

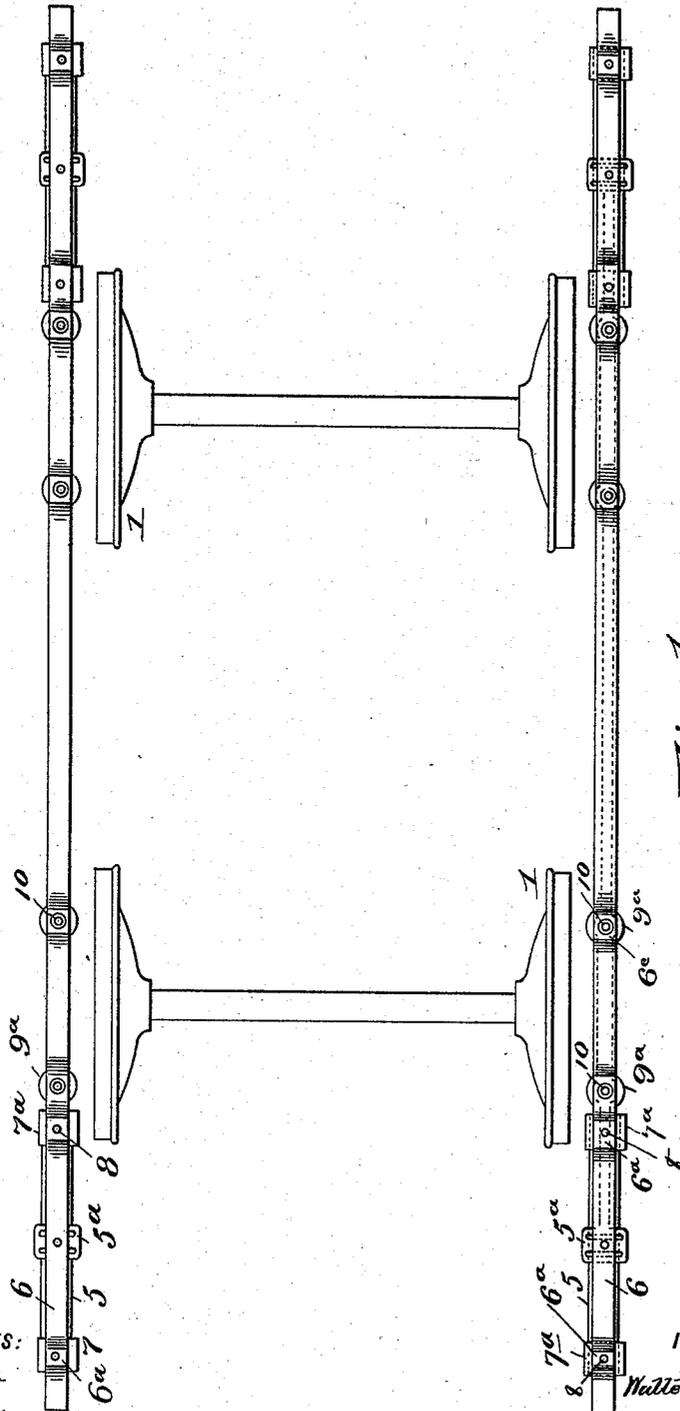
(No Model.)

3 Sheets—Sheet 1.

W. S. ADAMS.  
CAR TRUCK.

No. 568,079.

Patented Sept. 22, 1896.



*Fig. 1.*

WITNESSES:  
*C. W. Benjamin*  
*Wm. Jackson*

INVENTOR  
*Walter S. Adams.*  
BY  
*Joseph L. Perry*  
ATTORNEY

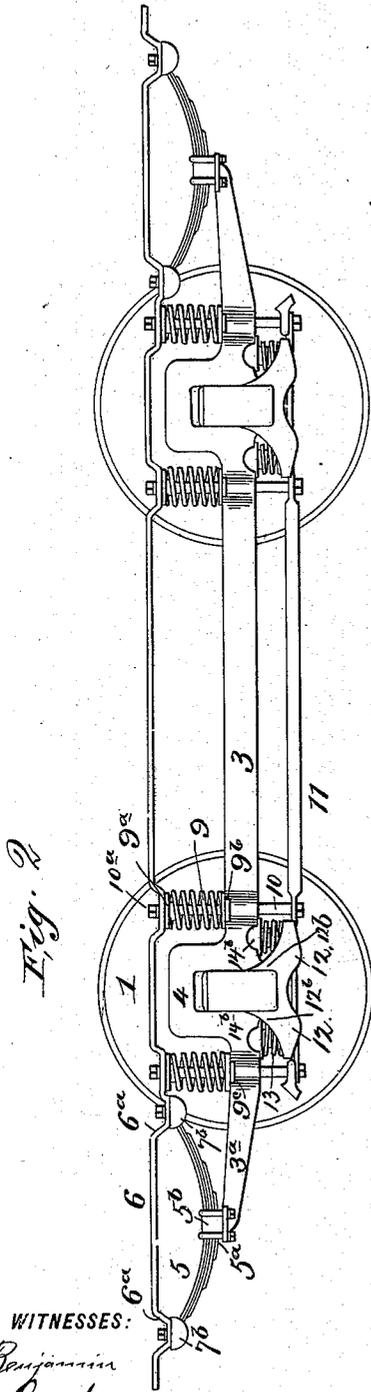
(No Model.)

3 Sheets—Sheet 2.

W. S. ADAMS.  
CAR TRUCK.

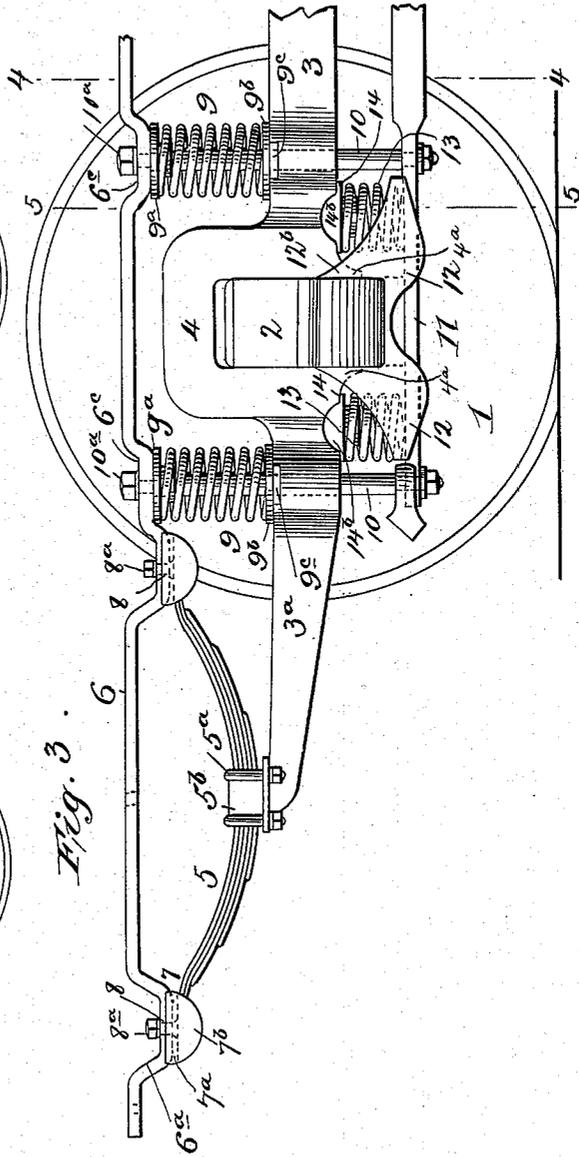
No. 568,079.

Patented Sept. 22, 1896.



WITNESSES:

*Wm Benjamin*  
*Wm Jacobsen*



INVENTOR  
*Walter S. Adams*

BY *Joseph L. Leary*  
ATTORNEY

(No Model.)

3 Sheets—Sheet 3.

W. S. ADAMS.  
CAR TRUCK.

No. 568,079.

Patented Sept. 22, 1896.

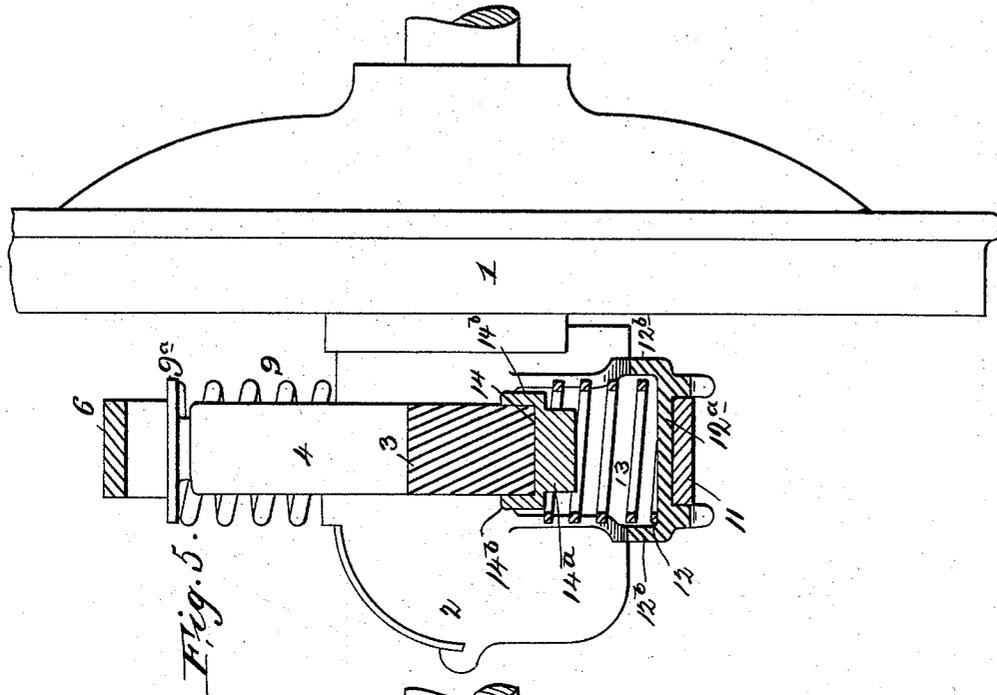


Fig. 5.

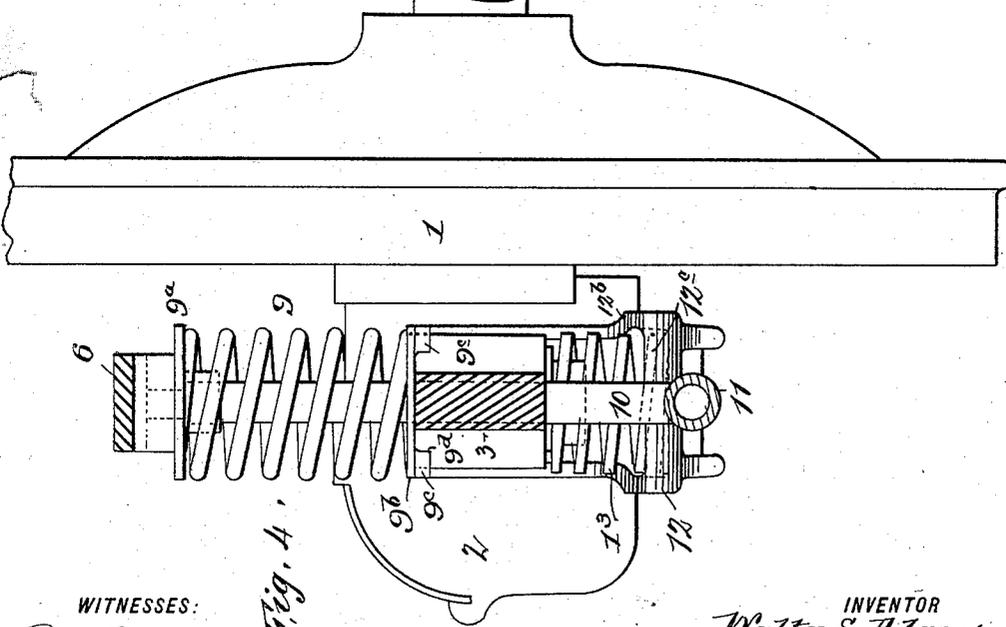


Fig. 4.

WITNESSES:

*W. Benjamin*  
*Wm. Jacobson*

INVENTOR

*Walter S. Adams*

BY

*Joseph L. Levy*

ATTORNEY

# UNITED STATES PATENT OFFICE.

WALTER S. ADAMS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO JOHN  
A. BRILL, OF SAME PLACE.

## CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 568,079, dated September 22, 1896.

Application filed April 16, 1896. Serial No. 587,783. (No model.)

*To all whom it may concern:*

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

The object of my invention is to provide improved means for resiliently connecting the axle-box frame outside of the wheel-base with the upper chord of a car-truck or the car-sill, and to this end the axle-box frame has arms extended forwardly of the axle-box yokes, and at the outer ends of these arms are secured semielliptical springs, the ends of which springs support the upper chord (or car-sill) and are retained in connection with said chord by depending webs or lips connected with said chord by screws or bolts, the heads of which are located in depressions in said chord, whereby the side sills of a car-body can rest upon said chords without obstruction.

A further object of the invention is to provide improved means for resiliently connecting the axle-box frame with the axle-boxes outside of the yokes. This portion of the invention consists in the combination of an axle-box frame having yokes with axle-boxes provided with arms extending outwardly from the lower part thereof and projecting longitudinally of said frame, said arms having a bottom plate and side webs, and with springs supported upon said bottom plates, and connections between said springs and the axle-box frame, on opposite sides of the yokes, to keep said springs in position relatively to said frame. The weight of the axle-box frame and the superposed car-body is thus resiliently supported by the axle-boxes without requiring the yokes to directly sustain the load.

Another portion of my invention consists in providing the yokes with depending lugs and causing the lugs to extend down into the webs of the axle-box arms, so as to restrain excessive lateral movement of the yokes or boxes in relation to each other.

The invention further 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 embodying my improvements. Fig. 2 is a side elevation thereof. Fig. 3 is a side elevation, enlarged, of one end of the truck. Fig. 4 is a vertical cross-section, enlarged, on the plane of the line 4 4 in Fig. 3; and Fig. 5 is a similar view on the plane of the line 5 5 in Fig. 3.

In the accompanying drawings, in which similar numerals of reference indicate corresponding parts in the several views, the number 1 indicates the wheels; 2 are the axle-boxes; 3, the side bars of an axle-box frame, and 4 are the yokes that receive said boxes, all of which may be of suitable or usual construction, except that the inner arms of the yokes, which abut against the boxes, are provided with depending lugs 4<sup>a</sup>.

From the outer or forward parts of the yokes 4 extend arms 3<sup>a</sup>, which are preferably made of solid metal and are inclined upwardly and outwardly. At the outer ends of the arms 3<sup>a</sup> are secured semielliptical springs 5, which are preferably laminated, their ends projecting upwardly, said springs extending longitudinally of the axle-box frame. The springs 5 may be secured on the arms 3<sup>a</sup> by clips 5<sup>a</sup>, which encircle the boxes 5<sup>b</sup> of said springs.

At 6 are the upper chords of the truck-frame, which may be single bars, as shown, or connected in the usual way, or sectional bars located above the side bars 3 and supported by the springs 5. The chords 6 carry guides 7, in which the ends of the springs 5 rest. These guides 7 consist of cross-plates 7<sup>a</sup>, having depending webs 7<sup>b</sup>, which lie on opposite sides of the ends of the springs 5 to retain the ends of said springs in place and prevent lateral displacement thereof, the plates 7<sup>a</sup> also serving as wearing-surfaces for the ends of the springs 5. The guides 7 are shown held on the chords 6 by means of screws or bolts 8, which pass from the plates 7<sup>a</sup> through the chords 6, nuts 8<sup>a</sup> serving to hold the parts in position. In order to prevent the bolts 8 or nuts 8<sup>a</sup> from interfering with

the side sills of a car-body, (not shown, but which is to be supported by the chords 6,) said chords are provided with depressions 6<sup>a</sup>, in which said nuts 8<sup>a</sup> lie, the metal of the chords 6 being properly bent down for this purpose. These bends in the chords 6<sup>a</sup> also serve to strengthen them and enable springs of less height to be used than if the chords were plane throughout. The upward incline of the arms 3<sup>a</sup> also serves to reduce the height of the springs 5. The chords 6 are also resiliently supported on opposite sides of the yokes 4 by springs 9, upon which the chords 6 rest, said springs being supported on the side bars 3 and arms 3<sup>a</sup> close to the yokes.

9<sup>a</sup> are washers or plates between the springs 9 and the chords 6, and 9<sup>b</sup> are plates or washers resting upon the side bars 3 and arms 3<sup>a</sup>, upon which plates or washers 9<sup>b</sup> the springs 9 rest. The plates or washers 9<sup>b</sup> are shown provided with depending lugs 9<sup>c</sup>, which enter sockets 9<sup>d</sup> in the side bars 3 and arms 3<sup>a</sup>, which lugs serve to retain said plates or washers in position.

At 10 are vertical rods or bolts which pass through the chords 6, plates 9<sup>a</sup>, springs 9, plates or washers 9<sup>b</sup>, and the side bars 3 and arms 3<sup>a</sup>, the rods or bolts 10 being connected together beneath the axle-boxes 2 by the rods 11. The heads or nuts 10<sup>a</sup> at the upper ends of the rods 10, above the chords 6, lie in depressions 6<sup>c</sup> in the chords 6, whereby the side sills of a superposed car-body can rest freely upon the chords 6. The springs 9 support the major part of the weight of the car-body, while the springs 5, which are located well forward (or rearward) of the wheel-base, resist the vertical oscillations of the ends of the car-body.

The axle-box frame is resiliently supported by the axle-boxes 2, as follows: From the lower parts of the axle-boxes 2, arms 12 extend forwardly and rearwardly longitudinally of the car, and they lie beneath the vertical arms of the yokes 4 and beneath the contiguous parts of the side bars 3 and arms 3<sup>a</sup>. The arms 12 are composed of bottom plates 12<sup>a</sup> and side webs 12<sup>b</sup>, which extend upwardly, these webs being curved upwardly from the plates 12<sup>a</sup> and connected with the axle-boxes. The outer ends of the arms 12 each have a cross-web 12<sup>c</sup>. (See Fig. 4.) In other words, the arms 12 may be described as hollow or recessed.

13 are springs which are located in the recesses of the arms 12 and rest on the bottom plates 12<sup>a</sup>, these springs being retained upon said arms by the side webs 12<sup>b</sup> and outer webs 12<sup>c</sup>. The upper ends of the springs 13 are connected with the side bars 3 and arms 3<sup>a</sup> by plates or cups 14, which have depending studs 14<sup>a</sup>, that enter the coils of the springs 13 and by vertical side webs or ears 14<sup>b</sup>, which lie on opposite sides of the side bars 3 and arms 3<sup>a</sup>. (See Fig. 5.) It will be understood that the arms 12 and springs 13 serve to support the axle-box frame at points close to and

beneath the yokes, and that the strain of the load is to a large extent thus removed from the yokes 4 and is taken up almost directly by the side bars 3 and arms 3<sup>a</sup>. The advantages of this construction and arrangement will be obvious. The car-body is thus, by the devices shown, resiliently supported by two sets of springs close to the yokes and by other springs far outside of the wheel-base, whereby a car-body is supported in a manner to give a great degree of comfort.

It will be observed by reference to Fig. 5 that there are no restraining-lugs on the sides of the boxes to limit transverse movement. This latter, however, is accomplished by causing the lugs 4<sup>a</sup> on the yokes to depend down into the webs 12<sup>b</sup>, thus allowing sufficient transverse movement between the yokes and the boxes, at the same time providing means for restraining excessive movement.

Wherever in the claims the upper chord is mentioned it is intended to include the car-sill as well, for it is apparent that the springs and other connections can be attached directly to the car-sill or a sectional chord without departing from the spirit of my invention.

By causing the posts 10 to pass through the side bars outside of the springs 13 I reduce the weight and cost of the metal and liability of breakage of the arms 12 of the axle-boxes 2 were the springs 13 directly under the posts. By making the yokes integral with the side bars and solid a much stronger structure is produced and a better bearing-surface had for the sides of the axle-boxes. By extending the bearing-surface of the yokes below the axles the strain of the yokes is distributed, so as to reduce the chances of fracturing the yokes, and by causing the springs 13 to bear directly against the side bars I do away with the necessity of using a number of parts to build up this part of the structure.

I claim—

1. In a car-truck, the combination with the axle-boxes and axle-box frame, and a top chord, of extensions of the frame beyond the axles, semielliptic springs secured upon the said extensions, the ends of the springs being secured to said chord on each side longitudinally of their points of connection with said extensions, yokes included in said frame, spiral springs extending between said frame and chord adjacent said yokes, seats on each side of the axle-boxes and springs extending between said seats and said frame adjacent the yokes, substantially as described.

2. In a car-truck, the combination of an axle-box frame, having outwardly-extending arms, and an upper chord, with semielliptical springs carried on the outer ends of said arms, the said chord resting upon the ends of said springs, guides for said springs secured to said chord and having depending webs or ears located on opposite sides of the ends of said springs, arms on the axle-boxes extending outwardly below the axle-box

frame, and springs between said axle-box arms and said yokes, substantially as described.

3. In a car-truck, the combination with the top chord and an axle-box frame having yokes, of the axle-boxes having arms that project outwardly and in opposite directions from the lower part thereof, and springs extending between said arms and frame adjacent the yokes, other springs extending between the frame and chord adjacent the boxes, and paired posts extending from the chord through the latter springs outside of the first-mentioned springs, substantially as described.

4. In a car-truck, the combination of an axle-box frame having side bars with integral yokes embracing the axle-boxes for substantially the latter's entire height, integral arms extending in opposite directions from the lower part of the boxes, said arms having a bottom plate and side webs, springs resting on said arms and directly engaging said side bars, substantially as described.

5. In a car-truck, the combination with the top chord, and the side bar of the axle-box frame having yokes, axle-boxes embraced by said yokes, arms on the boxes extending outwardly below the side bar, springs interposed directly between said arms and a point on the side bar outside of the inner engaging surface of said yokes, and springs extending be-

tween the side bar and top chord adjacent the yokes and outside of the first-mentioned springs, substantially as described.

6. In a car-truck, the combination with the side bar having yokes, lugs depending from the yokes below the side bar, axle-boxes having arms extending outwardly below the yokes, webs extending upwardly from the sides of the arms, the said lugs extending between the webs, and springs extending between said arms and said side bar, substantially as described.

7. In a car-truck, the combination with the side bars of the axle-box frame having yokes, with axle-boxes having arms extending in opposite directions from the lower part thereof, and below the yokes, said arms having a bottom plate and side webs, springs supported by said arms, plates having depending studs and upwardly-extending webs or ears directly engaging the side bar interposed between the side bar and said springs, the bearing-surface of said yokes extending down into said webs, substantially as described.

Signed at Philadelphia, county of Philadelphia, State of Pennsylvania, this 6th day of April, 1896.

WALTER S. ADAMS.

Witnesses:

R. S. REED,

R. W. BROADBENT.