-body from the side bars.

10. A car-truck having center bars, side bars and end bars on each side of the center bars, the side bars being pivoted to move vertically on the ends of the center bars, a truck bolster bridging the center bars, an axle in each pair of side bars, and means for suspending the bolster from each side frame at points on both sides of the axle in said frame.

11. A car-truck having center bars, side bars and end bars on each side of the center bars, the side bars being pivoted to move vertically on the ends of the center bars, means for limiting the movement of the side bars, an axle in each pair of side bars, suspension devices on both sides of the axle on each side bar, means connecting the suspension devices on each side of the truck, and a bolster resting on the connection between the suspension devices, the bolster bridging the center bars.

12. A car-truck having center bars arranged to swing horizontally in relation to each other, side bars and end bars on each side of the center bars, means on the center bars and actuated by the car-body to swing the center bars on each other, a bolster to bridge the center bars, springs in each end of the bolster and projecting therefrom underneath the side frames, an axle secured between each pair of side frames, and suspension devices to support the ends of the springs from each side frame, the suspension devices on each side frame being secured to the side frame on both sides of the axle.

13. A car-truck having center bars arranged to swing in relation to each other, side bars and end bars on each side of the center bars, the side bars being pivoted with a limited vertical movement on each end of the center bars, means for swinging the center bars on each other, a bolster bridging the center bars, a spring in each end of the bolster and projecting therefrom underneath the side frames, strips supporting the ends of the springs, equalizing levers supporting the strips, a suspension device for each end of each equalizing lever and secured to the side frames, and an axle between each pair of side frames between the suspension devices.

14. A car-truck comprising pivoted center bars, side bars and end bars on each side of the center bars, the side bars being pivoted to the ends of the center bars, a bolster bridging the center bars, springs in the ends of the bolster and adapted to support the same, the springs projecting underneath each side frame, strips on each side of each spring, an equalizing lever under each side frame, means for pivotally suspending the ends of the equalizing lever from its side frame, means for suspending the strips from the equalizing lever intermediate of its ends, and an axle between each pair of side frames between the suspension devices.

15. A car-truck comprising a rectangular frame, a substantially centrally arranged bolster transversely disposed in the frame, a spring projecting from both sides of each end of the bolster, strips arranged to support the ends of the springs, an equalizing lever for each end of each spring, each equalizing lever supporting the strips for the end of a spring, the strips and the levers being in rocking relation, suspension devices pivotally secured to the ends of the equalizing levers and adapted to rock on the side frames, and an axle near each end of the frame and between the suspension devices.

16. A car-truck comprising horizontally

pivoted center bars, side bars on the ends of the center bars with a slight vertical movement in relation thereto, and bars connecting the side bars, means connected with the center bars and the car-body for causing the center bars to swing in relation to each other, a bolster bridging the center bars, a spring in each end of the bolster and projecting underneath the side frames on that end, a pair of strips arranged to swing on and support each end of a spring, an equalizing lever for each side frame, the strips being adapted to rock on the equalizing lever intermediate of its ends, a spring between the strips and the equalizing lever, a suspension device for each end of each equalizing lever, each suspension device comprising opposed U-shaped plates having a spring between them, the ends of one U-shaped plate being pivoted to the end of an equalizing lever, the end of the other plate being arranged to rock on a side frame, and an axle between each pair of side frames and placed between the suspension devices.

In testimony, that I claim the foregoing, I have hereunto set my hand this 13th day of July 1908.

CHARLES H. KNOBBS.

Witnesses:

WM. H. CAMFIELD,
E. A. PELL.