(No Model.) 4 Sheets—Sheet 1.

J. C. BARBER.

CAR TRUCK.

No. 565,421. Patented Aug. 11, 1896.

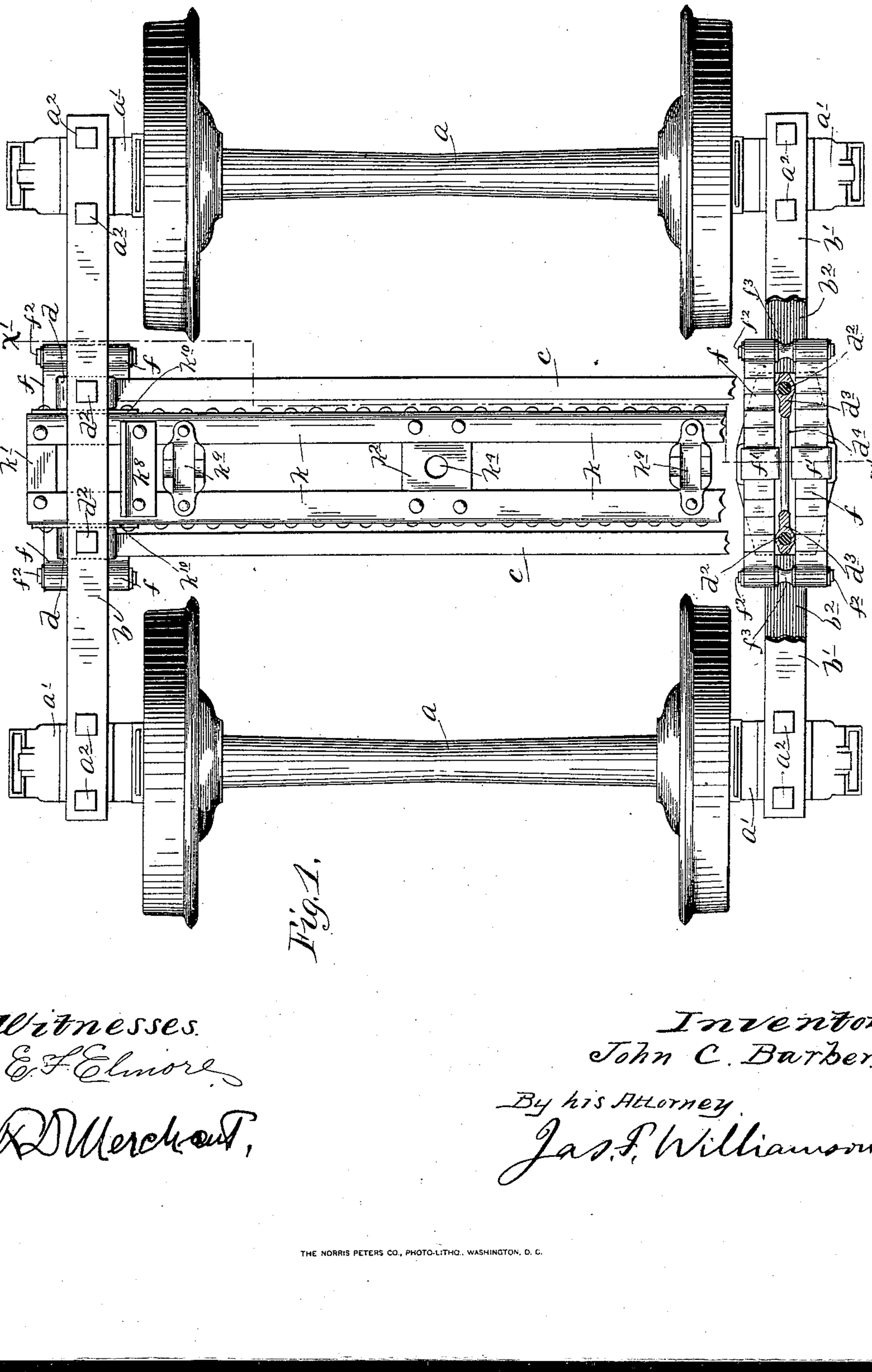

Fig. 1.

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R. D. Merchant.

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(No Model.) 4 Sheets—Sheet 2.

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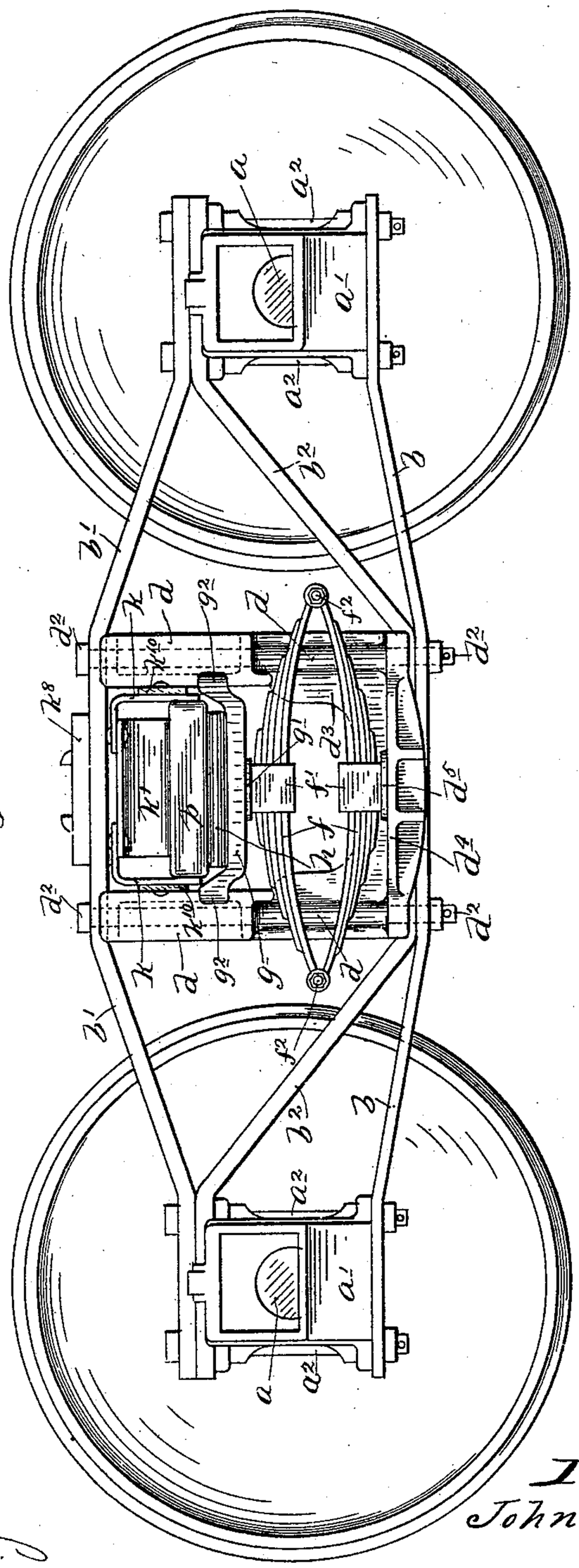
Fig. 2.



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(No Model.) 4 Sheets—Sheet 3.

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CAR TRUCK.

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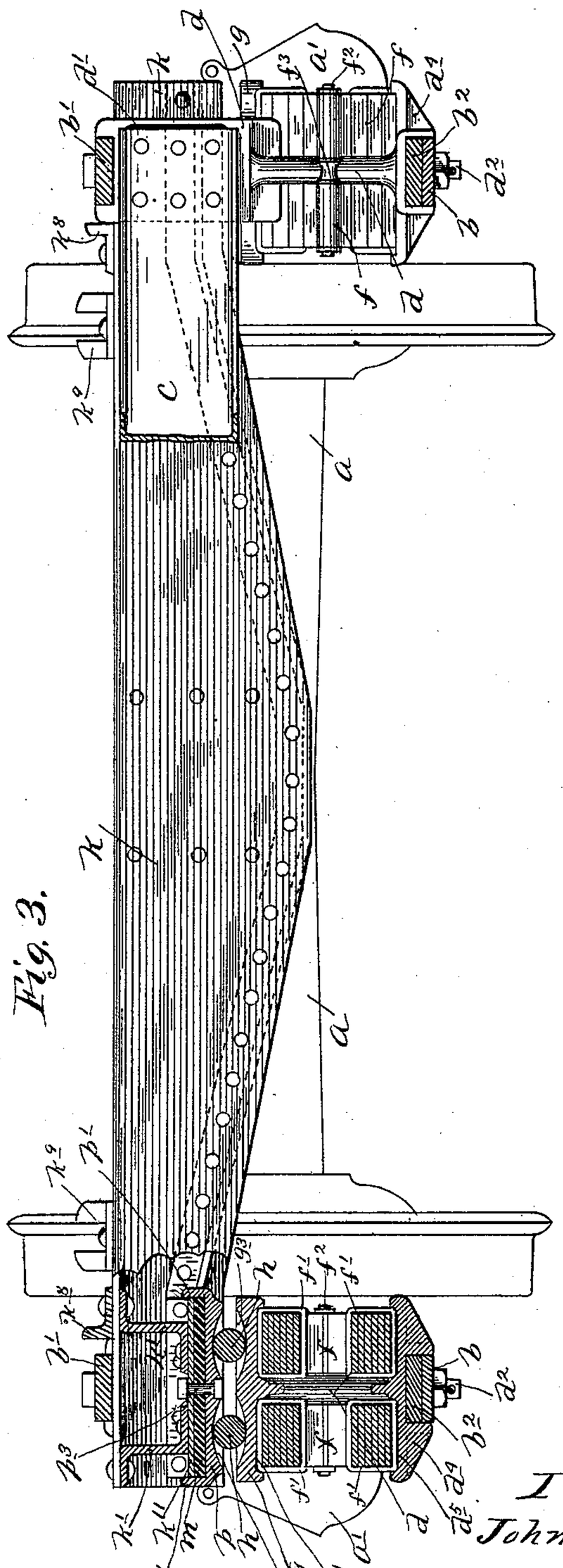

Fig. 3.

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No. 565,421. Patented Aug. 11, 1896.

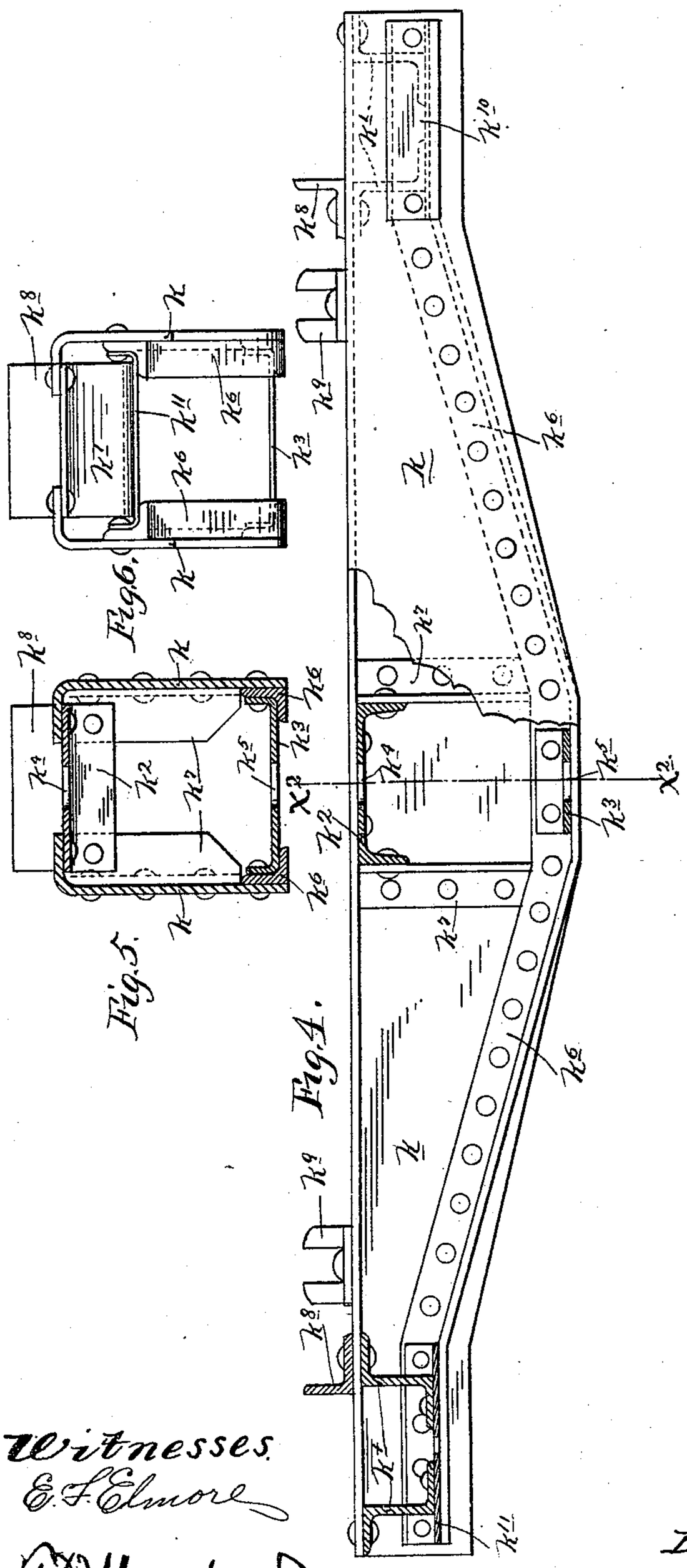

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

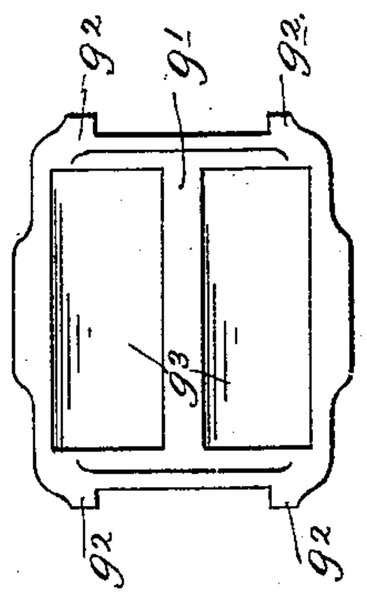

Fig. 9.

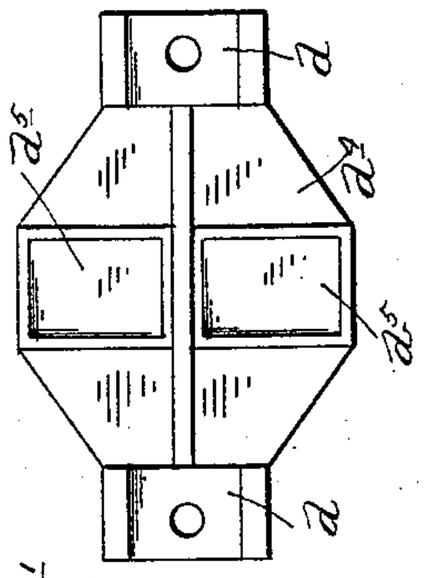

Fig. 8.

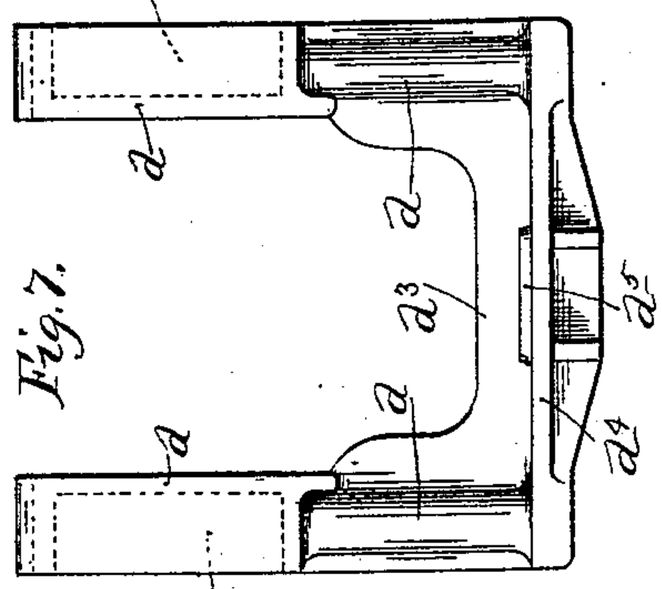

Fig. 7.

Witnesses.
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UNITED STATES PATENT OFFICE.

JOHN C. BARBER, OF ST. PAUL, MINNESOTA.

CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 565,421, dated August 11, 1896.

Application filed December 21, 1895. Serial No. 572,857. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. BARBER, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, 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 invention relates to car-trucks, and has for its object to improve the same in point of strength, durability, and simplicity of construction with the view of adaptation to greater load and of securing increased economy relative to the total tonnage for the life of the truck.

To these ends my invention comprises the novel devices and combinations of devices hereinafter described, and defined in the claims.

The truck herein disclosed, in addition to my present invention, involves in a broad point of view certain features of construction disclosed and claimed in my prior United States patents, No. 506,460, of date October 10, 1893, and No. 528,844, of date November 6, 1894, and in my application filed of date December 12, 1895.

The preferred form of my invention is illustrated in the accompanying drawings, wherein, like letters referring to like parts throughout the several views—

Figure 1 is a plan view of the truck, some parts being broken away and others shown in section. Fig. 2 is a left side elevation of the truck. Fig. 3 is a vertical transverse section, taken through the truck, substantially on the irregular line X′ X′ of Fig. 1. Fig. 4 is a detail view of the truck-bolster, partly in side elevation and partly in central vertical section. Fig. 5 is a transverse vertical section through the truck-bolster, taken on the line X^2 X^2 of Fig. 4. Fig. 6 is an end view of the truck-bolster. Figs. 7 and 8 are views, respectively, in side elevation and plan, showing in detail the U-shaped bracket-like casting forming the combined bolster-columns and spring base or saddle plate. Fig. 9 is a plan view of one of the combined roller-bearing spring cap plates removed.

a are the truck-axles, on the journals of which are mounted journal-boxes *a′*, held in place by tie-bolts a^2, passing through said boxes and securing the same to the tie-bars *b b′* and truss-bars b^2, which together constitute the trussed side frames of the truck.

c c are the transoms, which, as shown and preferred, are in the form of channel-irons located parallel with each other at equidistant points on the opposite sides of the longitudinal center of the truck. These transoms *c* are supported and connected together at their ends by united bolster-columns *d*, provided with seats *d′* for receiving the ends of the transoms *c*. The transoms are riveted to the bolster-columns. The said bolster-columns *d* are clamped in position between the upper tie-bar *b′* and the lower truss-bar *b* b^2 by means of nutted tie-bolts d^2, passing through suitable passages in said transoms, bolster-columns, and frame-bars *b b′* b^2. As shown and preferred, these bolster-columns *d* are reduced at their lower-half portions, so that they are in cross-section transversely of the truck but little more than the diameter of the tie-bolts d^2.

The coöperating pairs of bolster-columns *d* are connected at their lower ends by saddle-like base-plates formed integral therewith and composed of the central vertical cross-flange or truss-rib d^3 and the base-plate proper, d^4. The integrally-formed parts *d* d^3 d^4 constitute U-shaped bolster-column brackets, which not only support but rigidly connect the pairs of transoms *c* at their opposite ends. The said parts *d* d^3 d^4 are preferably made of cast-steel. The base-plates d^4 are provided with seats d^5 for the bosses *f′* of elliptical springs *f*. The said springs *f*, as shown, are connected in pairs, which are disposed longitudinally of the side frames of the truck, and are laterally spaced apart, with one thereof on each side of the lower or reduced portions of the bolster-columns *d*, as shown in Figs. 1, 2, and 3. The said pairs of springs *f* are tied together laterally by their common end bolts f^2, and are spaced apart by spacing-spools f^3 thereon, as best shown in Fig. 1. The lower members of the spring binders or bosses *f′* rest in the seats d^5 of the base-plates d^4 of the bolster-brackets *d* d^3 d^4, and the upper members of said bosses *f′* engage with corresponding recesses or seats *g′* on the under surface

of the combined spring cap and roller-bearing plates g, as shown in Figs. 2 and 3. The said plates g have pairs of lugs g^2, as shown in Fig. 9, which embrace the upper or square portions of the bolster-columns d, as shown in Fig. 2, for preventing the lateral displacement of said plates g, while permitting free vertical movement thereof on the bolster-columns as guides. Hence, with the above-described mounting of said springs f, the bolster-columns d, the base-plates d^4 of the bolster-brackets, and the combined spring cap and bearing plates g, held and guided by the bolster-columns, coöperate to hold the springs f in their true working positions against either lateral or endwise displacement. The above-described disposition of the elliptic springs f is a great advantage, for the reason that the strain from the load thereon will be distributed longitudinally of the side frames, substantially in line with the axle-journals. Torsional or sidewise tilting strain on the side frames and journal-bearings is therefore avoided.

The combined spring cap and bearing plates g are provided on their upper faces with concave seats g^3 for the bearing-rollers h.

The truck-bolster is of a novel construction, and will now be described. It will readily be understood on reference to Figs. 1, 3, 4, 5, and 6. k k represent a pair of parallel side plates having their upper edges turned inward to render the same of angular or half-channel form. The said plates k k are tied together and spaced apart by Z-shaped angle-irons k' at their ends, and by upper and lower channel-iron tie-plates k^2 k^3, respectively, at their central portions. The tie-plates k^2 k^3 are provided with coincident holes or passages k^4 k^5, respectively, for the king-bolt. (Not shown.) The center plate (not shown) is attached to the bolster directly over the tie-plate k^2.

The side plates k k of the bolster are preferably shaped as shown in Figs. 3 and 4, with their upper edges left straight and their lower edges dropped on an incline from points near their outer ends inward to their central or deepest portions. Truss-bars k^6, preferably of angle-iron form, are applied to the inner surfaces of said side bars k k lengthwise thereof, at or near their lower margins, for reinforcing the same, As shown, said truss-bars k^6 are riveted to said plates k k flush with the lower edges thereof at their central portions, and rising gradually above the same as they extend upward and outward to the ends of the plates.

Angle-iron central posts k^7 are applied to the side plates k k between their truss-bars k^6 and their inturned top flanges, and are riveted or otherwise made fast to the side plates and the upper central cross-tie k^2. The Z-shaped end cross-ties k' are applied with their ends between the inturned top flanges of the side plates k k and the flanges of the truss-bars k^6 and are riveted thereto, as shown best in Figs. 3 and 4.

The bolster is shown as provided with the angle-iron lateral stops k^8 and with seats k^9 for the side bearing-rollers for the car-bolster. (Not shown.)

k^{10} are chaffing-irons fixed to the side plates of the bolster near the ends of the same.

k^{11} are rest-plates fixed to the Z-shaped iron end cross-ties k' and the truss-bars k^6 of the bolster.

From the description above given it must be obvious that the bolster is made up of rolled forms, such as channel and angle irons, which are shaped, connected, and tied together in such a manner as to be trussed in every direction. In this way a bolster of great strength and durability can be secured with the use of a comparatively small mass or weight of metal.

m are adjusting-blocks directly below the rest-plates k^{11} and supported by the bearing-plates p, which have upturned flanges p', telescoping with the ends of the rest-plate k^{11}, and are also provided on their under surfaces with concave seats p^2, engaging with the roller-bearings h. The parts m and p are removably held to the part k^{11} by nutted bolts p^3. The adjusting-blocks m are preferably made of wood. By changing the thickness of the adjusting-blocks m or by substituting others of a different thickness the truck-bolster, and hence the car-body, may be vertically adjusted to bring the coupling parts of the cars to the standard or proper height for coupling together; but this feature of construction is not herein claimed, the same being fully set forth and claimed in my application filed of date December 12, 1895.

The bolster-columns of cast-steel formed integral with the saddle-plates or spring-seats in the form of U-shaped brackets give increased strength and rigidity over prior forms. For example, the corners or junctions of the bolster-columns, spring base-plates, and frame-bars are made a point of great strength instead of weakness, as under the old construction.

The advantage resulting from the described disposition of the elliptic springs has already been stated.

It will be understood that changes might be made in the minor details of the construction without departing from the spirit of my invention.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. A metallic truck-bolster, composed of a pair of parallel side plates reinforced by independent longitudinal truss-bars and bracing and spacing cross-ties uniting said trussed side plates at their ends and central portions, substantially as described.

2. A metallic truck-bolster, composed of a pair of parallel side plates reinforced by independent longitudinal truss-bars riveted

thereto and bracing and spacing cross-ties uniting said trussed side plates at their ends and central portions, with said trussed side plates constructed of greater depth at their central than at their end portions, substantially as and for the purposes set forth.

3. In a car-truck, a truck-bolster, formed by a pair of parallel side plates, tied together at their ends and central portions by transverse angle-irons, reinforcing truss-bars riveted to said side plates, with their central portions of greater depth than their end portions, and central truss-posts riveted to said side plates over the central parts of said truss-bars, substantially as described.

4. In a car-truck, a truck-bolster formed by the pair of angle-iron side plates k k tied together at their ends by the Z-shaped irons k', and at their centers by the upper channel-iron k^2 and lower tie-plate k^3, the reinforcing truss-bars k^6, depressed at their centers and riveted to said side plates k k', and the central truss-posts riveted to said side plates and extending upward from said truss-bars to the inturned upper flanges of said side plates, substantially as described.

5. In a car-truck, the combination with suitable side frames, transoms, and bolster-columns, of elliptical springs supported by said side frames, arranged in pairs positioned longitudinally of said side frames and spaced apart laterally to span or embrace the bolster-columns, substantially as and for the purposes set forth.

6. In a car-truck, the combination with the side frames b b' b^2, of the transoms c, the U-shaped combined saddle-plate and bolster-columns d d^3 d^4 having reduced portions, the tie-bolts d^2, the double elliptical springs f positioned longitudinally of the side frames, one on each side of the reduced portions of said bolster-columns, and a truck-bolster supported by said springs, substantially as described.

7. In a car-truck, the combination with suitable side frames and transoms, of double elliptical springs resting centrally in said side frames and disposed longitudinally thereof, and a bolster-column truss extending between and parallel with the two members of each pair of said double elliptical springs, substantially as described.

8. In a car-truck, the combination with suitable side frames and transoms, of the bolster-columns d united by the truss-ribs or flanges d^3, and the spring-bases or saddle-plates d^4, formed integral with said columns, and elliptical springs supported by said saddle-plates, arranged in pairs positioned longitudinally of said side frames, and spaced apart laterally to span said truss-ribs or flanges d^3, substantially as described.

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

JOHN C. BARBER.

Witnesses:
EDW. DENEGRE,
JAS. F. WILLIAMSON.