

(No Model.)

2 Sheets—Sheet 1.

C. W. KING.  
CAR TRUCK.

No. 553,346.

Patented Jan. 21, 1896.

Fig. 1.

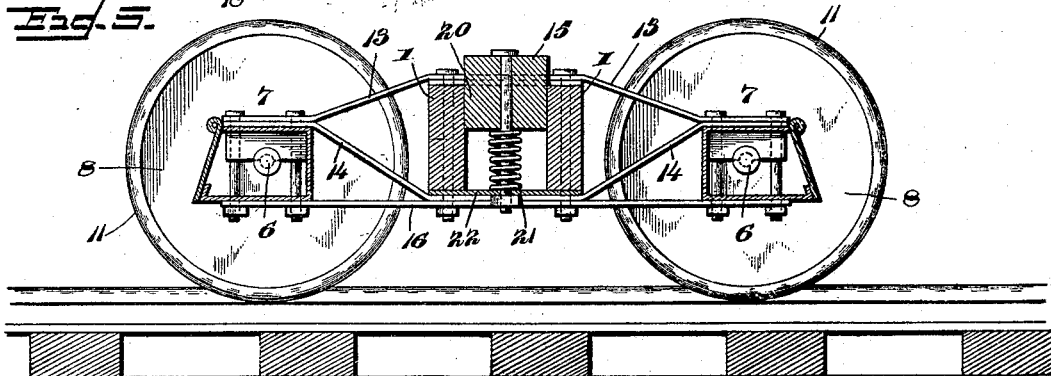
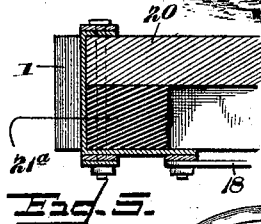
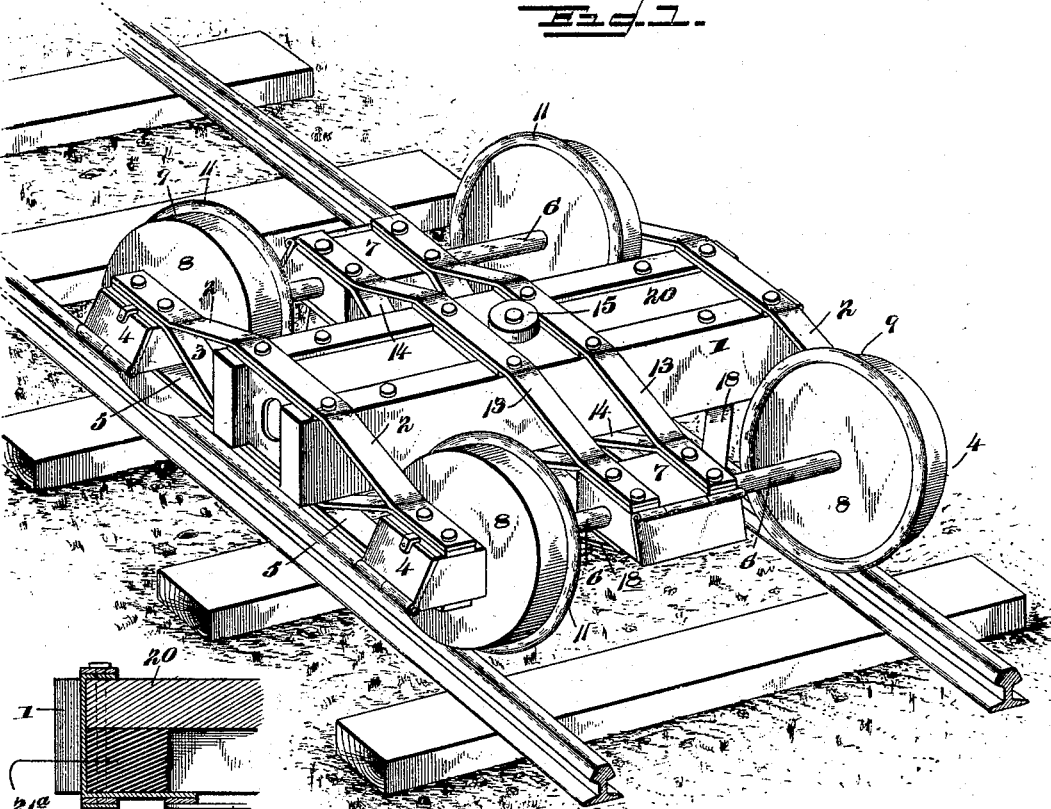


Fig. 3.

Inventor

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Witnesses

*C. S. Stewart*  
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By *his* Attorneys.

*Cash & Co.*

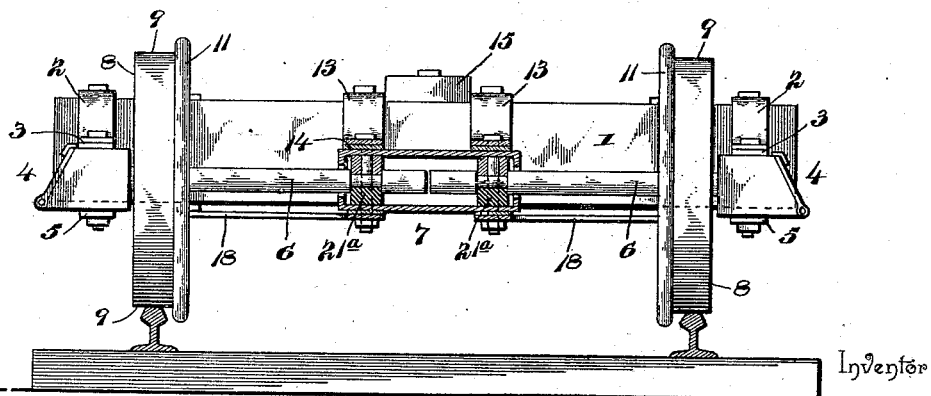
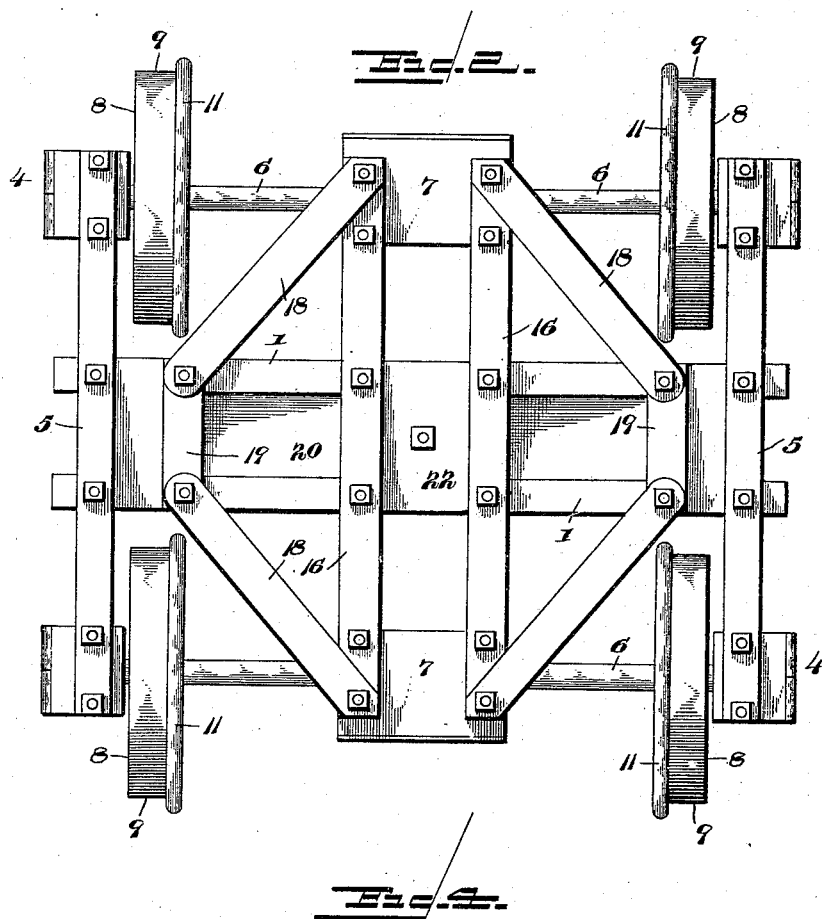
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2 Sheets—Sheet 2.

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No. 553,346.

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Witnesses

*E. H. Stewart*  
*J. H. Piley*

By *his* Attorneys,

*Calvin W. King*

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# UNITED STATES PATENT OFFICE.

CALVIN W. KING, OF SEYMOUR, MISSOURI, ASSIGNOR OF ONE-HALF TO  
W. R. JACKSON, S. L. WHITE, J. W. FUSON, AND J. R. TAGGARD, OF  
SAME PLACE.

## CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 553,346, dated January 21, 1896.

Application filed September 10, 1894. Serial No. 522,637. (No model.)

*To all whom it may concern:*

Be it known that I, CALVIN W. KING, a citizen of the United States, residing at Seymour, in the county of Webster and State of Missouri, have invented a new and useful Car-Truck, of which the following is a specification.

My invention relates to car-trucks, and has for its object to provide a simple and improved construction and manner of bracing and connecting the parts of a car-truck whereby the weight of the car is distributed and whereby straining of the members of the structure is avoided.

The car-truck embodying my invention is of the class in which a divided axle is employed, and in order to secure a direct vertical pressure upon the treads of the rails I prefer to employ wheels having cylindrical instead of conical treads, and in mounting the frame of the truck upon the axles it is my object to apply approximately three-fourths of the weight to the outer or stub portions of the axles in order to produce an upward pressure of the inner ends of the axles resisted by only one-fourth of the weight applied to each axle. This distribution of the weight brings it contiguous to the planes of the wheels, and, therefore, reduces the leverage to the minimum and applies the weight approximately in the planes of the wheels, and hence in the planes of the rails. The inner or intermediate journal-boxes, therefore, bear only a small percentage of the weight applied to the truck, and hence are adapted to be braced strongly to resist the rearward pressure of the inner ends of the axle members and also to resist any tendency of the truck to twist in rounding curves or when a side strain is caused by the rolling of the car.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a car-truck constructed in accordance with my invention. Fig. 2 is a bottom plan view of the same. Fig. 3 is a central longitudinal section. Fig. 4 is a transverse section taken in the plane of one of the axles.

Fig. 5 is a detail transverse section to show one of the end bolster-cushions.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

In the truck embodying my invention the only heavy beams employed are the transverse parallel transoms 1, which are arranged between the front and rear pairs of wheels 8 and are separated to form an interval sufficient to receive the vertically-movable bolster 20, under which are arranged the end cushions 21<sup>a</sup> and the central cushion 21, said central cushion being seated at its lower end upon a bearing-plate 22. The truck-plate 15 is arranged at the center of the bolster.

The side journal-boxes 4 are supported by upper and lower side trusses 2 and 3, the centers of which extend, respectively, above and below the ends of the transoms and the extremities of which are secured to the upper sides of the journal-boxes, and the intermediate journal-boxes 7 are supported by means of central parallel upper and lower trusses 13 and 14, which also pass above and below the transoms upon opposite sides of the truck-plate 15 and are bolted at their extremities to the said boxes.

In addition to the trusses thus employed to support the journal-boxes I arrange longitudinal side tie-bars 5, bolted at their extremities to the under sides of the side journal-boxes and at their centers to the lower edges of the transoms, and central tie-bars 16, which are arranged in a similar position, respectively, in the planes of the central trusses, with their extremities bolted to the under sides of the intermediate journal-boxes and their centers to the lower edges of the transoms.

Thus far I have described the skeleton of the improved truck, which consists, essentially, of transverse parallel transoms and parallel side and central trusses supporting the journal-boxes and additionally braced by tie-bars, arranged, respectively, in the planes of the trusses. I have found, however, that while efficient under ordinary circumstances, this construction alone is insufficient to resist the twisting and lateral strains caused in rounding curves and produced by the rolling of the

car-bodies, and therefore, in addition to the above, I employ a series of horizontal diagonally-disposed braces 18, which are bolted at their front ends to the under sides of the intermediate journal-boxes and diverge, respectively, forwardly and rearwardly toward their free ends and are bolted to the lower edges of the transoms contiguous to the planes of the side trusses, whereby said braces are arranged approximately in the form of a square, with the angles located, respectively, at the intermediate journal-boxes and near the extremities of the transoms. This prevents the twisting of the parts to cause the disarrangement of the transoms and intermediate journal-boxes, and at the same time any strain upon the intermediate journal-boxes tending to force them toward the planes of the transoms. In other words, these braces insure the rigidity of the skeleton frame above described, and therefore guard against the displacement of any of the parts due to the looseness of joints.

In order to prevent the overstraining of the transoms near their extremities, I employ connecting-plates 19 between the contiguous extremities of the braces 18 and arranged in contact with the lower edges of the transoms, whereby the bolts which secure the braces to the transoms pass through said plates.

The wheels 8 are carried, respectively, by the axle members 6, which are mounted at their outer extremities in the side and at their inner extremities in the intermediate journal-boxes, said wheels having the preferred cylindrical treads 9 and flanges 11.

From the above description it will be seen that the intermediate trusses 13 and 14, which pass over and under the transoms at an intermediate point, are arranged in planes, respectively, upon opposite sides of the central cushion 21, or, in other words, upon opposite sides of the central application of weight from the bolster to the truck, whereby depression of the centers of the transoms is prevented, and weight applied to the centers thereof is communicated to the journal-boxes by the intermediate trusses. This central cushion, however, is preferably made of less resisting power than the terminal cushions 21<sup>a</sup>, whereby the larger percentage of the weight applied to the truck is transmitted thereto through said terminal cushions 21<sup>a</sup>, and is thence communicated through the side trusses and connections to the side journal-boxes. In this way the majority of the weight supported by the truck is communicated to the exterior stub portions or extremities of the axle members, and is, therefore, applied to the wheels approximately in the planes thereof. This arrangement avoids side strain or leverage and causes an upward pressure of the inner extremities of the axle members instead of a downward pressure, while the weight applied to said inner extremities of the axle members, through the intermediate

trusses 13 and 14, is only sufficient to hold the parts properly in place and resist the upward pressure.

From the foregoing it will be seen that the construction of the improved truck is simple, and that the members thereof are arranged in the planes of strain which, in rounding curves, invariably assumes a position at an inclination to the longitudinal center of the truck, and hence is liable to cause disarrangement of the parts of the truck by reason of the twist or lateral strain.

It will be seen, furthermore, that the tie-bars 5 and 16 are straight throughout, inasmuch as the lower sides of the journal-boxes are arranged in the planes of the lower edges of the transoms, and, furthermore, said tie-bars are arranged in the same plane with the diagonally-disposed braces 18, whereby upward or downward strain caused by an inclined arrangement of the bracing devices is avoided. The upper and lower edges of the transoms are arranged approximately an equal distance above and below the tops of the journal-boxes, whereby the upward and downward deflection of the intermediate portions of the trusses are equal.

The novelty of the above-described invention resides in the specific relative arrangement of the means for distributing the strain and preventing the twisting incident thereto. An important factor of the construction resides in the arrangement of the longitudinal tie-bars 5 and 16 and the diagonally-disposed braces 18 in a common horizontal plane, whereby said parts are mutually supporting and combine to distribute any strain applied in a horizontal direction throughout the entire structure of the truck. Said tie-bars and braces unify and insure the rigidity of the device. When said tie-bars and braces are combined, as above described, with the divided trusses which serve to distribute vertical strain throughout the truck the result is a structure which is adapted to resist any vertical strain, while the weight is reduced to the minimum.

Having described my invention, what I claim is—

1. A truck having transverse transoms, side and intermediate journal-boxes in front and in rear of the transoms, and wheels having independent axles mounted at their outer ends in the side and at their inner ends in the intermediate journal-boxes, the front and rear journal-boxes being connected by longitudinal tie-bars intersecting and secured to the transoms, and, in combination therewith, the horizontal diagonal braces arranged below the plane of the wheel-axles and respectively connecting the intermediate journal-boxes with the extremities of the transoms, substantially as specified.

2. A truck having parallel transverse transoms, a cushion-supported bolster arranged between the transoms, side and intermediate

journal boxes, side and intermediate trusses  
consisting, respectively, of upper and lower  
bars 2 and 3, 13 and 14, the extremities of the  
trusses being secured to the upper sides of  
5 the journal boxes whereby the lower sides of  
the journal boxes are arranged approximately  
in the same horizontal plane with the lower  
edges of the transoms, longitudinal tie-bars  
arranged, respectively, in the vertical planes  
10 of the side and intermediate trusses and bolted  
at their extremities to the lower sides of the  
journal boxes and transoms, and horizontal  
diagonally-disposed braces arranged approxi-  
mately in the plane of said tie-bars and hav-  
15 ing their inner ends secured to the interme-

diate journal boxes and their outer ends to  
the transoms and contiguous to the planes of  
the side trusses, whereby horizontal strain is  
distributed by the tie-bars and diagonal  
braces, and vertical strain by the parallel side 20  
and intermediate trusses, to all parts of the  
truck, substantially as specified.

In testimony that I claim the foregoing as  
my own I have hereto affixed my signature in  
the presence of two witnesses.

CALVIN W. KING.

Witnesses:

THOMAS A. WARREN,  
I. M. BURRIS.