(No Model.) 3 Sheets—Sheet 1.

# W. F. RICHARDS.

## CAR TRUCK.

No. 594,559. Patented Nov. 30, 1897.

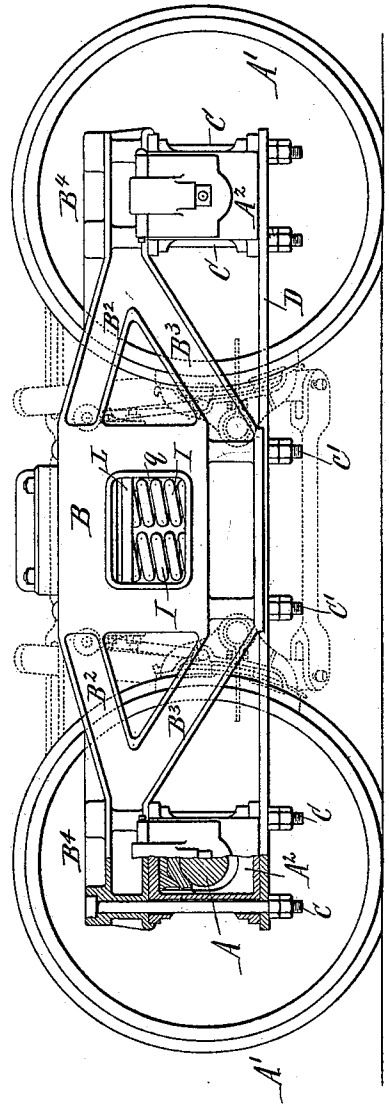



Fig. 1.

WITNESSES:

Chas. F. Burkhardt.

Henry L. Decker.

W. F. Richards INVENTOR.

By Wilhelm & Bonner

ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

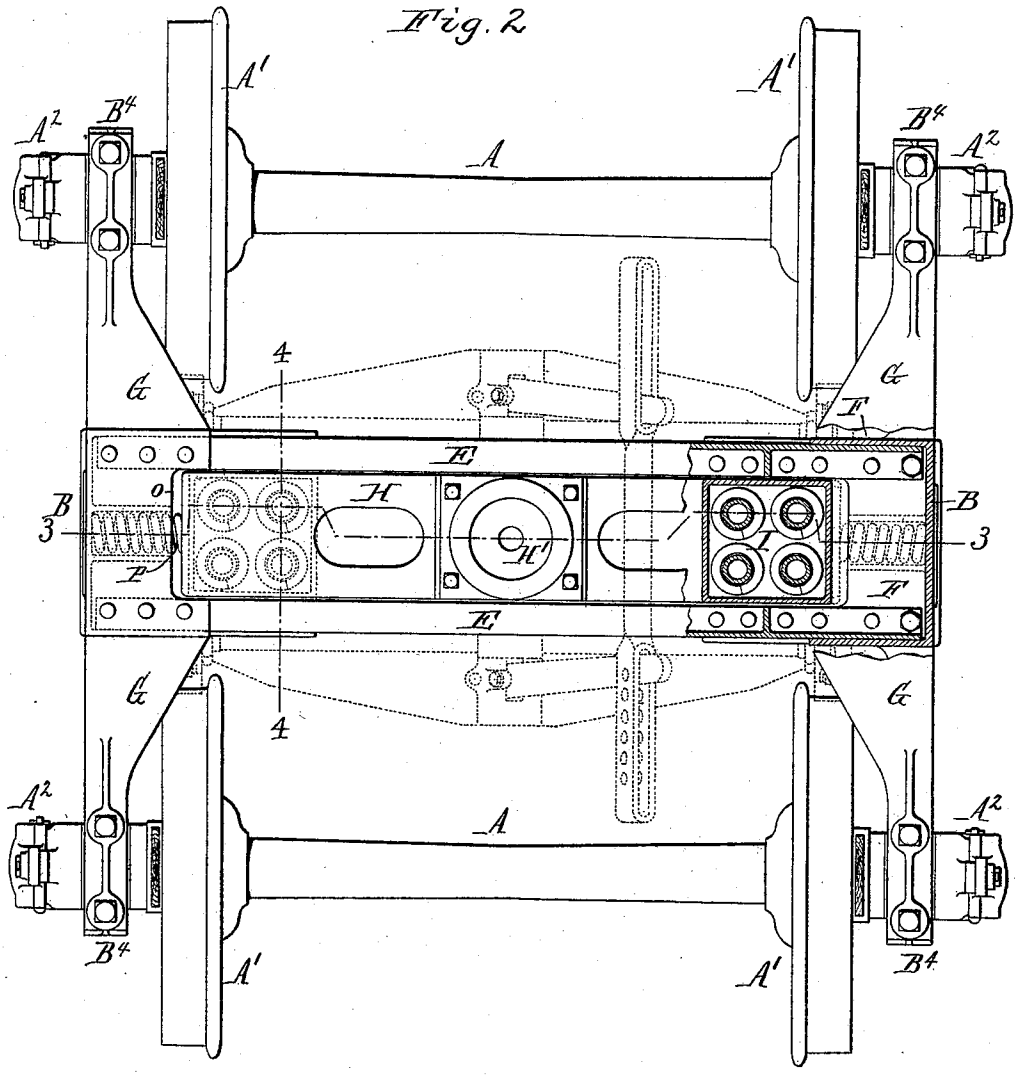
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## CAR TRUCK.

No. 594,559. Patented Nov. 30, 1897.

Fig. 2




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# W. F. RICHARDS.

## CAR TRUCK.

No. 594,559. Patented Nov. 30, 1897.

*Fig. 3.*

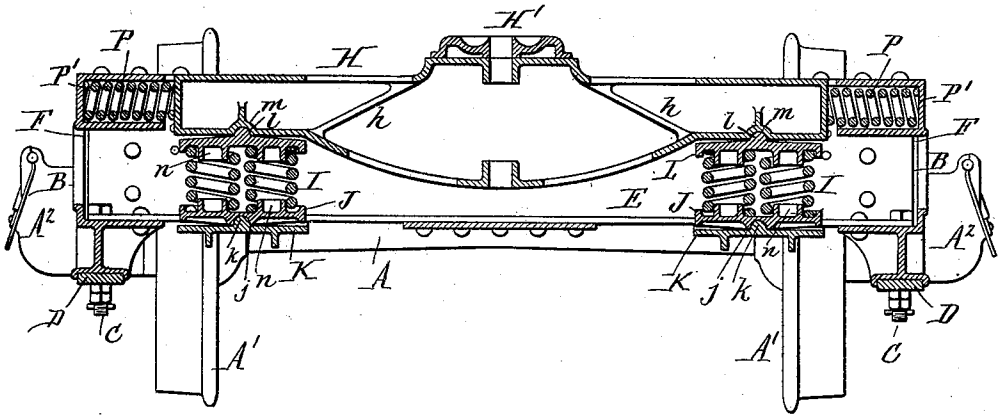
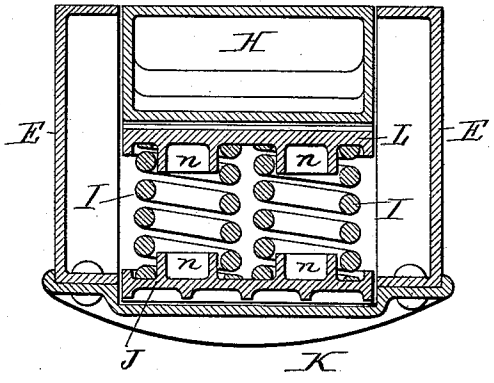



*Fig. 4.*




WITNESSES:

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# UNITED STATES PATENT OFFICE.

WILLARD F. RICHARDS, OF BUFFALO, NEW YORK, ASSIGNOR TO THE GOULD COUPLER COMPANY, OF NEW YORK, N. Y.

## CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 594,559, dated November 30, 1897.

Application filed January 27, 1897. Serial No. 620,852. (No model.)

*To all whom it may concern:*

Be it known that I, WILLARD F. RICHARDS, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Car-Trucks, of which the following is a specification.

This invention relates to that class of car-trucks in which the bolster is capable of a limited lateral motion independently of the truck, such trucks being commonly termed "swing-motion" or "swing-bolster" trucks.

The object of my invention is to simplify the construction and reduce the cost of such trucks and to render the same more compact.

In the accompanying drawings, consisting of three sheets, Figure 1 is a side elevation of my improved car-truck. Fig. 2 is a top plan view thereof, partly in section. Fig. 3 is a transverse section thereof in line 3 3, Fig. 2. Fig. 4 is an enlarged transverse section of the bolster and adjacent parts in line 4 4, Fig. 2.

Like letters of reference refer to like parts in the several figures.

A A are the axles, A′ the wheels, and $A^2$ the axle-boxes, arranged at the ends of the side frames of the truck.

The side frames are preferably constructed after the pattern of the well-known "diamond truck," as shown in the drawings, and each frame comprises a rectangular panel B, forming the central portion of the frame, upper arch-bars $B^2$, extending downwardly and outwardly in opposite directions from the upper corners of the central panel B, lower inverted arch-bars $B^3$, extending upwardly and outwardly from the lower corners of the central panel and united at their outer ends with the upper arch-bars, and horizontal lugs or extensions $B^4$, which project outwardly from the junction of the upper arch-bars and lower arch-bars. The axle-boxes $A^2$ are secured to the under side of these extensions by vertical bolts C. All of these several parts of each side frame, except the axle-boxes, are preferably formed in a single piece of cast metal, such as malleable iron or cast-steel. As shown in Fig. 1, the upper and lower arch-bars are provided with marginal stiffening ribs or flanges.

D is the usual tie-bar, secured to the lower ends of the axle-boxes by the bolts C and to the lower central portion of the side frame by bolts C′.

E represents the transoms which rigidly connect the side frames and which are separated by an intervening space and seated with their end portions in rectangular pockets F, extending inwardly from the central portions or panels B of the side frames, these panels forming the outer ends of the pockets. Each transom preferably consists of a channel bar or beam having its web arranged vertically and its flanges facing inwardly, as shown in Figs. 2 and 4. The upper ends of the pockets F are connected with the upper arch-bars $B^2$ by horizontal reinforcing ribs or flanges G, which increase in width toward the pockets, as shown in Fig. 2, and serve to give the pockets and the side frame the necessary strength and stiffness.

H is the laterally-movable bolster, which occupies the upper portion of the space between the parallel transoms E and which is preferably hollow and constructed of cast metal, and H′ is the center plate of the bolster. The central portion of the bolster is preferably widened or bellied and is reinforced on both sides by diagonal ribs *h* to give it the necessary strength. The bolster is yieldingly sustained by springs I, arranged under its reduced end portions and carried by the transoms. A set of four springs is preferably arranged at each end of the bolster, as shown, and the springs of each set rest upon a transversely-rocking spring seat or plate J, which is in turn supported upon a horizontal base-plate K, bridging the space between the transoms, and firmly secured to the lower flanges thereof, as shown in Fig. 4. This base-plate is provided centrally on its upper side with a raised convex rib *k*, arranged lengthwise of the truck, and the rocking spring-seat J is provided centrally on its under side with a corresponding longitudinal groove or depression *j*, which receives the rib of the spring-seat. The under side of the spring-seat is convex or inclined from its sides toward its concave seat, so as to allow the same to rock freely on the rib of the base-plate to a limited extent. The end portions

of the bolster rest upon similar upper rocking plates, caps, or followers L, which in turn rest upon the springs I. Each of these rocking caps is provided on its upper side with a raised convex rib *l*, arranged lengthwise of the truck and seated in a concave socket or depression *m*, formed in the under side of the bolster, and the upper side of the cap is convex or inclined from its pivot-rib *l* toward its sides to permit a rocking motion thereof. As shown in Figs. 3 and 4, the rocking cap L and spring-seat J have projecting studs *n*, which enter the ends of the springs I and retain the same in place. The stiffening-flanges G of the side frames are recessed, as shown at *o*, Fig. 2, to afford the necessary lateral play.

By providing a laterally-rocking seat or support for the bolster-springs and interposing a similar rocking support or cap between the upper ends of the springs and the bolster the latter is capable of a free lateral motion similar to that of the well-known "swing-motion bolster," which is sustained by a laterally-swinging plank or beam suspended by links or hangers. In my improved construction the bolster-springs are carried by the transoms and no additional supports, such as the spring-plank and hangers of the usual swing-bolster, are required, thus simplifying the construction of the truck and reducing its cost. The ends of the bolster do not extend beyond the side frames of the truck, but terminate at a distance from the frame, rendering the construction more compact.

P P represent springs or yielding cushions which are arranged between the ends of the bolster and the side frames of the truck and which check the lateral vibrations of the bolster and relieve the truck from the shocks or jars which it would receive by the employment of rigid end stops for the bolster. These springs are arranged horizontally in transverse sockets or housings P′, located centrally in the upper portion of the pockets F of the side frames, and bear at their inner ends against the ends of the bolster and at their opposite ends against the closed bottoms of their housings, as shown in Fig. 4.

In order to reduce the weight of the side frames and permit convenient inspection of the bolster-springs, the center panels of the frames are formed with openings *q*.

It is obvious that the arrangement of the pivot-ribs and depressions of the rocking spring-seats J and the base-plates K might be reversed, the ribs being arranged in the spring-seats and the depressions in the base-plates, and that the ribs and depressions of the spring-caps L and the bolster might be likewise reversed, if desired.

I claim as my invention—

1. The combination with the side frames of a car-truck, and a transom connecting the same, of a base-plate carried by the transom, a rocking spring-seat pivotally mounted on said base-plate by corresponding ribs and depressions arranged on the opposing faces of the base-plate and spring-seat, springs resting on said rocking seats, and a bolster supported on said springs, substantially as set forth.

2. The combination with the side frames of a car-truck, and a transom connecting the same, of springs supported on said transom, a bolster, springs and rocking caps interposed between said springs and said bolster and having a pivotal bearing against the bolster consisting of corresponding ribs and depressions arranged on the opposing faces of the bolster and the rocking caps, substantially as set forth.

3. The combination with the side frames of a car-truck, and a pair of separated transoms connecting the same, of base-plates bridging the transom and each provided on its upper side with a convex pivot-rib, rocking spring-seats having central concave depressions resting on said ribs, springs resting on said seats, rocking caps supported on said springs and each having a central convex pivot-rib on its upper side, and a bolster supported on said caps and having concave depressions which receive the pivot-ribs of the caps, substantially as set forth.

Witness my hand this 23d day of January, 1897.

WILLARD F. RICHARDS.

Witnesses:
KATHRYN ELMORE,
ELLA R. DEAN.