No. 816,294. PATENTED MAR. 27, 1906.

J. A. BRILL & S. M. CURWEN.

CAR TRUCK.

APPLICATION FILED MAR. 31, 1904.

6 SHEETS—SHEET 1.

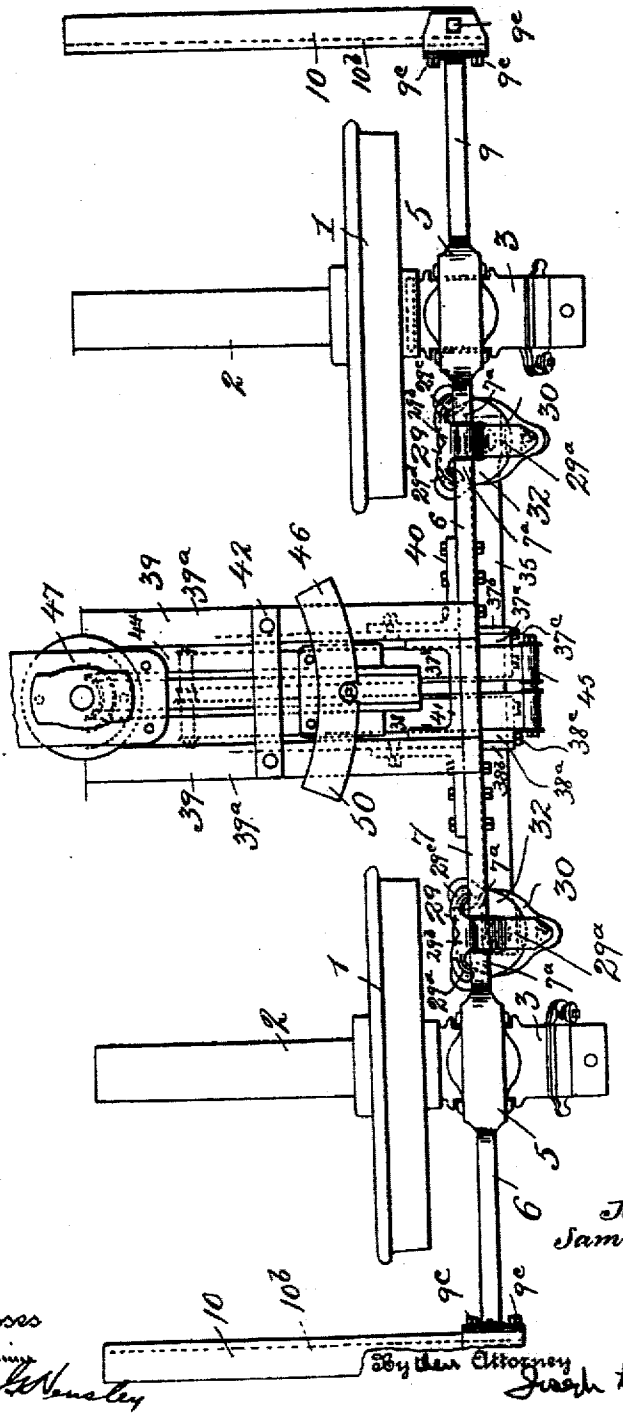


Fig. 1.

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5 SHEETS—SHEET 2.

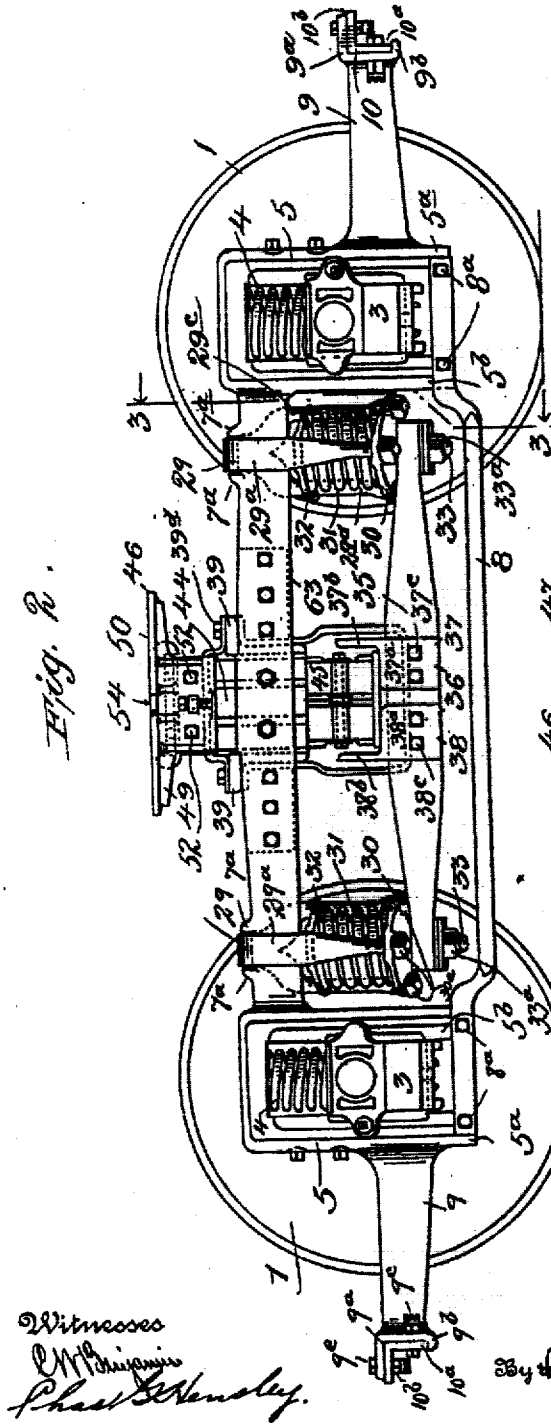


Fig. 2.

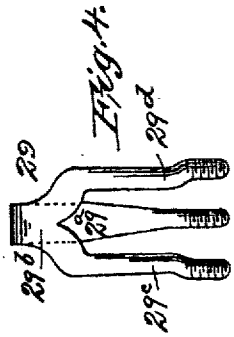


Fig. 4.

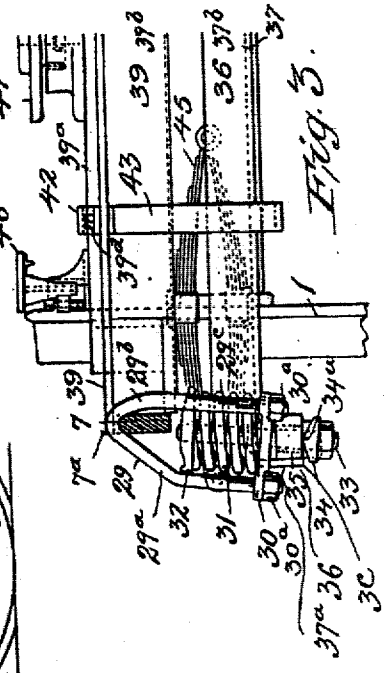


Fig. 5.

Witnesses

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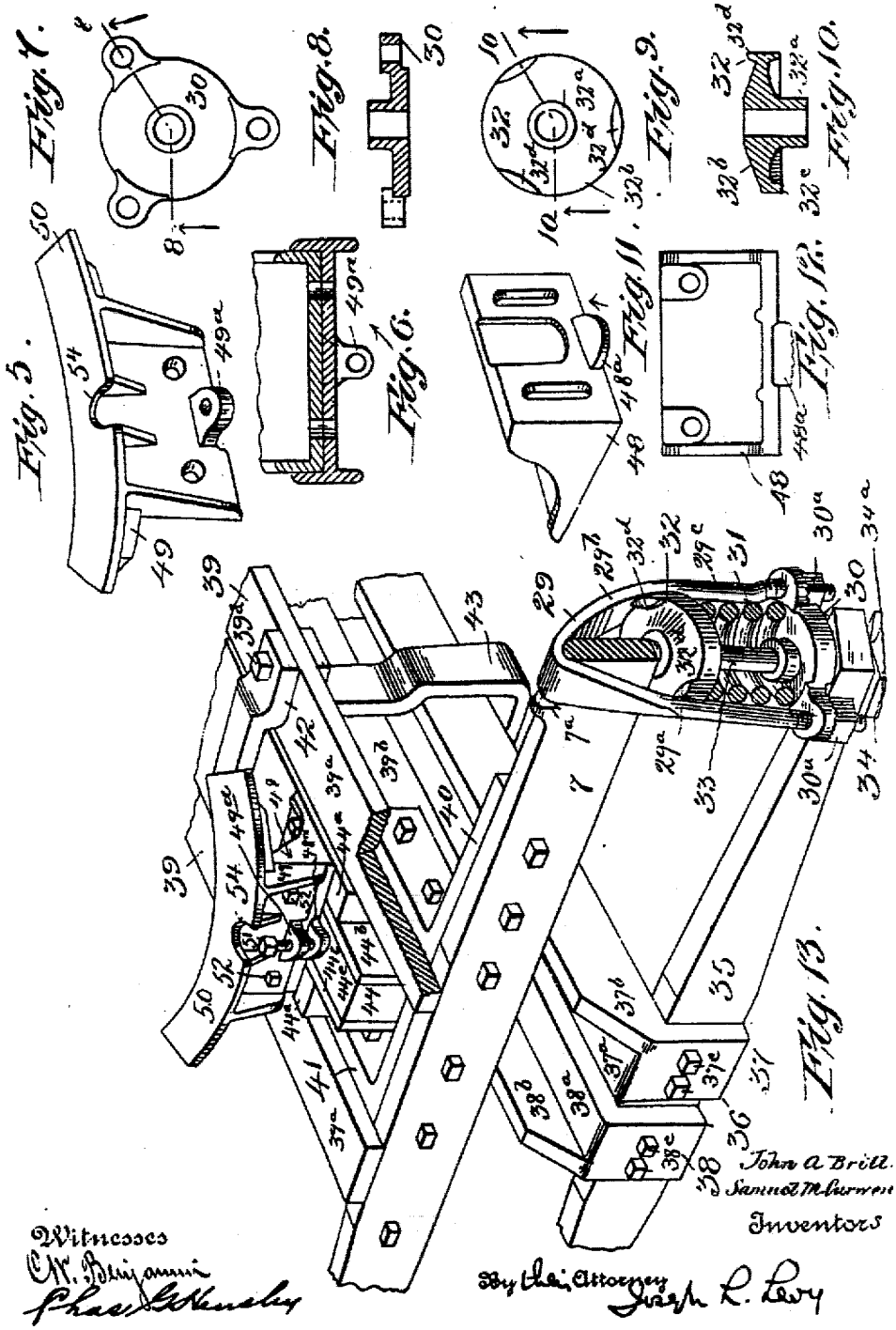
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5 SHEETS—SHEET 3.



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5 SHEETS—SHEET 4.

Fig. 14.

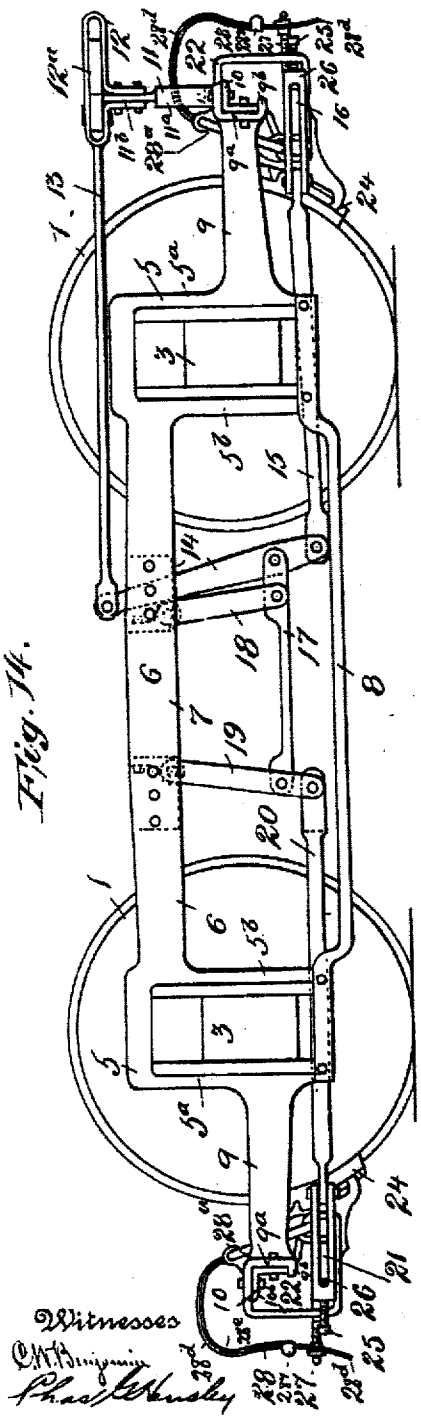


Fig. 15.

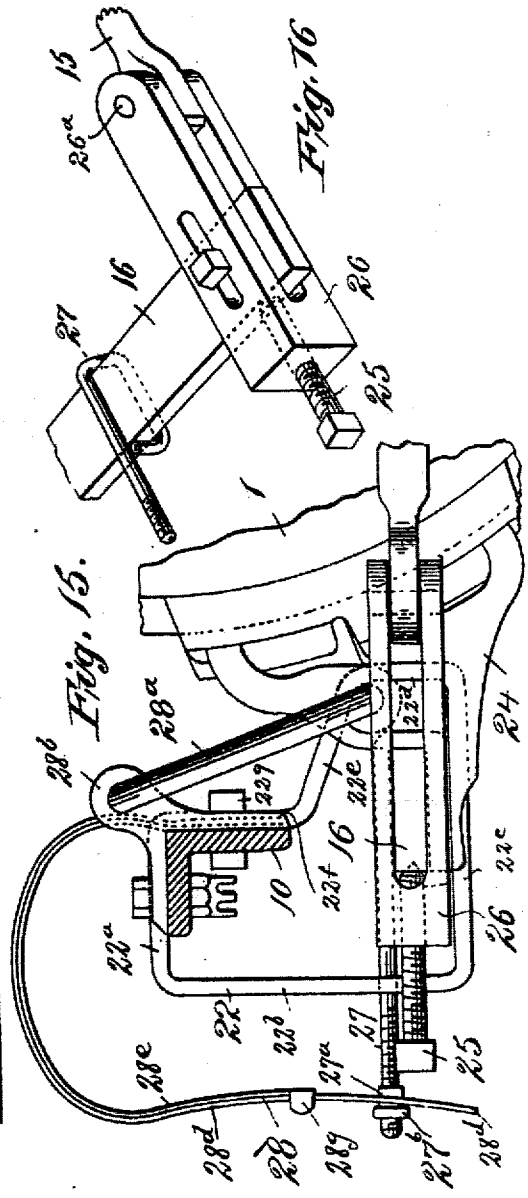


Fig. 16

Witnesses

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CAR TRUCK.

APPLICATION FILED MAR. 31, 1904.

5 SHEETS—SHEET 5.

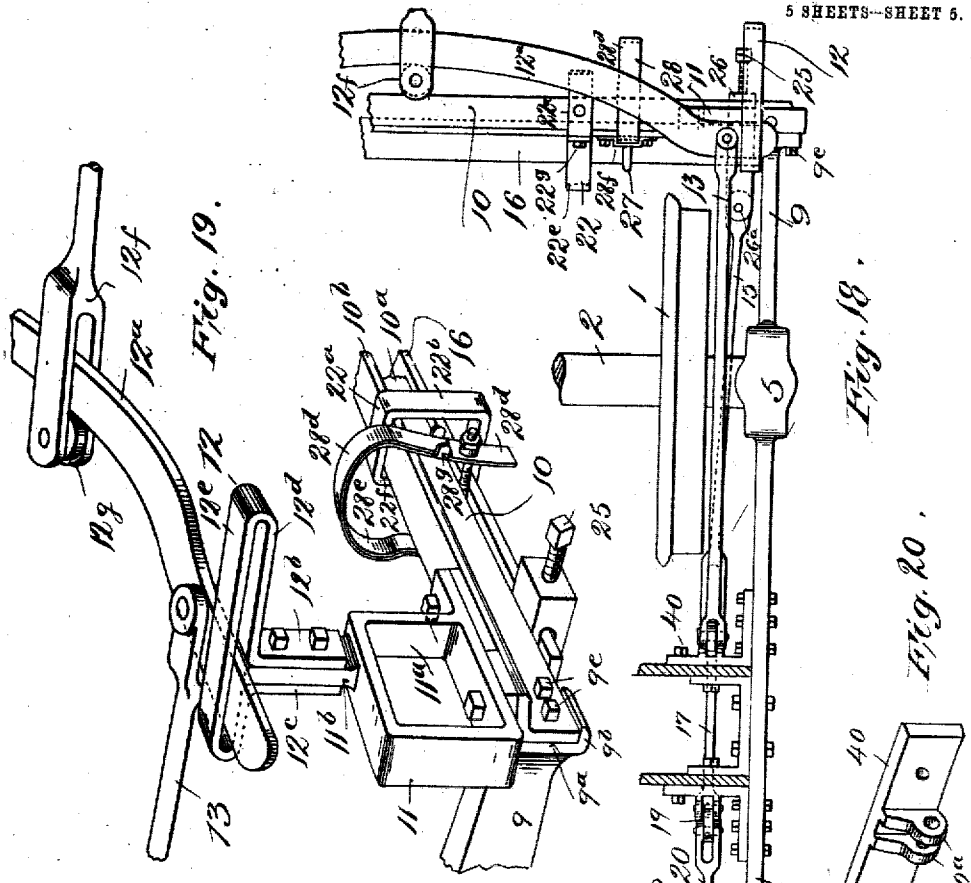


Fig. 19.

Fig. 18.

Fig. 20.

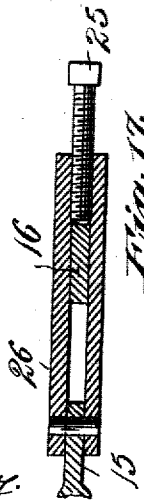


Fig. 17.

Witnesses

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UNITED STATES PATENT OFFICE.

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CAR-TRUCK.

Specification of Letters Patent. Patented March 27, 1906.

No. 816,294.

Application filed March 31, 1904. Serial No. 200,868.

To all whom it may concern:

Be it known that we, JOHN A. BRILL and SAMUEL M. CURWEN, citizens of the United States, and residents of the city and county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Car-Trucks, of which the following is a specification.

The object of our invention is to improve trucks of the pivotal type so that they will ride easier and be better adapted for all conditions of service, especially for narrow-gage and subway traffic, where space is limited and the car-body has to be hung and carried with great accuracy. This object is accomplished by the means hereinafter described.

For a more particular description of one embodiment of our invention reference is to be had to the accompanying drawings, forming a part hereof, in which—

Figure 1 is a plan view of a portion of a truck embodying the improvements. Fig. 2 is a side elevation of the same. Fig. 3 is a sectional view taken on the line 3 3 of Fig. 2 looking in the direction of the arrows. Fig. 4 is a view of the strap. Fig. 5 is a perspective view of one portion of a rub-plate. Fig. 6 is a sectional view of the same. Fig. 7 is a plan view of the spring-seat. Fig. 8 is a sectional view taken on the line 8 8 of Fig. 7. Fig. 9 is a plan view of the cap. Fig. 10 is a sectional view taken on the line 10 10 of Fig. 9. Fig. 11 is a perspective view of the lower section of a rub-plate. Fig. 12 is a plan view of the same. Fig. 13 is a perspective view of a portion of the truck-frame and bolster-supporting mechanism. Fig. 14 is a side elevation of a truck-brake mechanism, parts of the truck being shown. Fig. 15 is an enlarged view of a portion of the same. Fig. 16 is a perspective view of a clevis and connecting parts. Fig. 17 is a sectional view of the same. Fig. 18 is a plan view of a portion of a truck provided with the improved brake mechanism. Fig. 19 is a perspective view of a portion of the same. Fig. 20 is a perspective view of an angle-iron.

Throughout the various views similar reference characters designate similar parts.

The drawings show only half a truck; but as the other half is identical with that shown further illustration is unnecessary.

The improved truck comprises the wheels 1, mounted on axle 2, which terminate in axle-boxes 3, which support axle-box springs 4, which in turn support pedestals 5 with legs 5^a and 5^b, which guide the axle-boxes 3 in the customary way. The pedestals 5 are united by a chord 7, which extends from the upper ends of the legs 5^b, and a tie-rod 8 unites their lower ends and extends to the legs 5^a, where it is bolted by bolts 8^a. From near the lower ends of the legs 5^a extend the arms 9, which are recessed at 9^a, so as to be secured to an angle-iron crossing 10, the lower web 10^a of which is vertical and the upper 10^b is horizontal, and projections 9^b of the arms 9 extend under and support the vertical webs 10^a. Bolts 9^c secure the arms 9 and crossings 10 together. By making the upper web 10^b horizontal a large surface is obtained for motor and other supports.

The pedestals 5, chord 7, tie-bar 8, and arms 9 constitute the side frame 6.

Brackets 11 are fixed to the horizontal webs 10^b, each of which comprises a rectangular frame 11^a, which is bolted to the crossing 10, and projecting vertically from near one corner is a post 11^b, to which is bolted or otherwise secured a guide 12, which comprises a flat bar which is bent so as to have two vertical portions 12^b and 12^c, which are fixed to the post 11^b, and two guides 12^d and 12^e, between which the segmental equalizing-bar 12^a is guided and supported. This equalizing-bar 12^a is connected with the brake-actuating mechanism of the car-body in any suitable way, as by a clevis 12^f, with an antifriction-roller 12^g, held therein in the usual manner, and near each end of this equalizing-bar 12^a are the duplex rods 13, which are inside and between the side frames 6 and preferably the guides 12 also. Each of these rods 13 is pivotally connected at one end with the equalizing-bar 12^a and at the other with a floating lever 14, which is pivotally connected with a rod 15, that leads to the brake-beam 16, by means described below. At a point near the lower end of the floating lever 14 is pivotally connected a link 17, which is suspended by links 18 and 19, which are pivoted at their upper ends between ears 40^a on angles 40, fixed to the frame of the truck, and the lower ends of the links 18 and 19 are pivotally connected with the link 17, and the link 19 is extended beyond the link 17 and

pivotally connected with the rod 20, which is connected with a second brake-beam 21. As the brake-beams 16 and 21 are connected and supported by identical means and act in precisely the same manner, a description of one answers for both. These beams are supported by brackets 22, which are hung on the crossings 10. Each of these brackets 22 contains a horizontal portion 22^a, fixed to the web 10^b, and a vertical part 22^b, which connects with the part 22^c, on which the beam slides and rests. The other end of the guide 22^c is supported by the vertical portion 22^d, which is bent to form an inwardly and upwardly extending part 22^e, which is united with the horizontal portion 22^a by means of the vertical part 22^f. The parts 22^a and 22^f are fixed to the webs 10^b and 10^a, respectively, by bolts or other suitable means, as bolts 22^g.

Brake-shoes 24 are fixed or otherwise secured to the brake-beams and are also suspended from the crossings 10 by means of links 28^a, which are pivoted in supports 28^b, fixed to the angle-crossings 10 in any suitable manner. The links 28^a are so proportioned and arranged that they will take the stresses or a part of the stresses due to the action of the brakes off the brackets 22.

The ends of the brake-beams are provided with clevises 26 and set-screws 25. The clevises 26 are pivotally connected with the rods 15 and 20 by pins 26^a, and the beams may be adjusted with regard to said clevises by turning the set-screws 25, whereby the brakes may be adjusted to accurately compensate for wear. By removing the pins 26^a the rods and clevises 26 can be separated, the ends of the rods lowered, and then the wheels and axles can be removed without disturbing other parts of the brake mechanism.

At suitable points the brake-beams are provided with eyebolts 27, which are so bent as to firmly embrace the beam to which they are attached. These bolts 27 are provided with nuts 27^a, which have shoulders 27^b and pass through leaf-springs 28, when springs press against said shoulders and tend to remove the brakes from the wheels 1. These springs 28 each comprise a longer leaf 28^d, which is reinforced by a shorter leaf 28^e, and both are secured to the vertical web 10^a by means of a clamp 28^c. The end of the spring 28^e is provided with ears 28^c, which pass on each side of the leaf 28^d, and the leaf 28^e is placed under the spring 28^d.

The chords 7 are each provided with ears 7^a, between which are seats for the stirrups or links 29. These links 29 each comprise two branches, one of which, 29^a, is single and considerably offset, and the other, 29^b, is less offset and bifurcated into two legs 29^c and 29^d. The lower and free ends of the legs 29^a, 29^c, and 29^d are united by means of a spring-support 30 and nuts 30^a, which are roughened to firmly engage their seats in the support 30, which are also roughened to correspond, so that these nuts 30^a will not become loosened or unfastened.

Coiled springs 31 rest on the supports 30, and these springs each are surmounted by a cap 32, which comprises a central perforated hub 32^a, conical disk 32^b, extending therefrom, a downwardly-extending flange 32^c, running parallel to the hub 32^a, upwardly-extending projections or guides 32^d, which are so placed as to be opposite the legs 29^a, 29^c, and 29^d when the parts are assembled. Bolts 33 pass through and are secured to the hubs 32^a, and these bolts also pass through the coiled springs 31 and seats 30 and extending considerably below the same and are provided with nuts 33^a, on which rest caps 34 with arched or pointed tops, with an edge 34^a, on which rests an equalizing-bar 35. Both the caps 34 and bar 35 are perforated to let the bolts 33 pass freely through them.

The stirrups 29, spring-seats and caps 30 and 32, spring 31, and bolt 33 form what may be termed an "elastic link."

Because of the peculiar shape of the stirrups 29, which are offset in one leg, as described above, the equalizing-bar 35 is not in the same vertical plane as the chord 7, but is a little outside of this plane, and the stirrups 29 are outwardly splayed, so that each inner or straightened leg 29^b is close to the chord 7 and not between the spring 31 and the web of the wheel and removed from near the web of the wheel 1, so that the side frames may be placed closer together than would otherwise be possible. Furthermore, the nuts 33^a permit the block 34 and equalizing-bar 35 to be raised or lowered, as desired, thereby permitting an accurate adjustment to allow for wear on the wheels, a feature of great importance when the car runs in a limited space, as a subway or a tunnel, where the clearance between the walls of the car and subway is small.

The equalizing-bar 35 is preferably enlarged or deepened at its center to support the spring-plank 36, which is bolted thereto. This spring-plank 36 is composed of two angle-bars 37 and 38, each of which has lower horizontal webs 37^a and 38^a and upper vertical webs 37^b and 38^b, respectively. The webs 37^b and 38^b terminate over the outer edges of the equalizing-bars, and the lower webs 37^a and 38^a are extended and bent down against the outer surfaces of the equalizing-bars 35 and bolted thereto by bolts 37^c and 38^c, respectively. This construction of spring-plank combines rigidity, lightness, and compactness and has no protruding parts which might interfere with the brake mechanism or else not leave sufficient clearance between the brake mechanism and the ground.

The top chords 7 are united, by means of transoms 39, which are preferably angle-

irons, with upper webs 39^a, which are horizontal, and a lower vertical web 39^b. The webs 39^a extend over the chords 7, and the webs 39^b abut against these chords and are held in place by the angle-irons 40 and 41, which are bolted or otherwise secured both to the vertical webs and the top chords. To further strengthen and stiffen the structure, tie-bars 42 and 43 are employed, the former being above the bolster, and both are secured to the webs 39^a and the latter below the transoms 39 and spring-plank 36, and both the bars 42 and 43 are so bent as not to interfere with the action of the bolster and connected parts. These tie-bars 42 and 43 are preferably secured by bolts 39^d, which pass through them and the webs 39^a.

The bolster 44 rests between the transoms 39 and chords 7 and is supported by elliptic springs 45, which rest on the webs 37^a and 38^a of the spring-plank 36 and are secured thereto in the conventional manner. The bolster 44 may be made in any suitable way, but is preferably a laminated structure comprising a plurality of bars 44^a, 44^b, and 44^c, bolted or otherwise secured together. On the upper surface of this bolster are side and center bearings 46 and 47, respectively, the latter being of the conventional type and the former being adjustable. Each side bearing 46 contains a fixed base 48, on which the upper portion 49 is adjusted by a set-screw 51 and which passes through a projection 49^a and impinges against a second projection 48^a on the part 48, and the part 49 is provided with a rub-plate 50. When adjusted, bolts 52 fix the parts 48 and 49 together. The rub-plate 50 is recessed at 54 to permit access to the set-screw 51. From this it is apparent that the bolster will be carried so as to swing transversely of the truck and will promptly resume its normal position without jar and an easy motion.

From the foregoing the advantage and operation of our invention will be readily understood and appreciated by those skilled in the art; but as many changes may be made without departing from its spirit we do not regard it as limited to the embodiment shown and consider all structures as equivalents which come within the scope of the annexed claims.

Having thus described our invention, what we claim is—

1. In a car-truck or similar device, a side frame, stirrups suspended from said frames, said stirrups having one leg offset and the other nearly straight and means for supporting a bolster connected with said stirrups.

2. In a car-truck or similar device, a side frame, stirrups suspended from said frame, said stirrups having one leg bifurcated and means for supporting a car-body connected with said stirrups.

3. In a car-truck or similar device, a side frame, stirrups suspended from said frame, said stirrups having one leg bifurcated and the other leg offset and means for supporting a car-body connected with said stirrups.

4. In a car-truck or similar device, side frame with elastic links suspended therefrom, each link comprising a stirrup with one leg offset and the other nearly straight and bifurcated, a spring-seat secured to said legs, a spring resting on said seat, a cap on said spring, and a bolt suspended from said cap, and means for connecting said elastic links.

5. In a car-truck or similar device, a side frame, elastic links suspended from said frame, an equalizing-bar connecting said links, and means for permitting a vertical adjustment of said bar to compensate for wear on the wheels so that the car-body may always be maintained at the same level.

6. In a car-truck or similar device, a side frame, elastic links suspended from said frame having bolts protruding from their lower ends, an equalizing-bar connecting said bolts, and means for adjustably supporting said bar on said bolts.

7. In a car-truck or similar device, a side frame, elastic links suspended from said frame, means in said links for splaying the lower ends outwardly, and an equalizing-bar uniting the lower ends of said links.

8. In a car-truck or similar device, a side frame, elastic links suspended from said frame, each link being provided with a stirrup with an offset leg and nearly straight leg, and means for uniting the lower ends of said elastic links.

9. In a car-truck or similar device, a side frame, elastic links suspended from said frame, each link supporting a block with an angular top, and an equalizing-bar resting on edges of said angular blocks.

10. In a car-truck or similar device, a side frame, an equalizing-bar, angular blocks supporting said equalizing-bar at each end and means for supporting said angular blocks.

11. In a car-truck or similar device, equalizing-bars and means for supporting the same, and a spring-plank composed of two angle-bars with upper vertically-disposed webs and lower horizontally-disposed webs.

12. In a car-truck or similar device, equalizing-bars and means for supporting the same, and a spring-plank composed of two angle-bars with upper vertically-disposed webs and lower horizontally-disposed webs which are extended and bent over the sides of the equalizing-bars and attached thereto.

13. As an article of manufacture, a side frame with extending arms, projections at the ends of said arms forming a recess between them, the upper projection being longer than the lower.

14. As an article of manufacture, an elastic link comprising a stirrup with one leg offset and the other leg bifurcated, a spring-

seat, a spring resting thereon, a spring-cap and a bolt extending from said cap through said seat.

15. As an article of manufacture, a stirrup with one leg offset and the other leg bifurcated.

16. As an article of manufacture, a perforated block with an angular face presenting a straight edge which is adapted to support one end of an equalizing-bar.

17. In a truck or similar device, angle-metal trasoms connected by tie-bars which pass above and below said transoms.

Signed at the city and county of Philadelphia, State of Pennsylvania, this 28th day of March, 1904.

JOHN A. BRILL.
SAMUEL M. CURWEN.

Witnesses:
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