

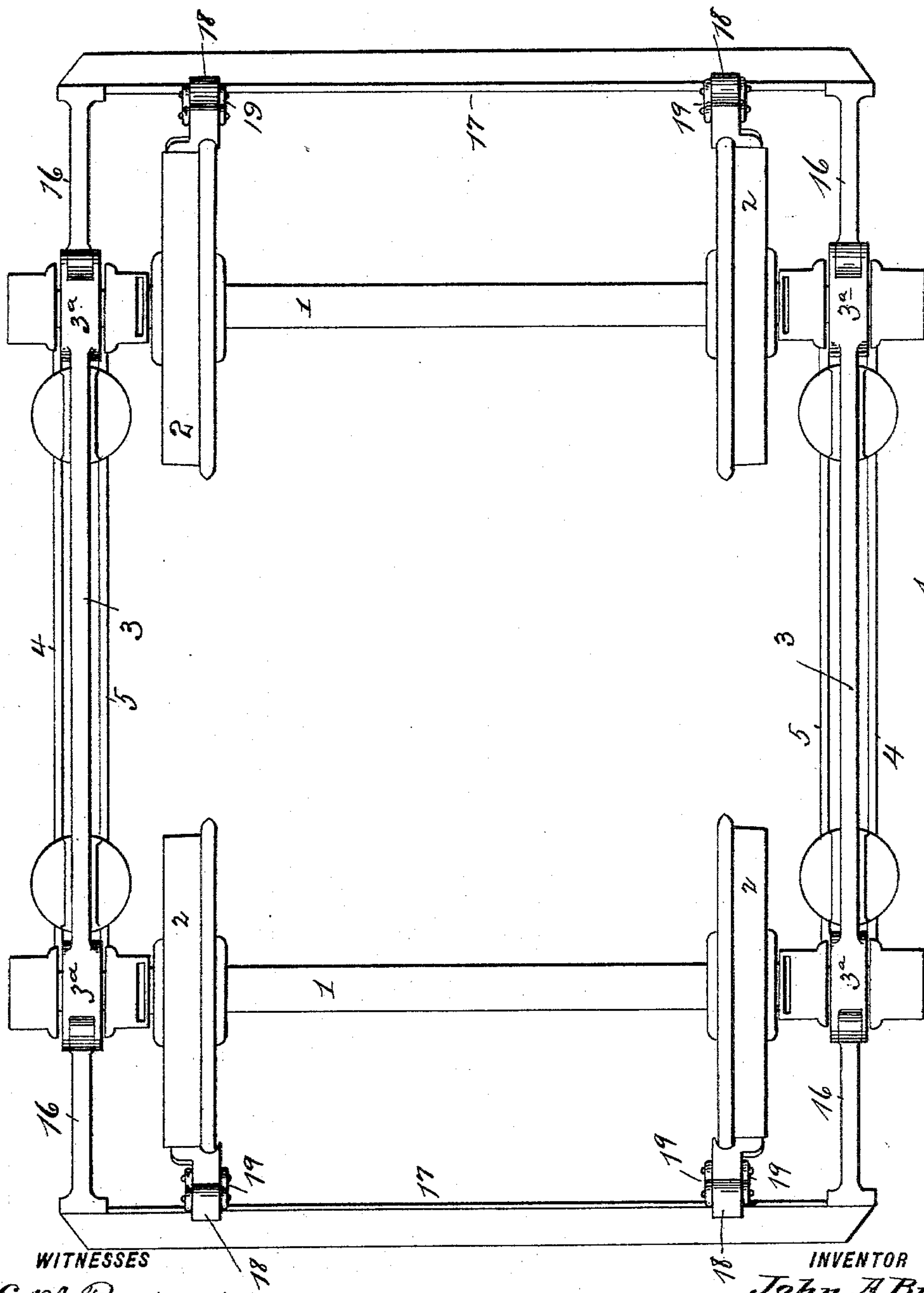
(No Model.)

2 Sheets—Sheet 1.

J. A. BRILL.  
CAR TRUCK.

No. 598,074.

Patented Feb. 1, 1898.



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Wm. Jacobson.

INVENTOR  
John A. Brill

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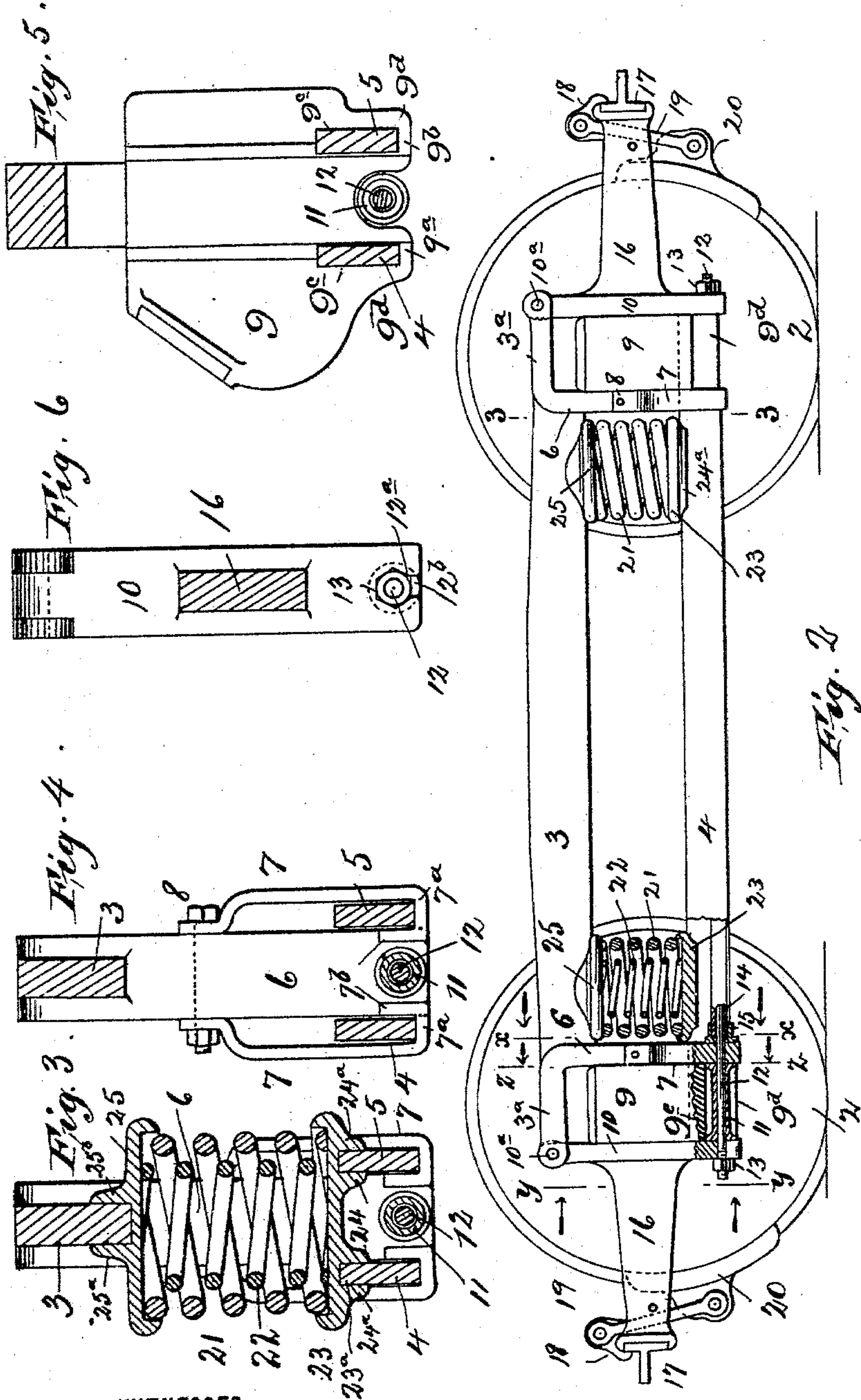
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# UNITED STATES PATENT OFFICE.

JOHN A. BRILL, OF PHILADELPHIA, PENNSYLVANIA.

## CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 598,074, dated February 1, 1898.

Application filed September 11, 1897. Serial No. 651,343. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN A. BRILL, a citizen of the United States, residing at the city and county of Philadelphia, State of Pennsylvania, have made certain new and useful Improvements in Car-Trucks, of which the following is a specification.

One object of my invention is to enable the axle, wheels, and axle-boxes of a car-truck or axle-box frame to be detached from the latter without the necessity of raising the car-truck above the normal level of the axles, while at the same time enabling the brake and brake-beams and their connected parts to be removed from alinement with the wheels without detaching them from the car-truck.

In carrying out my invention I provide a truck-frame or axle-box frame with yokes to receive the axle-boxes, one side of which yokes being pivotally or movably connected with the main part of the frame, and on the movable parts of the yokes brake-shoes are supported, whereby the movable parts of the axle-box yokes can be removed from in line with the axle-boxes to give the latter and the axles freedom for removal from the yokes, while at the same time the brake-shoes can be removed from in line with the wheels without disconnecting them from their supports. In this connection suitable means are provided for firmly uniting the movable parts of the axle-box yokes with the truck or frame to provide a rigid structure.

A further object of the invention is to enable the truck equalizing-springs to be brought as close as possible to the axle-boxes, so that the spring-base of the truck will be increased in the direction of its length, and resistance of these springs when the truck-frame is lifted during braking better attained.

The invention further comprises a truck-frame or axle-box frame having top chords and two sets of parallel equalizing-bars detachably carried by depending lugs formed on the axle-boxes, and cups mounted upon said bars and having projecting lugs located on opposite sides of the equalizing-bars, whereby these equalizing-bars are connected together and prevented from lateral displacement, and springs located upon said cups and interposed between said cups and the top chords of the frame.

The invention also consists in the novel details of improvement and the combinations of parts that will be more fully hereinafter set forth and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming part hereof, wherein—

Figure 1 is a plan view of a car-truck or axle-box frame embodying my improvements. Fig. 2 is a side elevation thereof, partly in section. Fig. 3 is a vertical cross-section, enlarged, on the plane of the line 3 3 in Fig. 2. Fig. 4 is a vertical cross-section, enlarged, on the plane of the line  $x x$  in Fig. 2. Fig. 5 is a similar view on the plane of the line  $z z$  in Fig. 2; and Fig. 6 is a similar view on the plane of the line  $y y$  in Fig. 2, looking from the left.

In the accompanying drawings, in which similar numerals of reference indicate corresponding parts in the several views, 1 indicates axles, and 2 the wheels, which may be of ordinary construction as used in car-trucks.

At 3 are the side bars or top chords of the car-truck or axle-box frame, and 4 5 are the paired equalizing-bars, located below said chords, as shown in Figs. 2, 3, 4, and 5. The chords 3 have extensions 3<sup>a</sup> and depending vertical arms 6, the parts 3<sup>a</sup> and 6 forming the top and inner sides of axle-box yokes. By preference the chords 3 and their arms 3<sup>a</sup> and 6 are forged in a single structure.

At 7 are straps which are secured to opposite sides of the yoke-arms 6, as by bolts 8 passing through the arms 6 and through said straps. (See Fig. 4.) The lower parts of these straps have inwardly-extending arms 7<sup>a</sup>, upon which the equalizing-bars 4 and 5 may rest, and the straps 7 may have upwardly-extending ends 7<sup>b</sup>, which lie in recesses in the arms 6 and which serve in conjunction with the equalizing-bars to keep the straps from outward movement. The straps 7 are of sufficient length to enable the arms 6 to have vertical movement relatively to the equalizing-bars 4 and 5. The equalizing-bars 4 and 5 are connected to the axle-boxes 9, so as to be supported by said boxes independently of the chords 3 and of the arms 3<sup>a</sup> and 6.

In Fig. 5 I have shown the equalizing-bars 4 and 5 as resting upon lips or ledges 9<sup>a</sup> and 9<sup>b</sup> at the bottom of transverse recesses 9<sup>c</sup>, formed in the depending portions 9<sup>d</sup> of the



box 9, and which also extend through and abut against the outer yoke-arms, to be described, whereby said equalizing-bars are secured to the boxes, so that the latter will prevent upward, downward, and outward independent movement of the equalizing-bars, while the arms 6 and recesses 9<sup>c</sup> prevent movement of said bars toward each other. The equalizing-bars 4 and 5 are shown rectangular in cross-section, like narrow bars turned on edge, to provide strength with lightness.

The foregoing construction leaves the space between the top chord 3 and equalizing-bars, closely adjacent the yoke-arms 6, clear vertically to allow of the location of the equalizing-springs.

At 10 are vertical outer arms of the axle-box yokes, and which are shown pivotally connected with the extensions 3<sup>a</sup> of the chords 3 at 10<sup>a</sup>, the parts 6 and 10 forming the sides of the axle-box yokes, while the arms 3<sup>a</sup> form the top thereof. The axle-boxes are adapted to have vertical movement between the arms or sides 6 and 10.

The arms 6 and 10 are held normally parallel, so as to form pedestals for the axle-boxes, and for this purpose I have employed a pedestal-tie-bar construction comprising the intermediate blocks, posts, or space-bars 11, located between the lower ends of the arms 6 and 10 and which lie within a central depression 9<sup>c</sup> in the under side of the box, the lower ends of said arms being tied together by bolts or threaded rods 12, having nuts 13, as shown in Fig. 2, or by other suitable means.

I have shown the arms 10 as held in place by rods 12, which extend from the arm 10 of one yoke to the arm 10 of the next yoke on the same side of the truck and passing through the blocks 11, through the arms 6, and between the equalizing-bars 4 5, so as to provide a firm connection between the movable arms or sides 10 on the same side of the truck-frame. As a further means of bracing the axle-box yokes on the same side of the truck I may provide tubes 14, which surround the rods 12 and are secured to the corresponding arms or sides 6 by suitable couplings 15, carried by the latter, (see Fig. 2,) or other means may be provided for bracing the lower ends of the corresponding arms 6 of the yokes. The tubes 14 will be of such a length as to fit snugly between the arms 6, so as to keep the latter from moving toward each other. By this means when the parts 11 12 13 14 15 are arranged as shown the lower ends of the sides or arms 6 at opposite ends of the truck are securely tied together in a firm and rigid structure, the tubes 14 serving to keep the arms 6 from approaching, the blocks 11 serving to keep the corresponding arms 6 and 10 from approaching, and the rods 12, with their nuts 13, serving to keep the sides 10 from moving outwardly.

It will be seen that when the nuts 13 are loosened and the arms or sides 10 vibrated

upwardly on their pivots 10<sup>a</sup> the axle-boxes and axle can be drawn outwardly, in which case it will only be necessary to place sufficient supports under the truck-frame as will sustain the latter while the axles are removed, thus dispensing with the necessity of lifting or jacking up truck-frames to enable the removal of the axles.

In order to permit the arms 10 to be swung upon their pivots without moving the rods 12, the lower edges of the arms 10, adjacent to which the apertures 12<sup>a</sup> for the rod 12 are located, are open to the edge or slotted at 12<sup>b</sup>, as shown in Fig. 6, whereby the lower end of the arms 10 can straddle the rod 12 when moving, thus giving free motion to said side.

The arms 10 have outwardly-projecting brackets or extensions 16, from which the brake-shoes are supported. These brackets 16 are tied together by bars and other beams 17, extended across the truck. (See Fig. 1.) These bars or beams 17 may be rigidly secured to the brackets 16 by any suitable means, and the brake-shoes are carried by said bars or beams. For this purpose I have shown hangers 18, carried by the bars 17 and having links 19 pivotally connected therewith and depending therefrom, to the lower ends of which links brake-shoes 20 are pivoted in such position as to be properly applied to the rim of the wheels. From the foregoing it will be understood that when the axles and their axle-boxes are to be inserted in or removed from their axle-box yokes it will be merely necessary to swing the arms 10 upwardly and outwardly, whereupon the brackets 16, the bars or beams 17, and the brake-shoes and their connections will also be swung upward clear from the wheels 2. This will be found of great convenience, in that it will not be necessary to detach any of the brake-operating mechanism (not shown) from the truck in order to get the wheels and axles out. Any suitable brake-operating mechanism may be connected with the brake-shoes 20; but I have not thought it necessary to illustrate such mechanism, and it may be arranged so that it will swing upwardly with the brake-shoes without the necessity of disconnecting it from said shoes.

It will be understood that as the equalizing-bars 4 and 5 on each side of the truck or frame are connected with and supported by the axle-boxes, and as the chords 3 and the axle-box yokes connected therewith are independent of said equalizing-bars, said chords and axle-box yokes will have a vertical movement independent of said bars, and to resiliently support the chords upon said equalizing-bars suitable springs are interposed between said chords and said bars. I have shown coiled springs 21 22 interposed between the chords and the equalizing-bars, and as the sides of arms 6 of the axle-box yokes are at substantially right angles to the chords and equalizing-bars said springs are thus enabled to be located close to said arms



6, whereby the thrust or weight of the chords and the superposed car-body (not shown) will be borne more directly upon these springs than if the springs were at greater distances from the sides or arms 6, or, in other words, more efficient leverage action is presented to the springs by having them close to the axle-box yokes.

I have shown two springs 21 22 as resting in and supported by cups 23, carried by the equalizing-bars 4 and 5. These cups are shown provided with recesses 23<sup>a</sup>, forming lugs or ears 24 and 24<sup>a</sup>, which project on opposite sides of the equalizing-bars, as shown in Fig. 3, whereby said cups are held from lateral movement upon the equalizing-bars, and the equalizing-bars are thus held from lateral movement relatively to said cups or, in other words, are braced by said cups. Between the springs 21 22 and the chords 3 are located other cups 25, which are shown provided with upwardly-extending lugs 25<sup>a</sup> and 25<sup>b</sup>, which serve to keep the cups in position relatively to the chords. From the foregoing it will be seen that as the chords 3 move up and down, through the influence of a superposed car-body, the springs will resist such motion in well-known manner, excepting that more efficient leverage will be present.

I do not limit my invention to the precise details of construction shown and described, as they may be varied without departing from the spirit of the invention, and it is apparent that means for operating the brake-shoes can be connected therewith and supported on the truck-frame in the usual or desired way.

Having now described my invention, what I claim is—

1. A car-truck having axle-box yokes, one arm of the yokes being movable, means for firmly holding the movable arm of the yoke, each of said arms having an extension, and a cross-bar uniting the extensions, whereby the movable arm of the yoke and cross-bar connected therewith may be moved out of the horizontal plane of the wheels, substantially as described.

2. A car-truck having wheels and axle-box yokes, the outer arm of each of the yokes being movable, means for firmly holding the movable arms of the yoke in operative position, an extension carried by each of the said arms extending out beyond the flanges of the wheels, and a cross-bar connecting the respective extensions at the corresponding ends of the truck, whereby the movable arms of the yokes and their connected cross-bars may be moved out of the horizontal plane of the wheels, substantially as described.

3. A car-truck having axle-box yokes, said yokes having a movable arm, means for firmly holding said movable arms in operative position, cross-bars connecting extensions from the arms at the corresponding ends of the truck, and brake-shoes carried by said cross-bars, substantially as described.

4. In a car-truck, the combination of the side bars, axle-box yokes connected therewith, the outer arms of said yokes being movable, means for firmly holding the movable arms of the yokes, an extension carried by said arms, cross-bars connecting the extensions, equalizing-bars connected with said boxes, and springs interposed between the side bars and equalizing-bars, substantially as described.

5. In a car-truck, the combination of side bars, each having extensions 3<sup>a</sup>, and a depending arm 6 both firmly connected therewith, with a movable arm connected at its top with the arm 3<sup>a</sup>, an extension 16 carried by each of the movable arms, a cross-bar secured to said extensions, and detachable means for firmly holding said movable arms to the arm 6, substantially as described.

6. In a car-truck, the combination of side bars having yokes comprising extensions 3<sup>a</sup>, and depending arms 6 both firmly connected therewith, with a movable depending arm connected with the extension 3<sup>a</sup>, an extension carried by each movable arm of the yoke, a cross-bar connected with said extensions, and means for firmly holding said movable arms, axle-boxes located in said yokes, equalizing-bars connected with said boxes and located below the corresponding side bars, and springs interposed between said side bars and corresponding equalizing-bars, substantially as described.

7. In a car-truck, the combination of side bars having axle-box yokes provided with depending arms 6, straps carried by said arms, axle-boxes, and equalizing-bars connected with the latter and located between said straps and said arms, whereby the arms may have independent vertical movement relatively to the equalizing-bars while the straps serve to retain the equalizing-bars adjacent to the corresponding sides of the yokes, substantially as described.

8. In a car-truck, the combination of side bars and axle-box yokes having depending arms 6, straps carried by said arms, and having supports 7<sup>a</sup> and upwardly-extending webs 7<sup>b</sup>, with axle-boxes and equalizing-bars connected therewith, said equalizing-bars being located between the outer parts of said straps and their webs 7<sup>b</sup>; substantially as described.

9. In a car-truck, the combination of side bars having depending arms 6 and movable arms 10, with blocks interposed between said arms, means for holding said arms firmly against the blocks, extensions from said movable arms, and a cross-bar connecting said extensions, substantially as described.

10. In a car-truck, the combination of side bars having depending yoke-arms, and arms movably connected with said side bars, blocks or posts interposed between pairs of said arms, and a rod passing through said arms, and blocks on the same side of the truck and connecting the movable arms at opposite ends of



the truck on the same side to firmly connect said movable arms together, substantially as described.

11. In a car-truck, the combination of side bars having depending rigid and movable arms, with a tube interposed between the corresponding arms of the yoke on the same side of the truck, blocks interposed between the respective rigid and movable arms of the corresponding axle-box yokes, and a rod connecting the movable arms of the respective yokes on the corresponding side of the truck, substantially as described.

12. In a car-truck, the combination of side bars having an extension 3<sup>a</sup> and arms 6, and movable arms 10, the arms 10 having an opening 12<sup>b</sup> leading to the edge thereof, blocks interposed between the corresponding arms 6 and 10 of the respective axle-box yokes, and a rod connecting the movable arms of the yokes at opposite ends of the truck on the same side thereof, whereby the movable arms of the yoke can be raised or lowered while the connecting-rod is in position, substantially as described.

13. In a car-truck, the combination with the side bars 3, extensions 3<sup>a</sup>, and depending arms 6, of the arms 10 pivoted to the extensions 3<sup>a</sup>, a rod 12 extending between the yoke-arms, axle-boxes having transverse apertures 9<sup>c</sup> and a central recess spanning said rod, equalizing-bars extending through and resting on the bottom of said apertures, and springs extending between the equalizing-

bars and top chords 3, substantially as described. 35

14. In a car-truck, the combination of the side bars, and axle-box yokes having their inner arms extending vertically at substantially right angles to the side bars, with axle-boxes, equalizing-bars connected therewith, cups mounted upon said equalizing-bars and having depending lugs extending on opposite sides of the latter whereby said equalizing-bars are braced transversely, and springs located upon said cups and interposed between the equalizing-bars and the side bars, substantially as described. 40 45

15. In a car-truck, the combination with a truck-frame having side bars and axle-box yokes, axle-boxes within the yokes, slotted lugs pendent from each of the axle-boxes, paired equalizing-bars detachably secured in said lugs, located at each side of the inner arms of the yokes, and disposed parallel with the side bars, a spring-cup having paired and recessed lugs embracing and straddling each pair of equalizing-bars, a spring-cap resting against the side bars, and springs extending between said cups and caps, substantially as described. 50 55 60

Signed at the city and county of Philadelphia, State of Pennsylvania, this 10th day of September, 1897.

JOHN A. BRILL.

Witnesses:

WM. H. HEULINGS, Jr.,  
W. E. PARTRIDGE.