(No Model.) 3 Sheets—Sheet 1.

G. G. FLOYD.

CAR TRUCK.

No. 586,482. Patented July 13, 1897.

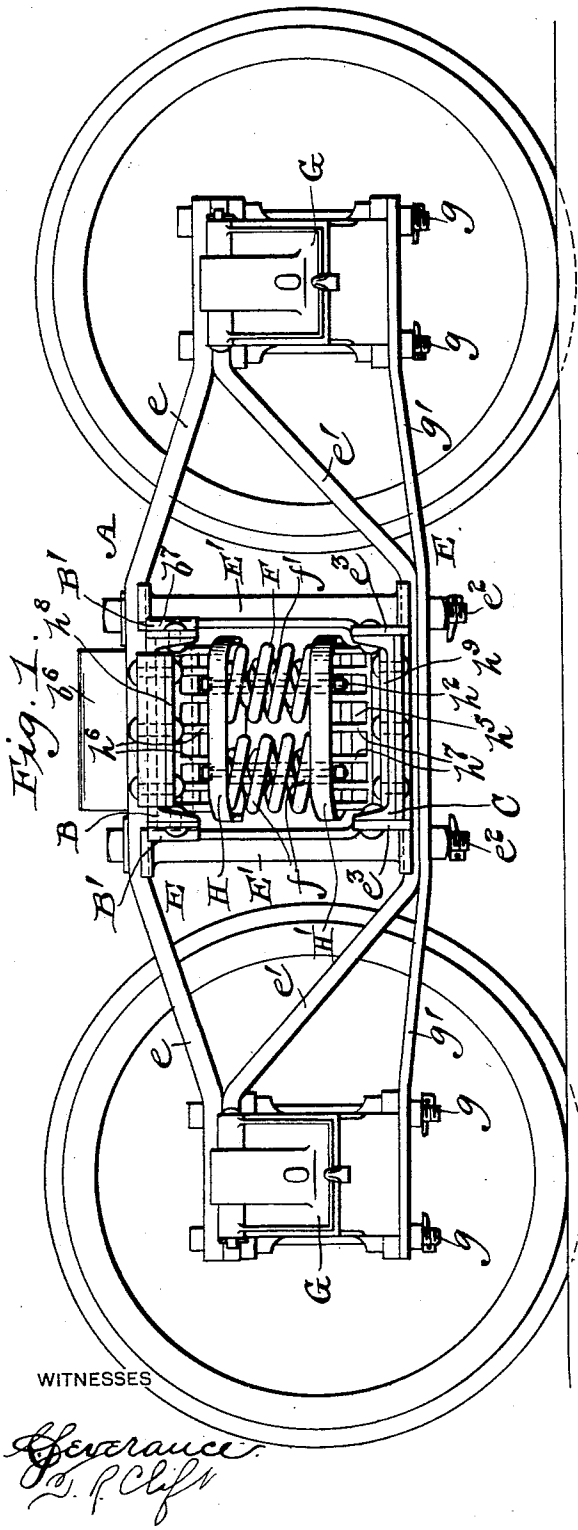

Fig. 1.

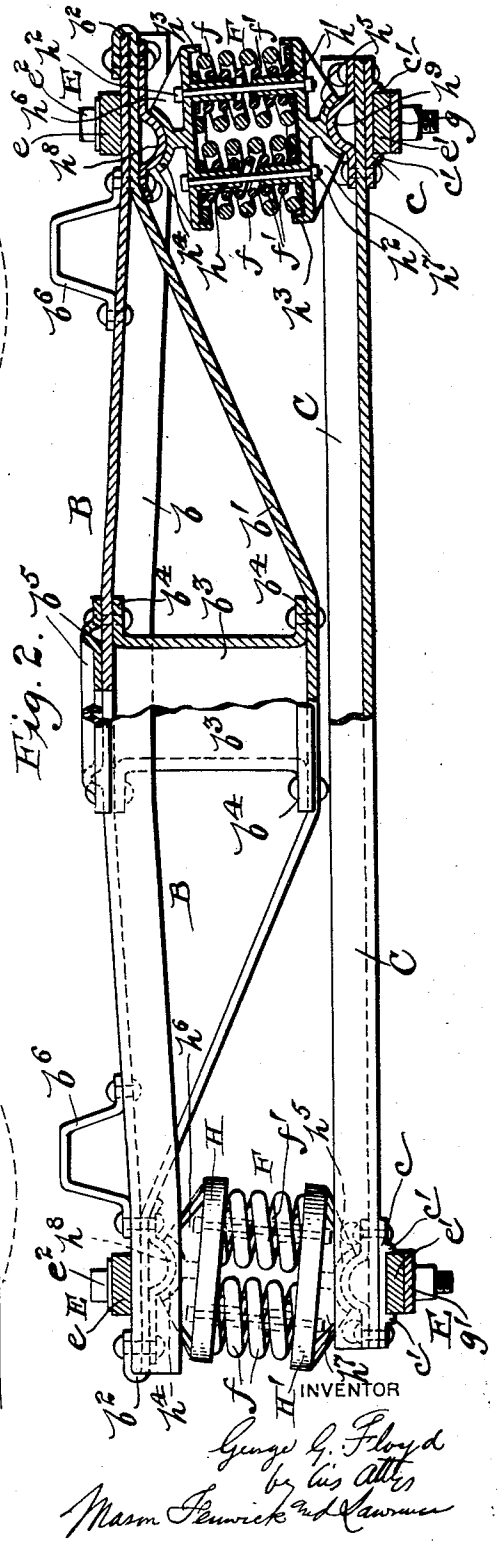

Fig. 2.

WITNESSES

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(No Model.) 3 Sheets—Sheet 2.

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Fig. 4.

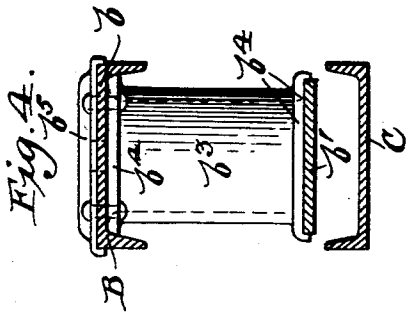


Fig. 7.

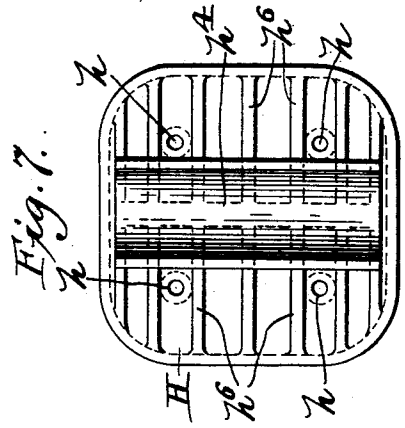


Fig. 3.

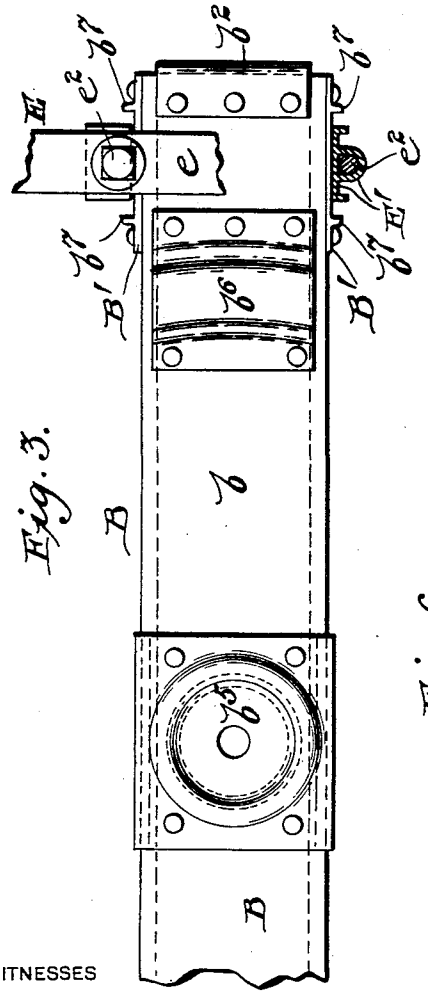
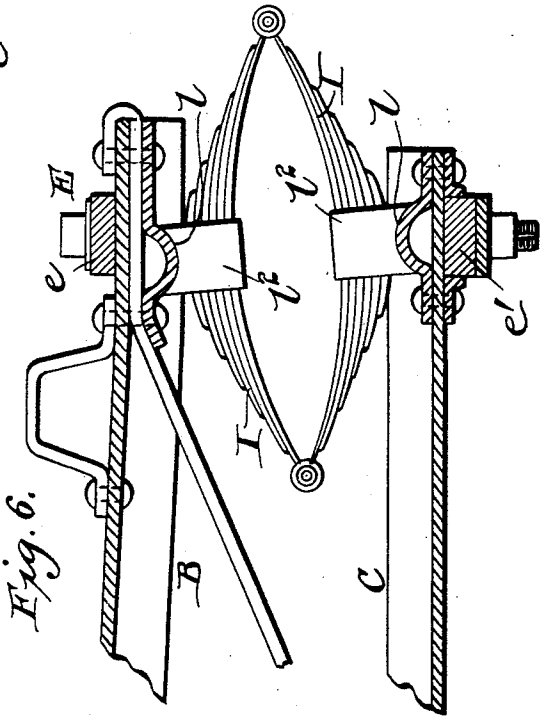


Fig. 6.



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3 Sheets—Sheet 3.

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CAR TRUCK.

No. 586,482. Patented July 13, 1897.

Fig. 5

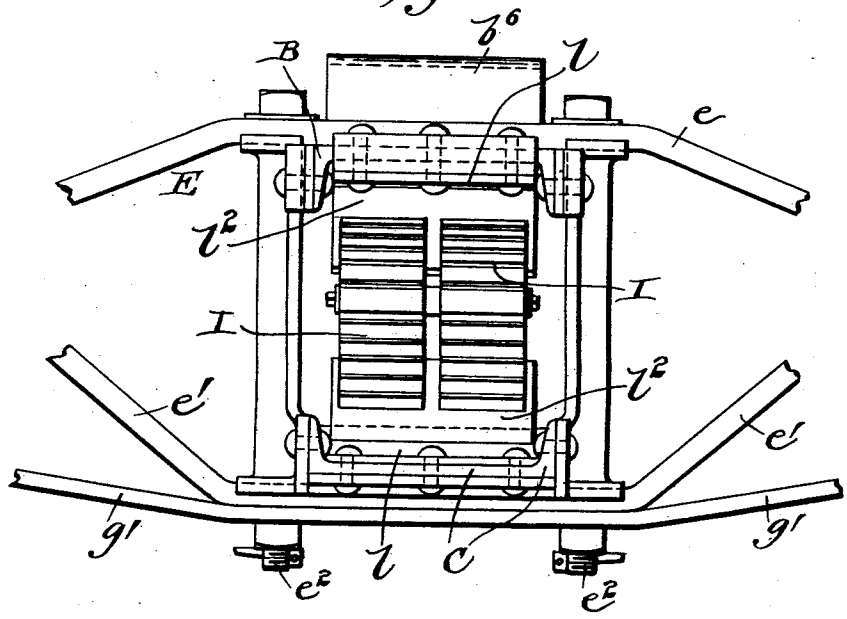


Fig. 9.

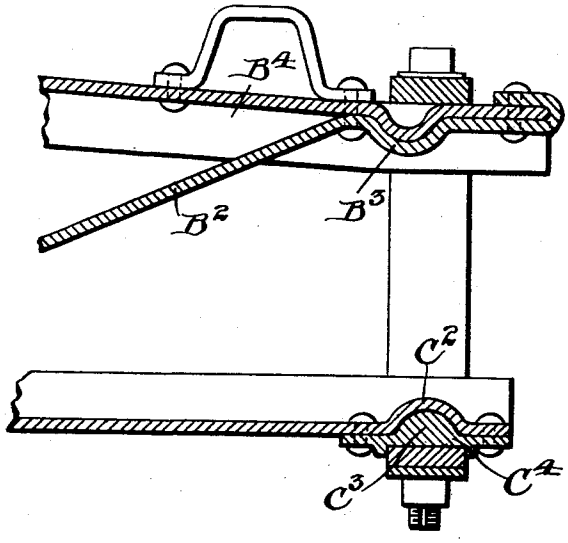
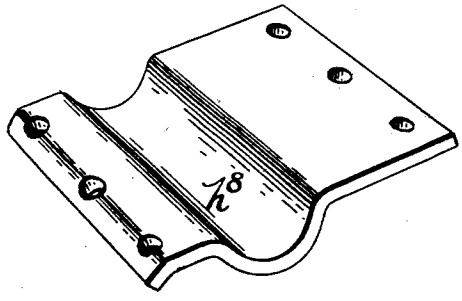


Fig. 8.



WITNESSES

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INVENTOR

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UNITED STATES PATENT OFFICE.

GEORGE G. FLOYD, OF SEDALIA, MISSOURI.

CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 586,482, dated July 13, 1897.

Application filed December 23, 1896. Serial No. 616,778. (No model.)

To all whom it may concern:

Be it known that I, GEORGE G. FLOYD, a citizen of the United States, residing at Sedalia, in the county of Pettis and State of Missouri, 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.

My invention relates to improvements in car-trucks, and particularly to that class of trucks which are capable of a lateral swing motion.

The object of my invention is to produce a car-truck which will embody the advantages possessed by both the rigid type of truck and the swing-motion type, without having the disadvantages of either.

It consists of the combination, with side arch-bars, of vertical columns or guide-bars, a spring-plank, a truck-bolster, and rocking supporting-springs normally occupying an inclined position interposed between the said bolster and plank.

It also consists of the combination, with side arch-bars, of vertical guide-columns, a spring-supporting plank, a truck-bolster, rocking springs normally occupying an inclined position, cap-plates for said springs, having bearing-surfaces, and seat-plates having bearing-surfaces, bearings upon the bolster and bearings upon the plank adapted to engage the said bearing-surfaces, the bearings upon the bolster being nearer together than the bearings upon the spring-plank.

It further consists in certain other novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a car-truck embodying my invention. Fig. 2 is a vertical cross-sectional view of the same. Fig. 3 is a detail fragmentary plan view of the truck-bolster, parts being shown in section. Fig. 4 is a detail sectional view of the bolster and spring-supporting plank. Fig. 5 is a detail side elevation of a portion of a car-truck, showing the adaptation of my invention to the use of elliptical springs. Fig. 6 is a detail in cross-section of the same. Fig. 7 is a detail view of one of the cap-plates for the coil-springs. Fig. 8 is a detail view of one of the bearing-plates, and Fig. 9 is a detail vertical sectional view showing a modified form of bearing-plate.

A in the drawings represents a car-truck; B, a bolster; C, a spring-supporting plank; E E, side arch-frames, and F F springs.

The side frames E E of the truck A are preferably constructed in arch form and comprise top arch-bars e e and inverted arch-bars e' e', the ends of both arch-bars coming together above the ordinary journal-boxes G G, upon which they rest and to which they are bolted with bolts g g. To prevent the journal-boxes G G from tipping, a tie-bar g' connects the bottom of each truss and the bottoms of the boxes and is secured to the same by the said journal-box bolts g g.

The arch-bars e and e' are connected by vertical bolts e^2 e^2, which pass through the columns or guide-bars E' E'. The cross-frame of the truck is mounted between the said columns E' E'.

The spring-supporting plank C, formed of channel-iron, is riveted or bolted through its flanges to flanges e^3 upon the lower ends of the columns E' E'. A bearing-plate c is bolted to the under side of the plank C at each end thereof, having flanges c' c' upon its under face to receive the lower arch-bar e' e', upon which said plates rest. These bearings serve to keep the truck-frame true, thus taking much or all the shearing strain from the column-bolts e^2 e^2 and the rivets or bolts with which the spring-plank C is secured to the flanges e^3 e^3 of the said columns.

The bolster B is formed of the compression member b, preferably of channel-iron, and the tension member b', bolted to the end of the member b, the ends being bent up around the ends of said channel-iron, as at b^2 b^2. A hollow strut b^3, provided with bolting-flanges b^4 b^4, is secured between the said compression member b and the said tension member b' at their central points. A center bearing b^5, of usual shape, is bolted to the upper side of the bolster, upon which the car-body, having a corresponding center plate, (not shown,) is adapted to rest. Side bearings b^6 b^6, to steady the car-body and prevent it rolling too much, are also secured upon the upper surface of the bolster B. The bolster B is free to move up and down between the columns E' E' and has guide-plates B' B' secured to each side of the member b, at each end thereof. These

guides are provided with flanges b^7 b^7, which limit the amount of lateral swing movement the bolster may have.

Interposed between the ends of the bolster B and the plank C are the truck-springs, the construction of which and arrangement of the parts thereof constitute a very important feature of my invention.

My truck is well adapted to the use of the different styles of springs in common use.

In Figs. 1 and 2 I have shown my invention as adapted particularly to the use of coil-springs, which are of as cheap construction as any. As shown in the drawings, the coil-springs F F are preferably arranged in groups of, say, four, upon opposite sides of the frame, and each coil F comprises, preferably, a heavy outer coil f and a lighter inner coil f'. The springs are held in position by cap-plates H and seat-plates H'. These cap and seat plates are provided with thimbles h and h', which extend toward each other through the center of the springs, as illustrated. The thimbles are perforated, and bolts h^2 h^2 pass through them, so as to hold the plates and springs in place and limit the expansion of the springs to prevent them from reacting with too much force. The thimbles h h' are not made long enough to meet, but have a sufficient space between them to permit of the proper compression of the springs E E under load, while they prevent the same from being compressed too much. In case a spring becomes broken or gives away from any cause the thimbles will prevent the truck-bolster from dropping down. The plates are also provided with edge flanges h^3.

The top of the caps H and the bottom of the seats H' are provided with longitudinal bearings h^4 h^5, preferably concave in form, full width, or nearly so, of said caps and seats, which bearings extend at right angles to the length of the bolster B and spring-plank C. These bearings h^4 and h^5 are strengthened by suitable webs h^6 h^7, cast with the said plates. On the under side of each end of the bolster B is secured a pivot-bearing h^8. These bearings h^8 are preferably convex longitudinally and are placed crosswise of the truck-bolster B, and are adapted to fit and work in the concave bearing of the bearings h^4 h^4. So, likewise, to each end of the spring-plank C is secured a pivot-bearing h^9. These bearings h^9 are also convex longitudinally and placed crosswise of the plank C, and are adapted to fit and work in the concave bearings h^5 h^5 of the plates H' H'. This arrangement of the spring caps and seats with longitudinal bearings crosswise the truck-bolster and plank, working in corresponding bearings attached crosswise to the said bolster and plank, allows the truck-bolster B to swing to and fro in the direction of its length, thereby producing what is known and termed in truck construction as "swing motion." It will be seen from Fig. 2 that the pivot-bearings h^8 h^8 are secure to the bolster B a little nearer to the center of the truck than are the pivot-bearings h^9 h^9. Thus the springs with caps and seats, taken as a whole, occupy an inclined position, leaning toward the center of the truck. This arrangement of the parts is important for various reasons. It insures that the bolster shall be kept in a central position, for otherwise the said bolster would be swung over one way or the other and remain in that position. This inclination of the springs toward the center of the truck also serves to check the bolster, so that it shall not swing with too much force when the car strikes a curve. It further insures that the bolster shall have the well-known action of the ordinary swing-motion truck—that is, that in swinging one end is lowered and the other is raised, thereby keeping the center of gravity of the car-body in about the same place or a little inside the center of the truck when rounding a curve.

It will be apparent from the above description that I may employ double-coil springs, as above described, or single coils, and with any desired number in a group, all within the spirit of my invention. So, also, the pivot-bearings may be made in separate pieces, as described, and secured to the truck-bolster and spring-plank, or they may be cast integral with the same. In this instance, as shown in Fig. 9, the tension member B^2 of the truck is so shaped at each end as to form the bearing B^3 to engage the cap-plate of the springs. The compression member B^4 is depressed so as to fit into the hollow side of the bearing B^3, both as a support for the same and also to prevent the tension member B^2 from straightening out when under load. The bearing C^2 for the spring-seat to rest upon may be formed or pressed into proper shape directly from the spring-plank, thus making it integral therewith. The under hollow side of the said bearing C^2 is preferably filled by a portion C^3 of the plank bearing-plate C^4, by which it is fully supported.

The arrangement of the bearings for the spring caps and seats above described may be changed or reversed without departing from the spirit of my invention, the bearing being formed upon the caps and seats and the sockets upon the bolster and plank.

In Figs. 5 and 6 of the drawings will be seen the adaptation of my device to the use of elliptical springs. In this construction the elliptical springs I are made in the usual form. The bearings l l are formed in the bands l^8 l^8, which hold the leaves of the springs together. It will thus be seen that said springs are adapted to occupy the same position and perform the same functions as the coil-springs above described.

From the aforegoing description it appears that I am enabled to obtain the up-and-down movement of the rigid truck-bolster and the lateral swing of the swing truck-bolster in a very simple and effective manner and with all the advantages attendant upon each form.

The advantages of the rigid truck or one

with only a vertical movement have been cheapness of first cost, simplicity of construction, few parts, little expense to keep in repairs, and length of time for which they will remain in repair, while the disadvantages of this type may also be enumerated—namely, that it is a hard-riding truck, racks the body of the car, is not very safe in rounding a curve at a high rate of speed, on a rough and uneven track is liable to get off the same, because it does not quickly adjust itself to such a track, and it wears out the flanges of the car-wheels, and therefore also wears away the track-rails.

The advantages of the swing-motion trucks, or those which have a lateral movement as well as a vertical, have been found to be easy-riding, less racking of the car-body, safety in rounding curves at high rate of speed, and on rough and uneven tracks little risk of getting off the same, because they adjust themselves quickly to such tracks. They do not wear out the flanges of the car-wheels so much as the rigid type, and therefore are not so hard on the track-rails. The disadvantages of this type of trucks have been the high first cost, the great number of parts, the greater consequent expense to repair, and liability to get out of order quickly.

By my improved construction, with its cheapness of construction and fewer parts, I produce a truck embodying all the advantages above mentioned with respect to both types of truck without any of the disadvantages enumerated.

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

1. In a car-truck, the combination with side arch-bars, of vertical guide-columns, a spring-supporting plank, a truck-bolster, and rocking supporting-springs normally occupying an inclined position, interposed between the said bolster and plank, substantially as described.

2. In a car-truck the combination of side frames, vertical guide-columns, a spring-supporting plank, a truck-bolster, rocking springs normally occupying an inclined position, cap and seat plates, having bearing-surfaces, and corresponding bearing upon the bolster and spring-plank, the bearings upon the bolster being nearer together than those upon the plank, substantially as described.

3. In a car-truck the combination of side frames, a bolster, a spring-supporting plank, springs interposed between said bolster and plank, pivot-bearings connecting said springs with the said bolster and plank whereby said bolster is adapted to have a swing motion, the upper bearings being nearer together than the lower one, for holding the springs normally in an inclined position, substantially as described.

4. In a car-truck, the combination of side frames, a bolster and spring-plank, of springs having cap and seat plates, pivot-bearings interposed between said caps and seats and the said bolster and plank, respectively, thimbles upon said caps and seats, and limiting-bolts passing through the same, said springs being normally inclined inward, substantially as described.

5. In a car-truck the combination of side frames, a bolster, a spring-plank, rocking springs interposed between the said bolster and plank, bearing-surfaces secured to said bolster and plank, and extending crosswise of the same, and corresponding bearing-surfaces attached to the springs whereby the said bolster is adapted to have a swing motion, the bearing upon the bolster being located nearer the center of the truck than those upon the plank, substantially as described.

6. In a car-truck, the combination of side frames, a bolster, and spring-plank, of springs having cap and seat plates, pivot-bearings interposed between said caps and seats and the said bolster and plank respectively, and thimbles upon said caps and seats, adapted to extend into said springs, and prevent the bolster from dropping down, if a spring is broken or gives away, substantially as described.

7. In a car-truck the combination of side arch-bars vertical guide-columns, a bolster, provided with guide-plates adapted to guide the said bolster with respect to said columns, a spring-plank, and rocking supporting-springs, normally occupying an inclined position substantially as described.

8. In a car-truck, the combination of side frames, a bolster, a spring-plank, bearing-plates secured to the under side of said planks, and provided with flanges, adapted to engage the lower arch-bar, for holding the said parts in true position and rocking supporting-springs normally occupying an inclined position, interposed between said bolster and spring-plank, substantially as described.

9. In a car-truck, the combination of upper and lower side arch-bars, guiding-columns connecting the same, a bolster adapted to move between the same, guide-plates secured to said bolster for guiding and limiting the movement of said bolster, a spring-plank secured to said columns, a bearing-plate secured to said plank and having flanges for engaging said lower arch-bar, and inclined rocking springs having pivot-bearings interposed between said bolster and plank, substantially as described.

10. In a car-truck, the combination with side frames, of a truck-bolster, a spring supporting-plank, and rocking supporting-springs normally occupying an inclined position interposed between the said bolster and plank, substantially as described.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

GEORGE G. FLOYD.

Witnesses:
A. P. MOREY,
JOHN WADDELL.