

J. C. BARBER.

CAR TRUCK.

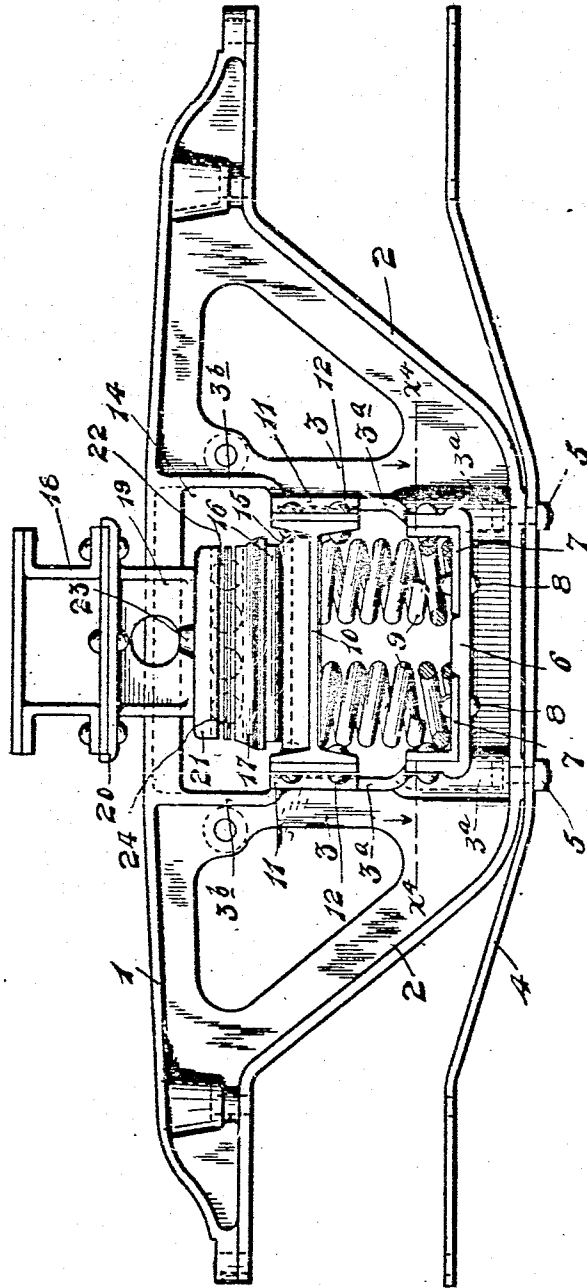
APPLICATION FILED DEC. 11, 1909.

953,681.

Patented Apr. 5, 1910.

3 SHEETS—SHEET 1.

Fig. 1



Witnesses.

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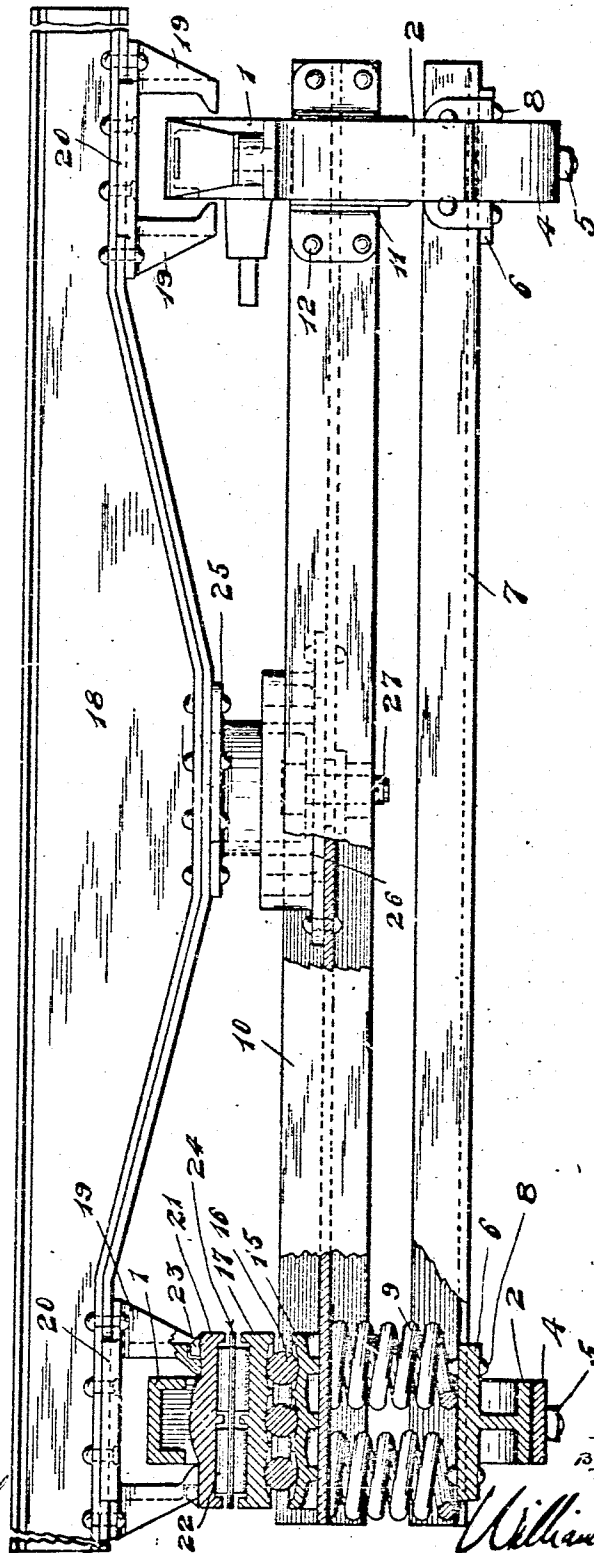
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3 SHEETS—SHEET 2.

Fig 2



Witnesses.
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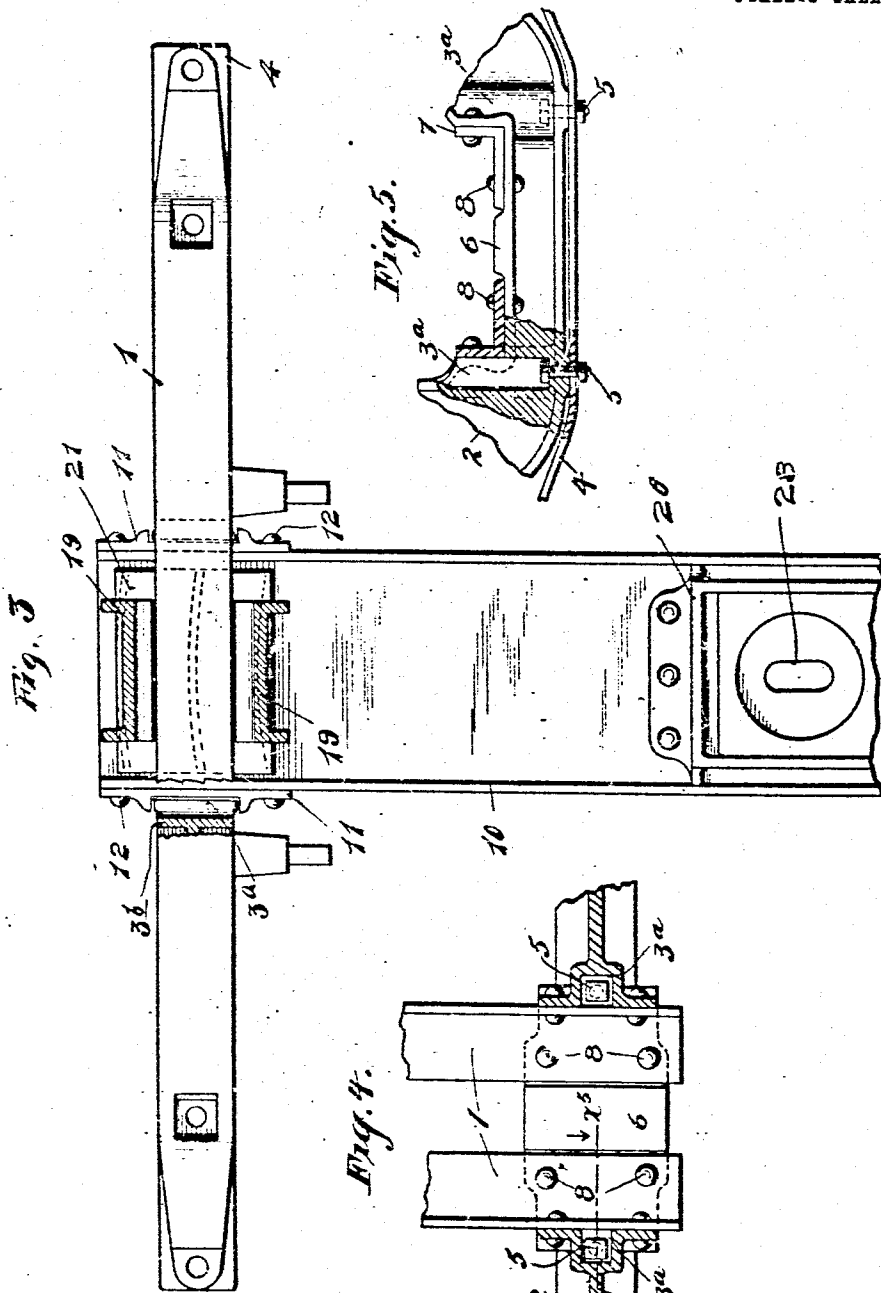
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953,681.

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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

JOHN C. BARBER, OF CHICAGO, ILLINOIS, ASSIGNOR TO STANDARD CAR TRUCK COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF NEW JERSEY.

CAR-TRUCK.

953,631.

Specification of Letters Patent.

Patented Apr. 5, 1910.

Application filed December 11, 1909. Serial No. 523,631.

To all whom it may concern:

Be it known that I, JOHN C. BARBER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, 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 present invention has for its object to simplify and generally improve the construction of lateral motion car trucks of the type disclosed and claimed in the Lake and Deverell patent, No. 788,350, of date August 29th, 1905, and in my prior patent, No. 863,012, of date August 13th, 1907.

The invention consists of the novel devices and combinations of devices herein-after described and defined in the claims.

In the accompanying drawings, which illustrate the invention, like characters indicate like parts throughout the several views. Referring to the drawings, Figure 1 is a view in side elevation, with some parts broken away and some parts removed, illustrating a truck embodying the several features of my invention; Fig. 2 shows the improved truck, chiefly in rear elevation, with some parts sectioned and some parts removed; Fig. 3 is a fragmentary plan view with some parts removed, some parts sectioned and some parts broken away, showing the said truck; Fig. 4 is a detail view, partly in section on the line x^x of Fig. 1; and Fig. 5 is a detail view, partly in section on the irregular line x^y of Fig. 4.

The top arch bar 1, the bottom arch bar 2 and the bolster columns 3 of each truck side frame are cast integral with each other, and the said castings, which are preferably steel castings, are, as shown, of substantially I-beam structure in cross section, but it will, of course, be understood that, so far as this cross section is concerned, the structure may be very greatly varied. The upper ends of these side frame castings are arranged to rest upon the usual journal boxes, not shown. Customary tie bars 4 are, as shown, connected to the bottom arch bar 2 by short bolts 5 seated in long tubular bolt seats 3^a formed in the bolster columns

3, and the ends of said tie bars 4 are secured to the journal boxes by the customary bolts or any other suitable way. The side frame castings are further provided with channel-shaped spring column base plates 6 cast integral therewith between the tubular bolt head seats 3^a and projecting both inward and outward from the bolster columns 3 as best shown in Figs. 1, 4 and 5.

By reference to Figs. 1 and 5, it will be noted that the tubular bolt head seats 3^a extend considerably below the base plate 6 and permit the use of very short bolts 5 in connecting the tie bars 4 to the bottom arch bar 2.

Angle cross ties 7 are seated in the angles of the column base plates 6 and are secured by rivets 8, both to the vertical and horizontal portions of the said column base plates and at points both inside and outside of the bolster columns 3. By thus extending the cross ties through the side frames and to points outside of the bolster columns and by rigidly securing the same to the castings, which make up the main body portion of the said side frames, well braced and substantial construction is produced.

Upon suitable seats afforded by the horizontal webs of the angle cross ties 7 and on the central portions of the base plates 6, are mounted springs 9, upon the upper ends of which a truck bolster 10 is mounted. Preferably this truck bolster is in the form of an ordinary steel I-bar or beam, laid down flatwise, and provided at its ends with channel-shaped or lug-equipped guide plates 11, that embrace the cooperating bolster columns 3 and hold the truck bolster against endwise movements but free for vertical movements in respect to the truck side frames. These so-called guide plates 11 are preferably secured to the vertical webs of the truck bolster 10 by rivets 12, located both above and below the horizontal web of the said bolster. The said plates 11 directly take the wear incident to vertical movements and endwise thrusting movements of the bolster in respect to the bolster columns, and for this reason, are better than laterally spaced guide lugs or stops on the bolster without the connecting plate to take the direct wear. Except for this latter noted reason, the inner and outer column engaging

guide lugs on the bolster might be completely separated or individually formed.

It is here important to make the following observations: The bolster columns 3 are formed with bolster guiding surfaces 3^a for engagement with the guide plates 11, which terminate below the upper compression members of the cooperating side frames a distance greater than the vertical dimensions of the said guide plates and of the truck bolster, and said bolster columns above these bolster guiding surfaces are spread or separated at 3^b to an increased extent so that the bolster, when raised to an extreme position, may be removed endwise from the truck side frames, through clearance passages 14, without requiring removal from the truck bolster of the column engaging plates or lugs. This construction also permits the upper compression members of the side frames to be cast integral with the cast body portions of said side frames. It will be also noted that the bolster guiding surfaces of said bolster columns are set farther apart than the extreme lower portions of said columns so that a truck bolster of as great, or even greater, extent, than the distance between the vertical flanges of the column base plates 6, may be employed. The springs 9 will be entirely relieved from tension when the truck bolster is raised into position to be moved endwise from the truck side frames through the widened clearance passages 14.

The truck bolster 10 has rigidly secured to the end portions thereof roller bearing plates 15, located in the upper channels thereof, and formed with a multiplicity of roller seats extended longitudinally of the truck side frames and supporting lateral motion bearing rollers 16; the central members of which, as shown are in the center planes of the corresponding truck side frames. Upon the rollers 16 is mounted a so-called floating or intermediate bearing plate 17, which for engagement with the roller 16 has, in its under surface, roller seats corresponding to the roller seats in the plates 15, except that they are reversed or turned upside down. The bearing plates 15 and 17 and the interposed rollers 16 afford the lateral motion devices for permitting endwise movements of the car body bolster presently to be described. Otherwise stated, these lateral motion devices permit lateral motion of the car body relative to the truck. It should be here stated that the roller bearing seats of the plates 15 and 17 are concave (the word concave being here used in a broad sense) but their concavities may be formed either by a curve or diverging straight lines or planes, the well known function of which is to maintain the said plates 17 in intermediate position in respect to the plates 15.

The car body bolster 18 which, as shown, has rigidly secured to its end portions depending bearing legs 19, arranged in pairs and arranged to embrace the upper compression members of the truck side frames with sufficient clearance to permit the required lateral motion of the car body in respect to the truck. As shown, these pairs of bearing legs 19 are cast integral with a tie plate 20, which, in turn, is rigidly secured to the body bolster by means of rivets. The lower ends of these bearing legs 19 rest upon and move with upper roller bearing plates 21, between which and the intermediate bearing plate 16, side bearing rollers 22 are interposed. Preferably the upper roller bearing plates 21 are detachable from the bearing legs 19 but are interlocked thereto by lugs 23 on the said plates 21, which engage notches or seats in the lower portions of said bearing legs. The rollers 22 extend approximately at right angles to the rollers 16 and are arranged to work in grooved flat-faced seats formed in the said plates 16 and 21, which seats, in plan, are curved on the arc of imaginary circles struck from the axis of the pivotal connection between the truck and body bolster. Preferably also the upper or side bearing rollers 22 are arranged in two series with the rollers of the inner series axially aligned with the rollers of the outer series and with all of the said side bearing rollers properly spaced by a retaining cage 24, of suitable construction, such for instance as that disclosed and claimed in my co-pending application, S. N. 536,085, filed of date January 3rd, 1910, and entitled "Improved roller bearing." The roller spacing cage is desirable in order to keep the side bearing rollers from bunching and to keep the entire lot of rollers 22 properly centered and positioned in respect to the bearing plates between which they work. The said side bearing rollers 22 are preferably arranged in two series with the inner and outer rollers axially aligned, because the relatively short rollers are better adapted, when cylindrical, to work on a slight arc of a circle, than are rollers of much greater length.

The central portions of the truck and body bolsters are pivotally connected by a suitable center coupling, which affords the proper pivotal connection between the said parts and permits the required limited lateral movements of the car body in respect to the truck and vice versa and allows all the weight of the load to be delivered from the body bolsters to the truck bolster and the truck side frames through the roller side bearings and lateral motion devices. Preferably this center connection is substantially of the form disclosed in my said prior patent No. 863,012, of date August 13th, 1907, a

comprises center plates 25 and 26, rigidly connected respectively to the body bolster 14 and the truck bolster 10. The said plates 25 and 26 have telescoping or interlocking hubs of unequal size, the hub of the lower plate 26 being considerably larger than the hub of the upper plate and being also, as shown, of rectangular form, while the hub of the upper plate is of circular form. The two plates 25 and 26 are connected by a king pin 27 closely fitted in the hub of the upper plate and working in an elongated slot 28 in the lower plate.

It should be noted that the roller bearing devices are located in the clearance passages but are formed in the truck side frames immediately below the upper compression members of the same and that they, therefore, normally hold the truck bolster down so that it cannot move upward in alinement of these clearance passages.

What I claim is:

1. In a car truck, the combination with a truck bolster, of a car bolster provided at its end portions with pairs of depending bearing legs that embrace the upper compression members of said side truck frames, and intermediate devices supporting said legs from said truck bolster, substantially as described.

2. In a car truck, the combination with a truck bolster extended through openings in the side frames of said truck, of a car bolster provided with depending bearing legs embracing the upper compression members of said side frames, and anti-friction bearing devices supporting said bearing legs and truck bolster from said car bolster, substantially as described.

3. In a car truck, the combination with a truck bolster working through openings in the truck side frames, of a car bolster provided at its end portions with pairs of depending bearing legs that embrace the upper compression members of said truck side frames with clearance, permitting lateral motion of the car body in respect to the truck, and anti-friction bearings supporting said bearing legs and car bolster from the outer end portions of said truck bolster with freedom for movements transversely of the truck and for horizontal pivotal movements, substantially as described.

4. In a car truck, the combination with a spring supported truck bolster mounted for freedom for vertical movements in the side frames of said truck, a car bolster provided at its end portions with pairs of depending bearing legs that embrace the upper compression members of said truck side frames with clearance, permitting lateral motion of the car body in respect to the truck, and anti-friction bearings supporting said bearing legs and car bolster from

the outer end portions of said truck bolster with freedom for movements transversely of the truck and for horizontal pivotal movements, substantially as described.

5. In a car truck, the combination with a truck bolster, spring supported in the truck side frames with freedom for vertical movements but held against endwise movements transversely of the truck, a car bolster provided at its ends with depending pairs of bearing legs embracing the upper compression members of said side frames with clearance, permitting lateral movements of the car in respect to the truck, upper, lower and intermediate roller bearing plates, said upper plates being detachably secured to the lower ends of said bearing legs and said lower plates being secured to said truck bolster, lateral motion rollers interposed between said lower and intermediate bearing plates, and side bearing rollers interposed between said intermediate and upper bearing plates, substantially as described.

6. In a car truck, the combination with side frames having bolster columns and journal box tie-bars, of cross tie bars connected to said side frames, long tubular bolt head seats formed in said bolster columns outwardly of and extending above and below said cross tie bars, and bolts seated in said tubular bolt head seats for detachably connecting said journal box tie bars to said side frames, substantially as described.

7. In a car truck, the combination with a spring supported truck bolster, of truck side frames having vertical bolster guiding surfaces terminating below the upper compression members of said side frames and having clearance passages immediately below said upper compression members, permitting endwise removal of said bolster when the latter is raised, and roller bearing devices mounted on said truck bolster in said clearance passages, substantially as described.

8. In a car truck, the combination with a spring supported truck bolster, of truck side frames having vertical bolster guiding surfaces terminating below the upper compression members of said side frames, said side frames having clearance passages immediately below the said upper compression members, permitting endwise removal of said bolster when the latter is raised, roller bearing devices mounted on said truck bolster and working in said clearance passages, and a car bolster provided with pairs of depending bearing legs embracing the upper compression members of said side frames and supported by said roller bearing devices, substantially as described.

9. In a car truck, the combination with truck side frames having vertical bolster

guiding surfaces, upper compression members and bolster clearance passages between said upper compression members and the upper extremities of said bolster guiding surfaces, of a truck bolster provided with rigidly secured channel-shaped guide plates working on said bolster guiding surfaces and removable through said clearance passages

when said bolster is raised, substantially as described.

In testimony whereof I affix my signature ¹⁰
in presence of two witnesses.

JOHN C. BARBER.

Witnesses:

LEE W. BARBER,
E. W. WEBB.