(No Model.) 3 Sheets—Sheet 1.

# E. CLIFF.

## CAR TRUCK.

No. 564,363. Patented July 21, 1896.

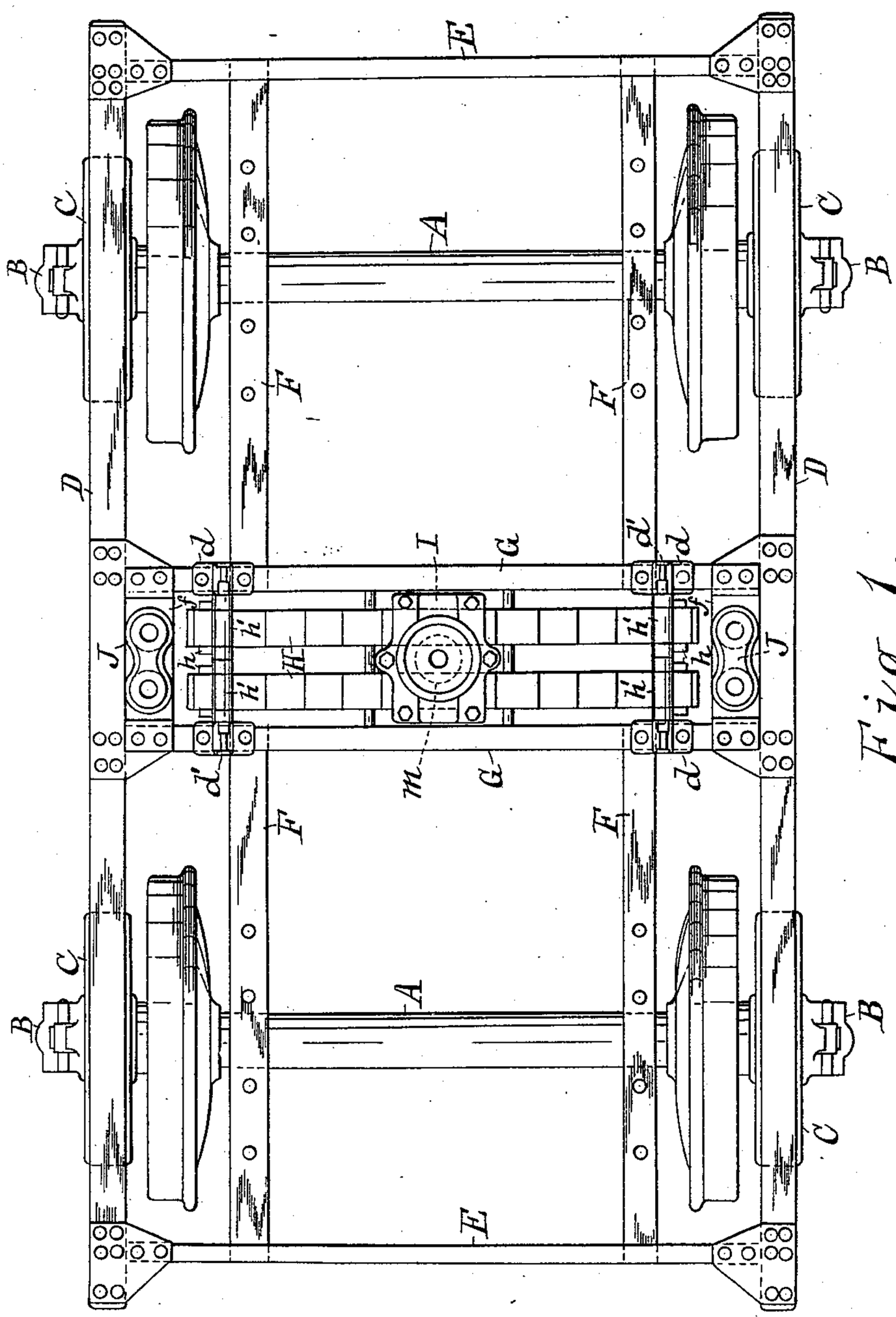


Fig. 1.

Witnesses.
R. S. Dewey.
H. M. Seamans

Inventor.
Edward Cliff
By C. H. Duell
his Attorney.

(No Model.) 3 Sheets—Sheet 2.

# E. CLIFF.

## CAR TRUCK.

No. 564,363. Patented July 21, 1896.

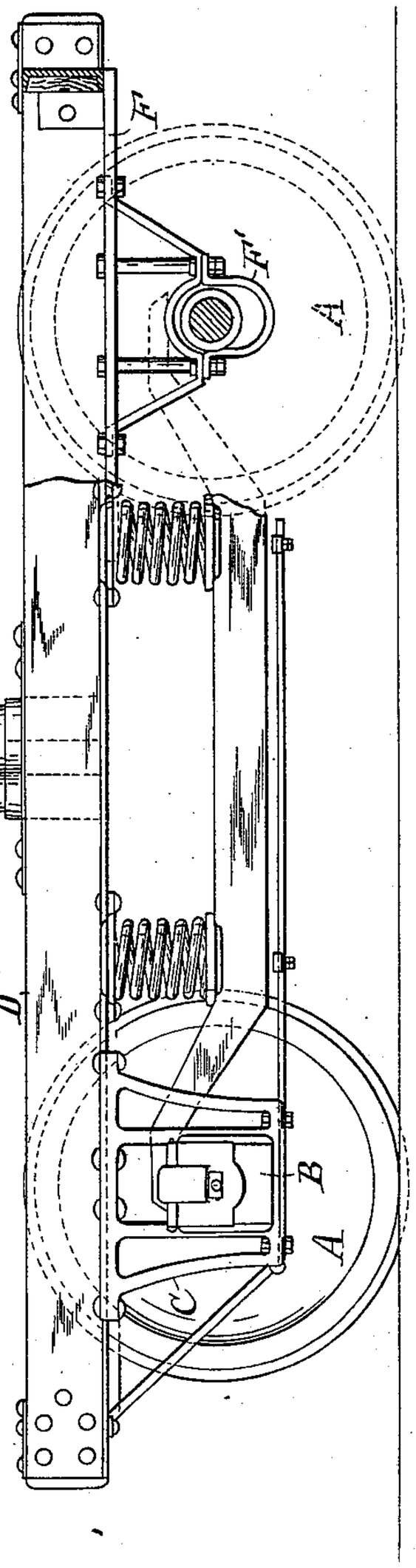


Fig. 2.

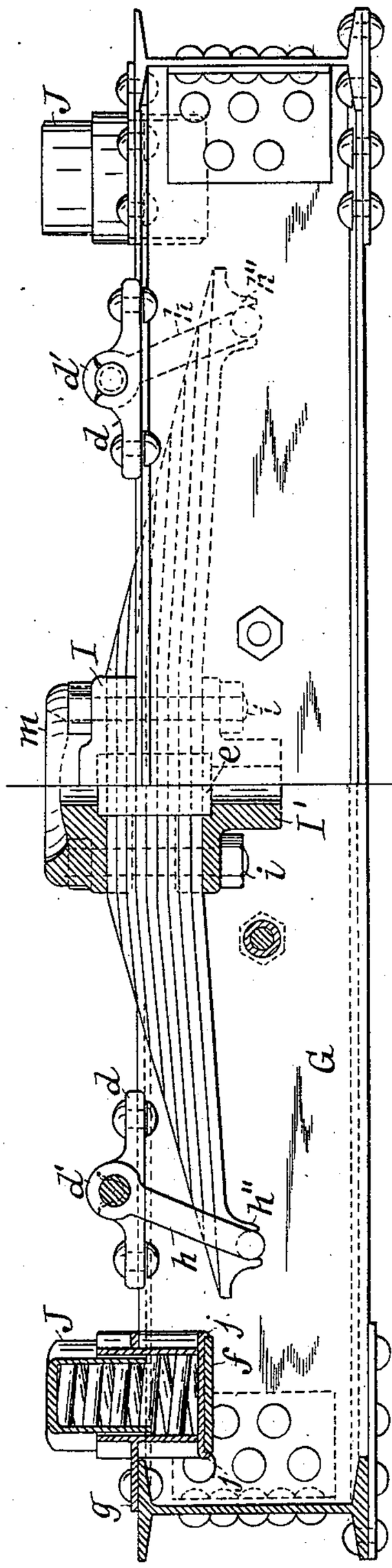


Fig. 3.

Witnesses.
R. S. Davey.
H. M. Seamans

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Edward Cliff
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his Attorney.

(No Model.)

3 Sheets—Sheet 3.

# E. CLIFF.

## CAR TRUCK.

No. 564,363. Patented July 21, 1896.

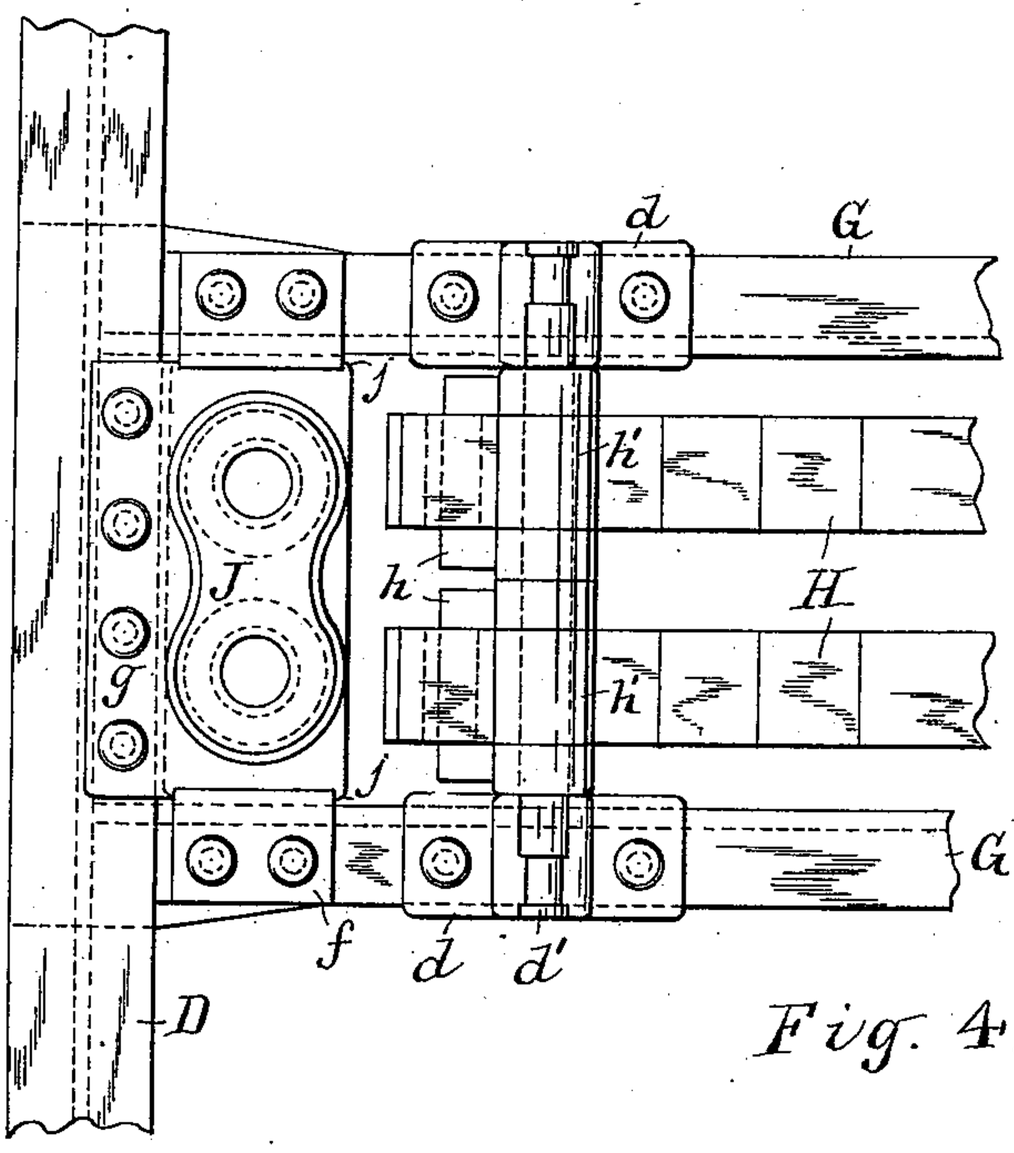


Fig. 4.

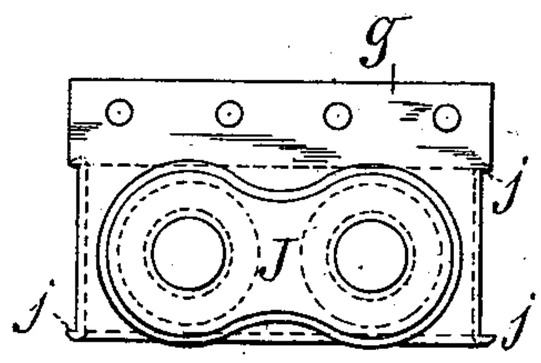


Fig. 5.

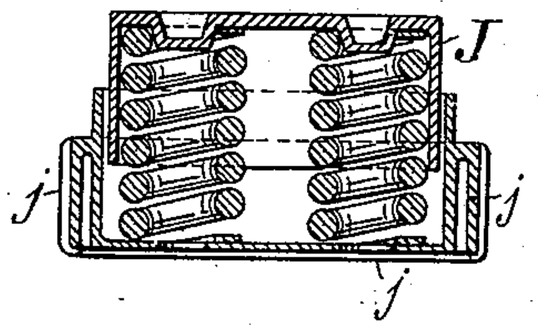


Fig. 6.

Witnesses.
R. S. Lacey.
H. M. Seamans

Inventor.
Edward Cliff
By C. H. Duell
his Attorney.

# UNITED STATES PATENT OFFICE.

EDWARD CLIFF, OF NEWARK, NEW JERSEY.

## CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 564,363, dated July 21, 1896.

Application filed May 11, 1896. Serial No. 591,006. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD CLIFF, of Newark, in the county of Essex, in the State of New Jersey, have invented new and useful Improvements in Car-Trucks, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to car-trucks for passenger-cars; and the object is to provide a truck that is simple and durable, and at the same time more easy-riding or capable of carrying a load without undue jarring or jolting.

To this end my invention consists in the combination, with the wheels, axles, and frame, of a bolster formed of a plurality of semielliptic springs extending across the truck between the sides of the frame, cross-bars connecting the sides of the frame, supports between the cross-bars and the ends of the springs, and a plate or beam carrying the center plate or bearing of the truck secured to the centers of the said plurality of springs.

My invention consists also in the combination of the wheels, axles, and side beams, with yielding side bearings between the side beams and held partly below the top sides of said beams; and my invention consists also in certain other combinations of parts hereinafter described, and specifically set forth in the claims.

In the drawings hereto annexed and forming a part of this specification, Figure 1 is a top plan view of a car-truck embodying my invention. Fig. 2 is a side elevation of the same. Fig. 3 is an enlarged end elevation of the truck-frame, partly in section. Fig. 4 is a top plan view of the portion of the truck at the side bearing; and Figs. 5 and 6 are top and longitudinal sectional views, respectively, of the side bearing removed from the truck-frame.

Referring specifically to the drawings, A A are the axles and wheels.

B B are the axle-boxes.

C C are the pedestals inclosing the boxes, and D D are the side beams of the frame, which are preferably formed of metallic I-beams.

E E are channeled steel end beams joining the side beams together.

F F, &c., are beams running parallel with but between the side beams to support the safety-straps F′ for the axles, and G G are cross-beams joining the side beams together between the wheels, supporting the inner ends of the beams F F, and also forming the supports for the hangers of the bolster.

The bolster of the truck is formed of a plurality of semielliptic springs H H, the upper parts of full elliptic springs, as shown clearly in the drawings. These springs are arranged side by side, parallel with each other, and are supported at their ends from the cross-beams G G by means of hangers *d d*, mounted on said cross-beams, and links *h*. The hangers *d* consist of plates provided with sockets to receive the ends of a bolt or bar *d′*, preferably in the shape of an axle, so that it cannot move endwise. This bolt or axle extends across between the two bearings, parallel with the side beams D D. The links *h* for the springs H H are strung upon the bar *d′*, with short pieces of pipe *h′* between their eyes. The ends of the lower or longest leaf of the spring H is provided with sockets or bearings *h″ h″* to retain the links.

Only two semielliptic springs are shown forming the bolster, but of course any suitable number may be employed. Resting upon the centers of these springs is a plate I, having the center bearing *m* of the truck. Another plate I′ is placed below the centers of the springs, and the two plates are rigidly secured together and to the springs by bolts *i*, passing through the plates, between and on each side of the springs. The leaves of each spring are shown held together at the center by the ordinary band *e*.

Upon opposite sides of the plate I, near the centers of the side beams D D, but between them, I mount the yielding side bearings J. These side bearings are similar in shape to the well-known "King side bearing," which has a plurality of coiled springs inclosed by a case which holds the springs in place, and is formed in two parts which slide one within the other. Such a side bearing, if mounted on the top side of the side beams D, would be too high unless the center plate I was raised. In order to keep the center plate as low as possible and at the same time use these side bearings, I sink the same and support

them partly below the top sides of the side beams and on the inside of the latter. Each side bearing is supported in a right-angular saddle *f*, which is secured at its ends, resting upon the top sides of the cross-beams G G, its central portion being depressed. Ribs *j* on the sides and bottom of the stationary or lower part of the casing of the side bearing engage the edges of the saddle. The side bearing is also provided with a broad horizontal flange *g* on one side, which lies on the top side of the side beam D, and is there riveted securely in place.

It will be obvious that my invention does away with the old form of bolster for car-trucks, the sand-planks of wood, and the hangers usually employed, and this without connecting directly the hangers for the bolster with the side beams D D of the truck-frame.

I do not desire to be limited to the precise forms of construction shown herein, as they may be varied without departing from my invention.

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 the wheels, axles, and frame, of a bolster formed of a plurality of semielliptic springs extending across the truck between the sides of the frame, cross-bars connecting the sides of the frame, supports between the cross-bars and the ends of the springs, and the center plate secured to the bolster and connecting the springs together, as set forth.

2. In a car-truck, the combination with the wheels, axles, and frame, of a bolster formed of a plurality of semielliptic springs extending across the truck between the sides of the frame, cross-bars connecting the sides of the frame together, bars extending between and supported on the cross-bars, links connecting the said bars with the ends of the springs, and the center plate secured to the bolster and connecting the springs together, as set forth.

3. In a car-truck, the combination with the wheels, axles, and frame, of a bolster formed of a plurality of semielliptic springs extending across the truck between the sides of the frame, cross-bars connecting the sides of the frame together, bearing-plates on the cross-bars, axles on the bearing-plates extending between the cross-bars, links mounted on the axles and forming hangers for the ends of the springs, and the center plate secured to the centers of the springs, as set forth.

4. In a car-truck, the combination of the wheels, axles, side beams and cross-bars, saddles between the side beams and extending between the cross-bars, the end portions of the saddles lying on the upper sides of the cross-bars and the central portions of said saddles lying below the top sides of the side beams, and yielding side bearings containing coiled springs supported on said saddles, as set forth.

5. In a car-truck, the combination of the wheels, axles, side beams and cross-bars, saddles extending between the cross-bars, the central portions of said saddles lying below the top sides of the side beams, and yielding side bearings supported on said saddles and provided with flanges bearing upon the top sides of the side beams, as set forth.

6. In a car-truck, the combination of the wheels, axles, side beams and cross-bars, saddles extending between the cross-bars, the central portions of said saddles being depressed below the top sides of the side beams, and the end portions lying on the upper side of the cross-bars, and spring side bearings supported on said saddles and on the side beams, and provided with suitable securing means, the springs of said bearings being inclosed by a case, substantially as described and shown.

7. In a car-truck, the combination with the wheels, axles, and frame, of a bolster formed of a plurality of semielliptic springs extending across the truck between the sides of the frame, cross-bars connecting the sides of the frame, hangers between the cross-bars and the ends of the springs, the center plate secured to the bolster and connecting the springs together, and yielding side bearings between the side beams and supported partly below the top sides of said beams, as set forth.

8. In a car-truck, the combination with the wheels, axles and frame, of a bolster formed of a plurality of semielliptic springs extending across the truck between the sides of the frame, cross-bars connecting the sides of the frame, hangers between the cross-bars and the ends of the springs, the center plate secured to the bolster and connecting the springs together, saddles between the cross-bars, the central portions of said saddles lying below the top sides of the side beams, and yielding side bearings supported on said saddles and provided with horizontal flanges bearing upon the top sides of the side beams, as set forth.

9. In a car-truck, the combination with the wheels, axles and frame, of a bolster formed of a plurality of semielliptic springs extending across the truck between the sides of the frame, cross-bars connecting the sides of the frame together, bearing-plates on the cross-bars, axles on the bearing-plates extending between the cross-bars, links mounted on the axles and forming hangers for the ends of the springs, the center plates secured to the centers of the springs, saddles between the cross-bars having their central portions depressed below the top sides of the side beams, and spring side bearings supported on said saddles and provided with horizontal flanges bearing upon the top sides of the side beams, substantially as described and shown.

In testimony whereof I have hereunto signed my name.

EDWARD CLIFF. [L. S.]

Witnesses:
W. L. SAWYER,
F. M. BLOCKLEY.