No. 831,212. PATENTED SEPT. 18, 1906.

A. CAMPBELL.

DRAFT RIGGING ATTACHMENT FOR CARS.

APPLICATION FILED APR. 13, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

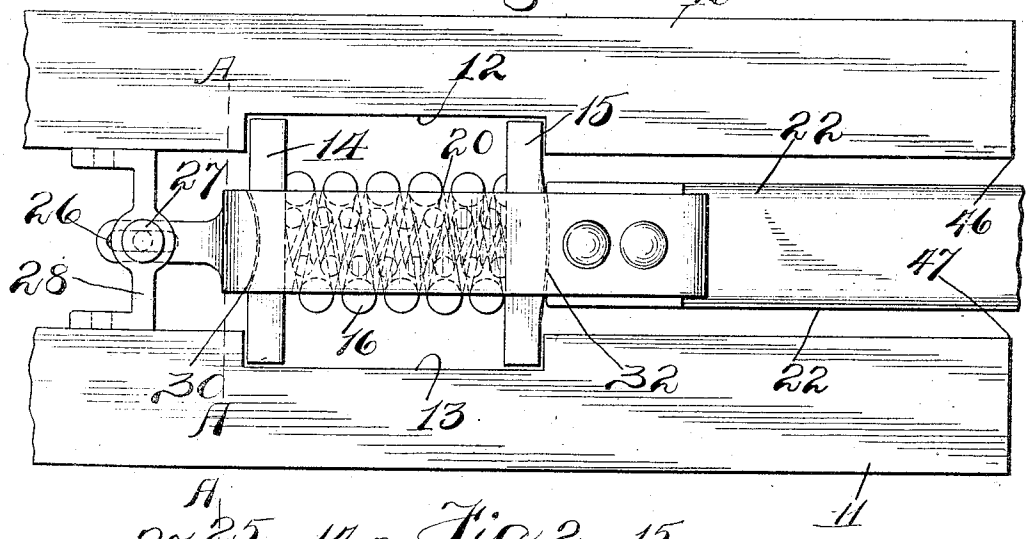


Fig. 2.

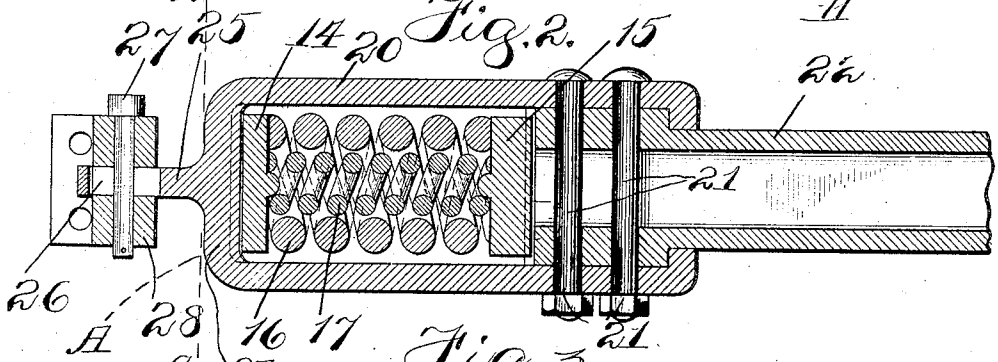
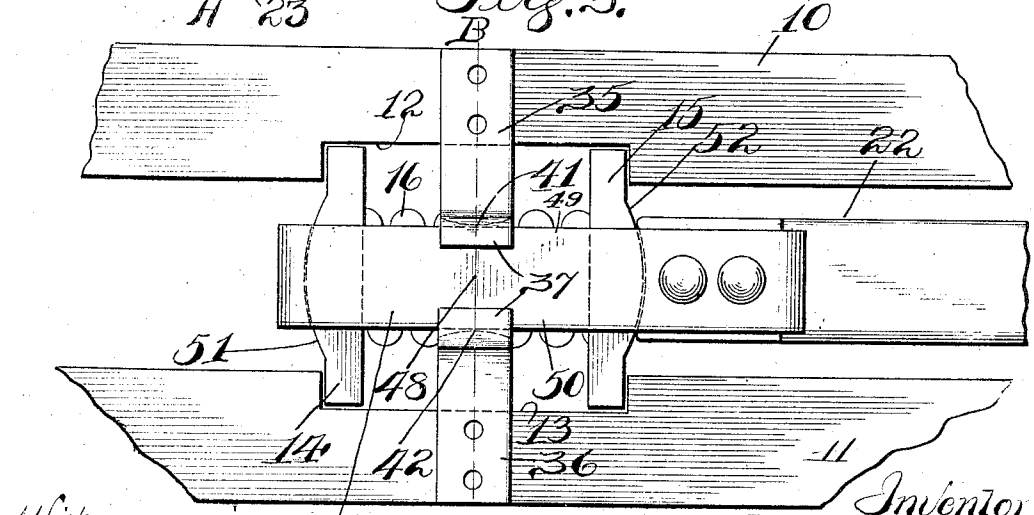


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 6.

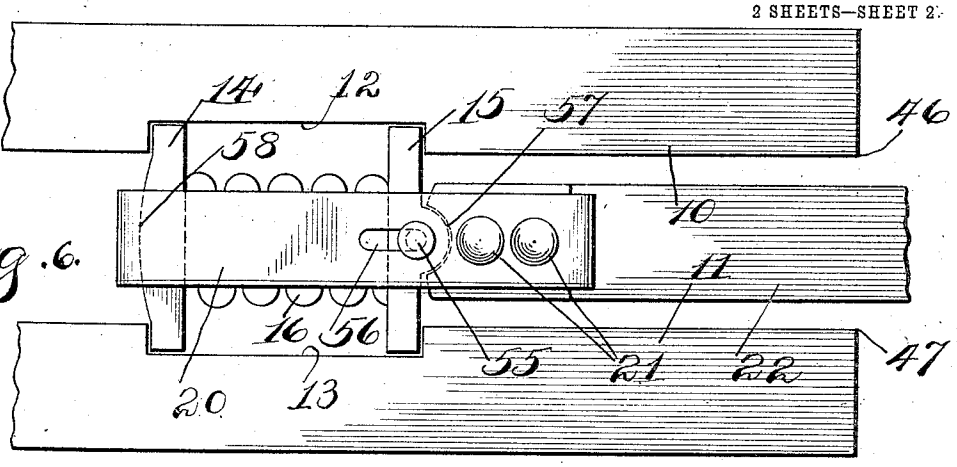


Fig. 7.

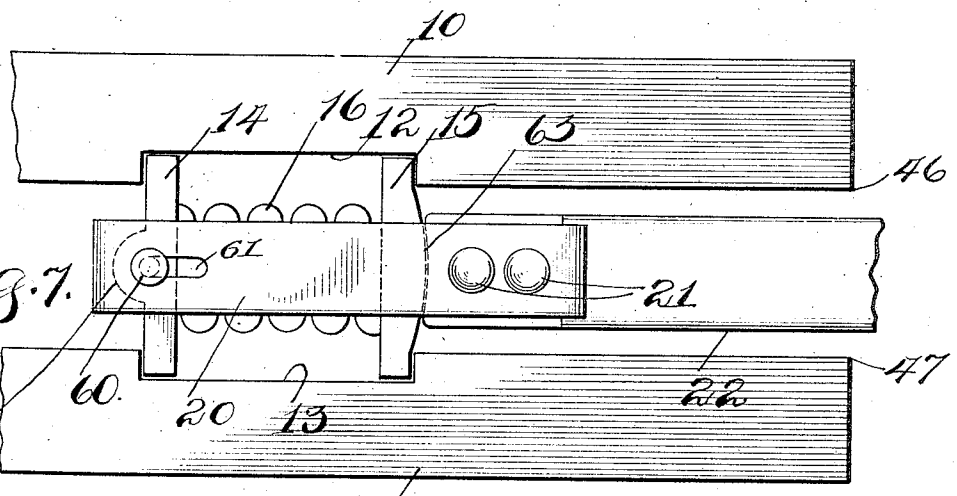


Fig. 4.

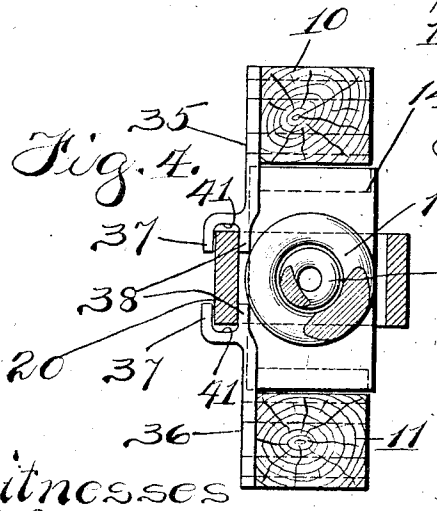
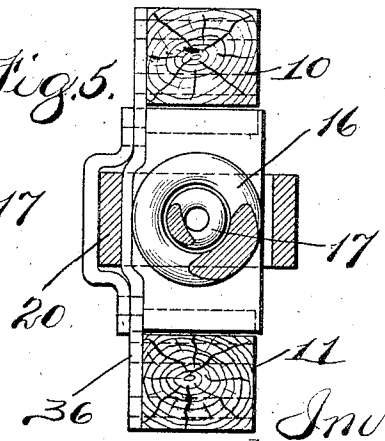


Fig. 5.



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UNITED STATES PATENT OFFICE.

ARGYLE CAMPBELL, OF CHICAGO, ILLINOIS.

DRAFT-RIGGING ATTACHMENT FOR CARS.

No. 831,212. Specification of Letters Patent. Patented Sept. 18, 1906.

Application filed April 13, 1906. Serial No. 311,550.

To all whom it may concern:

Be it known that I, ARGYLE CAMPBELL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Draft-Rigging Attachments for Cars, of which the following is a specification.

My invention relates to draft-rigging attachments for cars; and its object is to provide mechanism by means of which the draw-bar or coupler-shank of a car may be turned in a horizontal plane as the car goes around a curve to a considerable angle without changing the angular position of the follower-plates from normal, thereby distorting the direction of resultant force upon the spring between the follower-plates controlling the coupler.

My invention consists in mechanism capable of accomplishing the above objects which can be easily and cheaply made and installed, which is efficient in operation, and is not readily liable to get out of order.

More particularly it consists in providing a pivotal point for the draw-bar adjacent to the springs, while allowing said bar longitudinal motion with reference to the pivot as the springs act, this in combination with curved bearing connections between the ordinary coupler-yoke and the ordinary follower-plates, the radii of said bearings being in the center of said pivotal point, whereby during the passage of the car around a curve the yoke moves along said curved surfaces on the follower-plates without moving them out of their normal position or bearing upon the springs.

My invention further consists in details of construction which will be hereinafter more fully described and claimed as the specification proceeds.

Referring to the drawings, Figure 1 is a plan and Fig. 2 is a vertical central sectional detail view of the device of my invention in its preferred form. Fig. 3 is a plan and Fig. 4 an end view of one modified form of construction of my invention. Fig. 5 is a modified form of construction of the device of Fig. 4. Figs. 6 and 7 are plan views of two other modified forms of my invention.

Again referring to the drawings, numerals 10 and 11 indicate the parallel center sills of any car. The center sill 10 is notched at 12, while the center sill 11 is notched at 13, to receive the two follower-plates 14 and 15, between which are springs 16 and 17. Inclosing these follower-plates 14 and 15 and the springs 16 and 17 is a draw-bar yoke 20, connected by bolts or rivets 21 to the draw-bar or coupler-shank 22, having integral with it at the right, beyond the figure, the coupler proper. This yoke here shown is only one of several types of yoke well known in the art, and its particular form is no part of my invention. In the ordinary type of this coupler the draw-bar yoke ends, as shown in Figs. 3, 6, and 7, on the line A A of Figs. 1 and 2, the parts at the left of that line, as seen in said Figs. 1 and 2, being entirely omitted. When now in a draft-rigging of the class just described not supplied with my invention there is a side pull upon the draw-bar 22, tending to rock it laterally of the car or to draw it over against one of the center sills—as, for instance, sill 10—this action causes the opposite end 23 of the yoke to swing over against the center sill 11, thereby shifting the bearing-points of the yoke on the follower-plates 14 and 15 from their centers in the center line of the car to points at one side of the center. As pushing or pulling force is now exerted on the draw-bar yoke it throws them out of their normal positions, shown at right angles to the center sills of the car and to the central axis of the car, on which the springs 16 and 17 are mounted and should normally act. Such tilting of the follower-plates destroys the efficiency of the springs and sooner or later injures the springs themselves. In order to overcome this difficulty, I, in the preferred form of construction of Figs. 1 and 2, mount upon the end 23 of the draw-bar yoke, preferably casting it integral therewith, a tailpiece 25, having cut in it a slot 26, elongated in the center line of pull of the draw-bar, containing a vertical pin or bolt 27, rigidly mounted in a support 28, secured, by any suitable means, between these center sills 10 and 11 and at the rear of the draft-rigging, as shown. This pin 27 should be so located that it is in the middle of slot 26 when the parts are in the normal position of Fig. 1, with no strain, tending to either push or pull the car, acting upon the coupler. The slot 26 should be of such a length that when force is exerted upon the shaft of the coupler 22 to pull the car, thereby drawing the follower-plate 14 toward the plate 15 and compressing the springs 16 and 17, the draw-bar yoke may move with reference to the pin 27 a distance equal to the compression limit of the springs. The slot should also be of such a length that

when a pushing force is exerted against the coupler, and thus forces follower-plate 15 toward follower-plate 14, the yoke may move the same distance as before in the opposite direction. In order that this rotation of the yoke about the pin 27 may not disturb the follower plates, I cut in the rear face of the rear follower-plate a curved bearing 30, struck on an arc having the pin 27 as a center, and correspondingly curve the inner face of the rear end 23 of the draw-bar yoke. Similarly I form upon the front face of the front follower-plate 15 a curved bearing-surface 32, struck on an arc whose radius has its center on pin 27, and I correspondingly form the inner surface of the draw-bar, from which it will be seen that when the right-hand or forward end of the draw-bar 22 is given a sidewise or rotary motion in a horizontal plane about the pin 27 as a center the draw-bar yoke will swing upon the curved bearing-surfaces 30 and 32 of the respective follower-plates from the position of Fig. 1 to the new inclined position without moving the follower-plates out of their normal positions perpendicular to the center sills 10 and 11, from which it will be seen that while the push or pull on the draw-bar 22 may be at a distinct angle with reference to the central line of the car the component force of the pulling force along the draw-bar, tending to cause motion of one of the two follower-plates 14 or 15, will be in the center line of the car, and therefore the springs remain in their normal position in the center line of the car and act perpendicular to the faces of the follower-plates.

In Figs. 3, 4, and 5 I have shown a modified way of making the pivot-point or bearing for the rotation of the draw-bar yoke and have changed its location from that of Figs. 1 and 2. In the construction of Figs. 3 and 4 I simply secure to the center sills 10 and 11 two guiding-clips 35 and 36, having jaws 37 and 38 loosely inclosing the upper bar of the draw-bar clip. The inner vertical surfaces of these clips are curved in the lines 41 and 42, preferably drawn on such radii on points so located at the sides of the coupler that as the draw-bar swings between the corners 46 and 47 of the center sills the sides of the draw-bar yoke top will always be tangent to these arcs 41 and 42, the result being that as the draw-bar is rocked it tilts about a center 48 midway between the curved surfaces 41 and 42, located in the center line B B. The curved surfaces 41 and 42 should be near enough to the edges 49 and 50 of the upper plate of the draw-bar yoke to produce this center for rotation, as described, and yet should be far enough apart so that the draw-bar yoke may move backward and forward during the pushing or pulling action on the coupler, as has been heretofore described in connection with the preferred form. With the point 48 as a center I strike the arcs 51 and 52 and form thereon curved surfaces for the outer faces of the follower-plates 14 and 15, forming corresponding curved faces on the interior rear walls of the draw-bar yoke and draw-bar. The result of this construction is that as the shank of the coupler is rocked about the center 48 the faces of the yoke slide upon the curved bearing-faces 51 and 52, heretofore described, with the result that the springs 16 and 17 act normally in the central plane of the car, regardless of the angle of the shank of the coupler, exactly as in the preferred form of Figs. 1 and 2. It will be noted that there is no difference in the operation of the bearing about pin 27 of the preferred form and the bearing about center 48 between curves 41 and 42 of the structure just described. One may be described as an internal bearing, while the other is an external bearing; but their functions are identical.

In Fig. 5 I have shown a modification of the device of Fig. 4, which consists merely in continuing the jaws 37 and 38 across, over, and under the upper plate of the draw-bar yoke. It will be seen that this change in construction does not change the operation of the device illustrated in Fig. 4.

In Fig. 6 I have illustrated a third modified form of the device of Figs. 1 and 2, in which instead of placing the pivot-pin for the draw-bar upon support 27 at the rear of the draft-rigging I use a pin 55, located upon the front follower-plate 15. This pin is in an elongated slot 56, cut in the draw-bar yoke, which slot performs exactly the same functions as the slot 26, heretofore described. As in the previously-described constructions, I use this pin 55 as a center to strike the arcs of the curved bearings 57 and 58 and the bearing-surfaces on the draw-bar yoke and draw-bar upon the follower-plates 14 and 15.

In Fig. 7 I have shown a fourth modified form of construction, which is simply a reversal of the construction of Fig. 6, the pivotal center pin 60 being located on the rear follower-plate 15, said pin fitting in an elongated slot 61 in the top plate of the draw-bar yoke, the arcs 62 and 63 and the respective bearing-surfaces of the follower-plates 14 and 15 being struck about this pin 60 as a center.

It will be noted that in the last two modified forms of construction the pivot-pin moves with the follower-plate on which it is located; but as this movement is slight there is no real modification in the operation of the device. As a result of this I only have to make the slots 56 and 61 one-half as long as slot 26.

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

1. In mechanism of the class described, a frame, draft mechanism therein, a pin-and-

slot connection between the draft mechanism and frame adapted to center the draft mechanism while permitting slight longitudinal movement, as described.

2. In a car in combination with a frame, a follower-plate adapted to movably engage the frame, a spring normally pressing against said follower-plate, a draw-bar having a yoke engaging said follower-plate and spring pin-and-slot mechanism adjacent to the yoke forming a pivotal bearing about which the draw-bar rocks in a horizontal plane when the coupler is moved laterally of the car, this while permitting longitudinal movement of the draw-bar with reference to said bearing.

3. In a car in combination with a frame, a follower-plate adapted to movably engage the frame, a spring normally pressing against said follower-plate, a draw-bar having a yoke engaging said follower-plate and spring, pin-and-slot mechanism adjacent to the yoke forming a pivotal bearing about which the draw-bar rocks in a horizontal plane when the coupler is moved laterally of the car, this while permitting longitudinal movement of the draw-bar with reference to said bearing, and a curved bearing connection between the follower-plate and the yoke or draw-bar formed on the arc of a circle struck from the pivotal bearing as a center.

4. In a car, the combination with a frame, two follower-plates adapted to movably engage the frame, a spring between said follower-plates, a draw-bar having a yoke engaging said follower-plates and spring, pin-and-slot mechanism adjacent to the yoke forming a pivotal bearing about which the coupler-shank rocks in a horizontal plane when the draw-bar is moved laterally of the car, this while permitting longitudinal movement of the bar with reference to the pivotal bearing.

5. In a car, in combination with a frame, two follower-plates adapted to movably engage the frame, a spring between said follower-plates, a draw-bar having a yoke engaging said follower-plates and spring, pin-and-slot mechanism adjacent to the yoke forming a pivotal bearing about which the coupler-shank rocks in a horizontal plane when the draw-bar is moved laterally of the car, this while permitting longitudinal movement of the bar with reference to the pivotal bearing, and curved bearing connections between each follower-plate and the yoke formed on arcs or circles struck from the pivotal bearing as centers.

6. In a car, in combination with a pair of center sills, a movable follower-plate slidable backward and forward between the center sills, a spring normally pressing said follower-plate, a draw-bar having a yoke engaging said follower-plate and spring, pin-and-slot mechanism adjacent to the yoke forming a pivotal bearing in the central longitudinal plane of the draw-bar about which the draw-bar rocks in a horizontal plane when the coupler is moved laterally of the car, this while permitting longitudinal movement of the draw-bar with reference to the pivotal bearing, and a curved bearing connection between the follower-plate and the yoke, formed on the arc of a circle struck from the pivotal bearing as a center.

7. In a car, in combination with a pair of center sills, a pair of follower-plates slidable backward and forward between the center sills, a spring between said follower-plates, a draw-bar having a yoke engaging said follower-plates and spring, pin-and-slot mechanism adjacent to the yoke forming a pivotal bearing in the central longitudinal plane of the draw-bar about which the draw-bar rocks in a horizontal plane when the bar is moved laterally of the car, this while permitting longitudinal motion of the bar with reference to the pivotal bearing, and curved bearing connections between each follower-plate and the yoke, the same being formed on arcs of circles struck from the pivotal bearing as centers.

8. In a car, in combination with a frame, a follower-plate adapted to movably engage the frame, a spring normally pressing against said follower-plate, a draw-bar having a yoke engaging said follower-plate and spring, pin-and-slot mechanism on the end of the yoke away from the draw-bar forming a pivotal bearing about which the draw-bar rocks in a horizontal plane when the coupler is moved laterally of the car, this while permitting longitudinal movement of the draw-bar with reference to said bearing, and a curved bearing connection between the follower-plate and the yoke or draw-bar formed on the arc of a circle struck from the pivotal bearing as a center.

9. In a car, in combination with a frame, two follower-plates adapted to movably engage the frame, a spring between said follower-plates, a draw-bar having a yoke engaging said follower-plates and spring, pin-and-slot mechanism on the end of the yoke away from the draw-bar forming a pivotal bearing about which the coupler-shank rocks in a horizontal plane when the draw-bar is moved laterally of the car, this while permitting longitudinal movement of the bar with reference to the pivotal bearing and curved bearing connections between each follower-plate and the yoke formed on arcs of circles struck from the pivotal bearing as centers.

10. In a car, in combination with a pair of center sills, a movable follower-plate slidable backward and forward between the center sills, a spring normally pressing said follower-plate, a draw-bar having a yoke engaging said follower-plate and spring, pin-and-slot mechanism on the end of the yoke away from the draw-bar forming a central pivotal

bearing about which the draw-bar rocks in a horizontal plane when the coupler is moved laterally of the car, this while permitting longitudinal movement of the draw-bar with reference to the pivot-bearing, and a curved bearing connection between the follower-plate and the yoke, formed on the arc of a circle struck from the pivotal bearing as a center.

11. In a car, in combination with a pair of center sills, a pair of follower-plates slidable backward and forward between the center sills, a spring between said follower-plates, a draw-bar having a yoke engaging said follower-plates and spring, pin-and-slot mechanism on the end of the yoke away from the draw-bar forming a central pivotal bearing about which the draw-bar rocks in a horizontal plane when the bar is moved laterally of the car, this while permitting longitudinal motion of the bar with reference to the pivotal bearing, and curved bearing connections between each follower-plate and the yoke, the same being formed on arcs of circles struck from the pivotal bearing as centers.

12. In a car, in combination with a frame, a follower-plate adapted to movably engage the frame, a spring normally pressing said follower-plate into its normal position, a draw-bar having a yoke engaging said follower-plate and spring, a tailpiece upon said yoke, extending away from the draw-bar, there being an elongated slot in said tailpiece lying normally in the central line of pull of the draw-bar, a stationary pivot-pin entering said slot, adapted to act as a center about which the draw-bar rocks in a horizontal plane when the coupler is moved laterally of the car, said slot and pin being so proportioned as to permit movement of the draw-bar with reference to the pin, and a curved bearing connection between the follower-plate and the yoke, the same being formed on the arc of a circle struck from the pivot-pin as a center.

13. In a car, in combination with a frame, two follower-plates movably engaging the frame, springs between said follower-plates, a coupler-shank having a yoke engaging said follower-plates and springs, an extension-tailpiece on the end of the yoke away from the draw-bar, there being in said tailpiece an elongated slot lying in substantially the center line of the draw-bar, and a stationary pivot-pin entering said slot, the same acting as a center about which the draw-bar rocks in a horizontal plane when the bar is moved laterally of the car, said pin and slot being so proportioned that longitudinal movement of the draw-bar is permitted with reference to said pin, and curved bearing connections between each follower-plate and the yoke, the same being formed on arcs of circles struck from the pivot-pin as a center.

14. In a car, in combination with a pair of center sills notched to receive the follower-plates, as described, a pair of follower-plates slidable backward and forward in said notches in the center sill, a spring between said follower-plates normally pressing them in opposite directions, a draw-bar having a yoke engaging said follower-plates and springs, and a pivot-pin entering an elongated slot in a part movable with the draw-bar, said pin and slot being so proportioned that the pin acts as a center about which the draw-bar rocks in a horizontal plane when the bar is moved laterally of the car, this while permitting a limited longitudinal movement of the draw-bar with reference to the pin.

15. In a car, in combination with a pair of center sills notched to receive the follower-plates, as described, a pair of follower-plates slidable backward and forward in said notches in the center sill, a spring between said follower-plates normally pressing them in opposite directions, a draw-bar having a yoke engaging said follower-plates and springs, a pivot-pin entering an elongated slot in a part movable with the draw-bar, said pin and slot being so proportioned that the pin acts as a center about which the draw-bar rocks in a horizontal plane when the bar is moved laterally of the car, this while permitting a limited longitudinal movement of the draw-bar with reference to the pin, and curved bearing connections between each follower-plate and the yoke formed on arcs of circles struck about the pivot-pin as a center.

In witness whereof I have hereunto subscribed my name in the presence of two witnesses.

ARGYLE CAMPBELL.

Witnesses:
DWIGHT B. CHEEVER,
CLARA J. CHRISTOFFEL.