

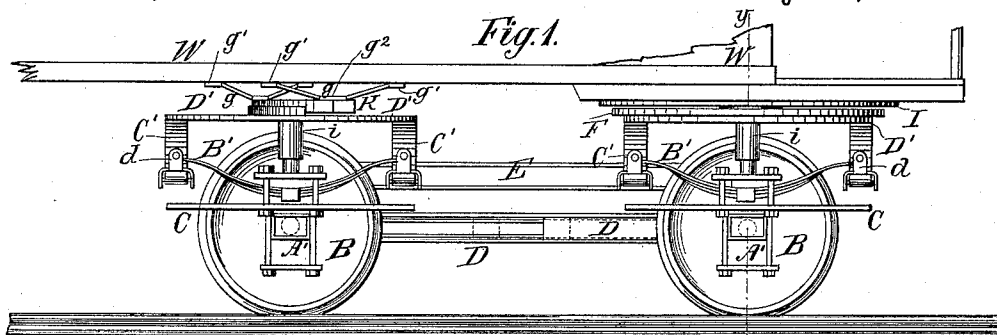
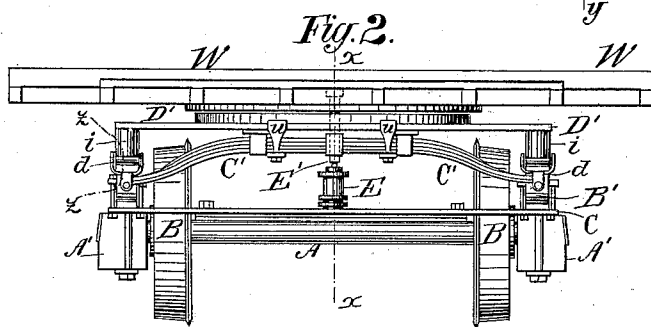
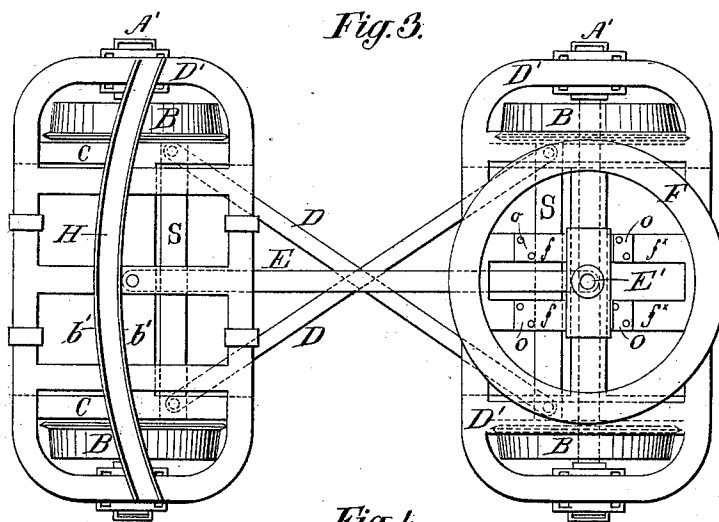
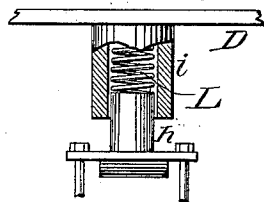
(No Model.)

3 Sheets—Sheet 1.

W. YOUMANS.
CAR TRUCK.

No. 383,164.

Patented May 22, 1888.



WITNESSES:
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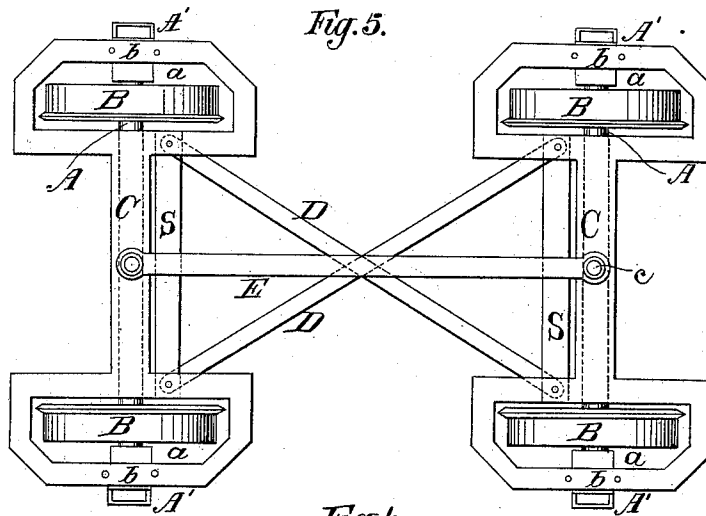
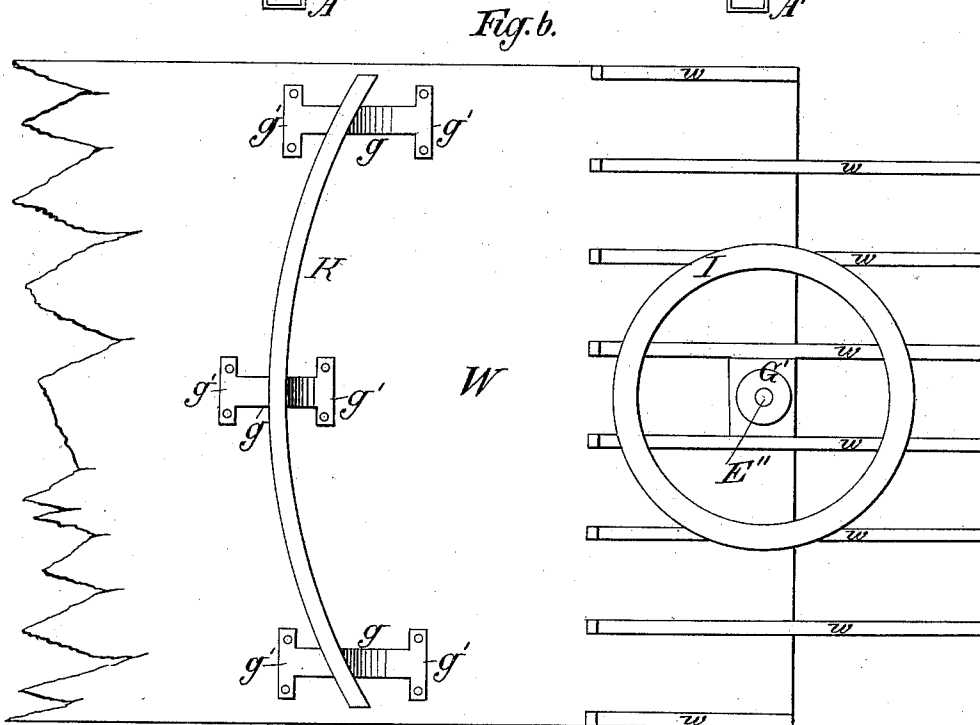
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3 Sheets—Sheet 2.

W. YOUMANS.
CAR TRUCK.

No. 383,164.

Patented May 22, 1888.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WALTER YOUMANS, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO JOHN W. EMERSON, OF SAME PLACE.

CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 383,164, dated May 22, 1888.

Application filed June 29, 1885. Serial No. 170,073. (No model.)

To all whom it may concern:

Be it known that I, WALTER YOUMANS, a citizen of the United States, and a resident of New York, in the county and State of New York, have invented a new and useful Improvement in Car-Trucks, of which the following is a specification.

This invention relates to that class of car-trucks in which provision is made for maintaining the axles in the position radial to the curves around which the truck may be caused to pass.

My said invention comprises certain novel combinations of parts, whereby the bearing of the car-body upon the truck is greatly increased in order to insure much greater stability to the ponderous mass while moving than has hitherto been attained with railway-cars; also, whereby the movements of the axles are readily controlled to bring them into the radial positions just hereinbefore indicated; also, whereby the jarring of the car-body and the impact of the wheels upon the rails are ameliorated in a very great degree and a steady motion given to the said body; also, whereby the elastic action between the trucks and the car-body is rendered much more sensitive in proportion to their permanence and power of resistance than has been obtainable by the use of springs arranged in any ordinary manner; also, whereby springs are applied in such manner as to give efficient support to the body of the car without interfering with the strength and effective working of the trucks; also, whereby the rear portion or section of each truck is strongly and firmly connected with the front portion or section thereof without interfering with the flexibility of the two parts of the truck with reference to each other.

Figure 1 is a side view or elevation of an apparatus constructed according to my said invention. Fig. 2 is an end view thereof. Fig. 3 is a plan view as the same appears when the car-body is removed from the trucks. Fig. 4 is a detail section showing one of the end springs of the car-axle as taken on the line z z of Fig. 2. Fig. 5 is a plan view, substantially on the same scale as Figs. 1, 2, &c., of the lower portion of the truck—that is to say, of the truck with its upper part removed. Fig.

6 is an inverted plan view of the car-body constructed for use in connection with other portions of my said invention. Fig. 7 is a plan view corresponding to Fig. 3, showing a modification of the construction, in which the reach is replaced by two cross-bars uniting the top frame. Fig. 8 is a side elevation corresponding to Fig. 7. Fig. 9 is a sectional detail view of the king-bolt block and the bars of the top frame on which it slides, the section being taken on the line x x of Figs. 2 and 3. Fig. 10 is a similar section on y y of Figs. 1 and 9.

Referring first to Fig. 5, A are axles corresponding to those of an ordinary truck, and each provided with the two wheels B. C are what I term "base-frames," the central portions of which are situated above the axles and are parallel therewith, but the end portions of which are expanded, with large openings a , through which the wheels B extend upward, so that whatever be the size of the wheel the frame C can always be placed immediately above the axle. The outer end, d , of each of the base-frames C is provided with boxes A', in which the ends of the axles A work in usual manner. Crossed or intersecting bars D have their ends attached to the base-frame C near the ends thereof, and from the center of one of the said frames to the center of the other frame extends a reach, E, the ends of which are pivoted to the said base-frame, as shown at c .

In Figs. 7 and 8 the reach E, connecting the base frames, is omitted, and the top frames, D', hereinafter to be described, are connected by crossed or intersecting bars D', situated in the same vertical plane as the lower bars, D.

It will be observed that the connection by means of the cross-bars D permits the axles A to be turned at any desired angle to each other, while the reach E, while permitting such turning of the axles, affords a tensile connection between the two base-frames C, which affords much greater strength and endures less strain than would be possible if reliance were had alone on the cross-bars D for connecting the two base-frames during the drawing or forward motion of the truck.

Referring more particularly to Figs. 1, 2, and 3 upon the top of each of the boxes A'—that

is to say, above the adjacent axle—is a fixed and inverted leaf spring, B', in a position parallel with the length of the truck. The two springs B' are connected at their front ends and also at their rear ends by other leaf springs, C', the connection between the ends of the springs being by means of shackles *d* or other suitable devices.

The springs B' C' constitute what I term "platform springs," which are virtually supported upon the base-frames C below, each of the base frames having a platform-spring, B' C', as aforesaid. Upon each of the platform-springs, and, of course, above the adjacent base-frame C, is placed a horizontal top frame, D', which may be most conveniently secured by means of bolts or clips *u* to the central and upwardly-projecting portions of the front and back springs C' of the base-frames C below. At the center of the forward top frame, B', is a king-bolt, E', and concentric with the said king-bolt is a fifth-wheel, F. The king-bolt E' is provided upon the block G, which is made in two halves, *m n*, each of which is provided with end flanges, as shown in Fig. 9, by which they are notched and bolted together and arranged to embrace in the opening between the said pieces *m n* the bars *f** of the forward top frame, D', so that the block G and the frame D' may be allowed a sliding movement with relation to each other, said movement being transversely to the axle, which movement is limited by cleats *o*, secured to the said bars *f**. The said block G works with its upper surface in contact with the lower surface of another block, G', secured to the under side of the car-body between the timbers *w*, the said piece G' being provided with a socket, E², to receive the upper part of the king-bolt, as shown in Figs. 6, 9, and 10. Fixed upon the rearmost of the top frames, D', is a curved guide or segment, H, and to the under side of the car-body is secured, as hereinafter described, the curved bar K, fitted into the guide-segment H. The segment H is not concentric with the king-bolt, but is curved from a center situated somewhere in front of the front axle, and which is formed in the manner described in my patent of November 12, 1872.

When, now, the truck is passing upon a curve sufficiently sharp to cause the rearmost top frame, D', to slide so far from the center line as to make the truck bind between the segment H and the king-bolt E', (if the latter were immovable,) this difference will be made up for and the objection overcome by the aforesaid slight sliding movement between the king-bolt block and the bar *f**.

I is an annular plate, which is fixed to the under side of the body of the car, as represented in Fig. 6, and which may be termed the "upper half" of the fifth-wheel.

In order to accommodate the placing of the segment H and bar K in any desired plane between the top frame, D', and the car-body W, and to make space between the bar K and the car-body for placing the brake-rods or for other

purpose, the said bar K is secured to the car-body by angular or V-shaped brackets *g*, as shown in Figs. 1 and 8, the said brackets having at the point of the V a lug or flange, *g*², which is fastened to the upper surface of the bar K and at the upper ends of the V flanges *g'* fastened to the under side of the car-body W. When the car body is put in its place, the king-bolt E' is fitted into the aforesaid socket E² of the block G' at the center of the annular plate I, and the bar K rests upon the sector H, being fitted more or less loosely between the upwardly-projecting flanges *b'* at the front and back of said sector.

When the car rounds a curve in the track, the axles and consequently the backward and forward portions of the trucks adjust themselves automatically in positions radial to the curve, and the car-body swings around the axis of the king-bolt E', and is permitted so to do by its movement laterally upon the sector H, the arrangement of the fifth-wheel, sector, &c., giving a broad and steady bearing of the car-body upon its support, which prevents undue jar and strain on the parts. Interposed between each end of each of the top plates, D', and the adjacent central upper side of the inverted spring B' is a spiral spring, L, which rests upon a cylindrical supporting-block, *h*, the upper end of which fits into a sleeve, *i*, which projects downward from the adjacent end of the top frame, D', the sleeve being thereby enabled to retain the spring L in position. By using these springs L in connection with the platform-springs to sustain the top frames, D', above the base-frame C greater sensitivity, combined with power of resisting weight, is secured than would be possible if reliance were had upon one or the other of the springs alone.

It will be observed that each axle, with its base-frame C, top frame, D', and attachment constitutes what may be termed a "single truck," two single trucks being used to constitute an entire truck, as the term would be naturally understood, inasmuch as the two single trucks, acting and operating together as such, are preferred to be used as one of the ordinary trucks on the end of a car-body; but if the car-body be short one single truck only may be used at each end; or, when desired, more than two of these single trucks may be joined to act in unison to constitute a compound truck to be used in lieu of the ordinary truck. This multiplication, however, of single trucks to form a compound truck need not be here specifically described. It will also be observed that while allowing of the described oscillations of the truck-axles the car-body itself acts as a substitute for the rigid separate frame, which in the ordinary four-wheel trucks holds the two axles always in a position parallel with each other.

In order to allow of making the base-frame C comparatively light, and yet give it strength enough to resist the twisting strain which will naturally be acting during the oscillation of

the axles at the points at which the bars D are pivoted to the said frames, I connect those opposite portions of the frame C inside of the wheels, which lie transversely to the axles, with strengthening-bars S, as shown in the drawings.

I am aware of Patents Nos. 128,533, 193,439, and 249,370, and I do not claim the constructions therein shown.

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

1. The direct combination of a car-body with two independent single trucks at each end thereof, the car-body resting directly upon all 15 of the said trucks and being connected with each of them at points above their axles, all substantially as and for the purpose herein set forth.

2. The combination, with a car body and 20 with two independent single trucks at each end thereof, the car-body resting directly upon and connected with each of said trucks at points above their axles, of the crossed bars D, pivoted at their ends to the said trucks, all substantially as and for the purpose herein set 25 forth.

3. The combination, with a car-body and with two independent single trucks at each end thereof, the car-body resting directly upon and 30 connected with each of said trucks at points above their axles, of the crossed bars D and the reach E, the said bars and reach being pivoted at their ends to the said trucks, substantially as specified.

35 4. The combination of the platform-springs B' C' with a top frame, D', base-frame C, axle-boxes A', and axles A, all substantially as and for the purpose herein set forth.

5. The combination, with a car-truck axle, 40 A, base-frame C, and top frame, D', of the side springs, B', the cross-springs C', connected by clips or bolts to the said top frame, and the shackles d, connecting the ends of said springs B' C', substantially as shown and described.

45 6. In combination with the top frame, D', side springs, B', cross springs C', and axle A, the springs L, interposed centrally upon the side springs, B', between the latter and the superjacent end portions of the top frame, D', 50 in position to support the said end portions upon the ends of the axle A, substantially as and for the purpose set forth.

7. The combination, with the car-body and with two independent single trucks at each 55 end thereof, of a fifth-wheel, F, arranged centrally above the axle of each of the extreme forward and the extreme rearward trucks, and the car-body resting upon the said fifth-wheels and having a suitable bearing upon each of

the other two single trucks, substantially as 60 and for the purpose set forth.

8. The combination of two single trucks connected by cross-bars D, each truck consisting of a wheeled axle, a base-frame, C, platform-springs B' C', and a top frame, D', 65 one of the said trucks having directly above its axle a fifth-wheel, F, and a king-bolt, E', and the other truck being provided with a segmental guide, H, with a car-body resting directly upon the said trucks and having upon its under side a slide-bar, K, fitting the said segment H, and having also near its end an annular plate, I, and a socket, E'', fitting the said 70 fifth-wheel F and king-bolt E', respectively, substantially as shown and described.

9. The combination, with the car-body W and the top frames, D', independent of the car-body, and the journal-boxes A', of the springs L, the sleeves i, inclosing the said springs, the spring-supports h, fitting in the said 80 sleeves, the boxes A', and top frames, D', the said springs L, sleeves i, and supports h being placed between the journal-boxes and the end portions of the top frames, D', in position to support the said end portions upon the ends 85 of the axle, all substantially as and for the purpose herein set forth.

10. The bar S, in combination with the base-frame C, having axle-boxes A', and the crossed connecting-bars D, substantially as and for 90 the purpose set forth.

11. The combination of the car-body W, provided with the curved bar K and with means for retaining the king-bolt E' in a fixed position, with the two single trucks, the rear- 95 most being provided with the guide-segment H, eccentric with the king-bolt, and the foremost having a sliding block, G, pivoted upon the king-bolt and reciprocally movable transversely to the truck-axle, substantially as and 100 for the purpose set forth.

12. In a car connected by a segmental guide with the subjacent truck, the combination, with the body W and the curved bar K, or its substantial equivalent, of intermediate fasten- 105 ing devices, g, affording a free space above the said bar between the same and car-body for receiving the brake-rods, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as 110 my invention I have signed my name, in presence of two witnesses, this 16th day of June, 1885.

WALTER YOUMANS.

Witnesses:

A. W. ALMQVIST,
GUNVALD AAS.