2 Sheets—Sheet 1.

W. YOUMANS.

Car Truck.

No. { 2,163. / 33,167. }

Patented Aug. 27, 1861.

Fig. 1.

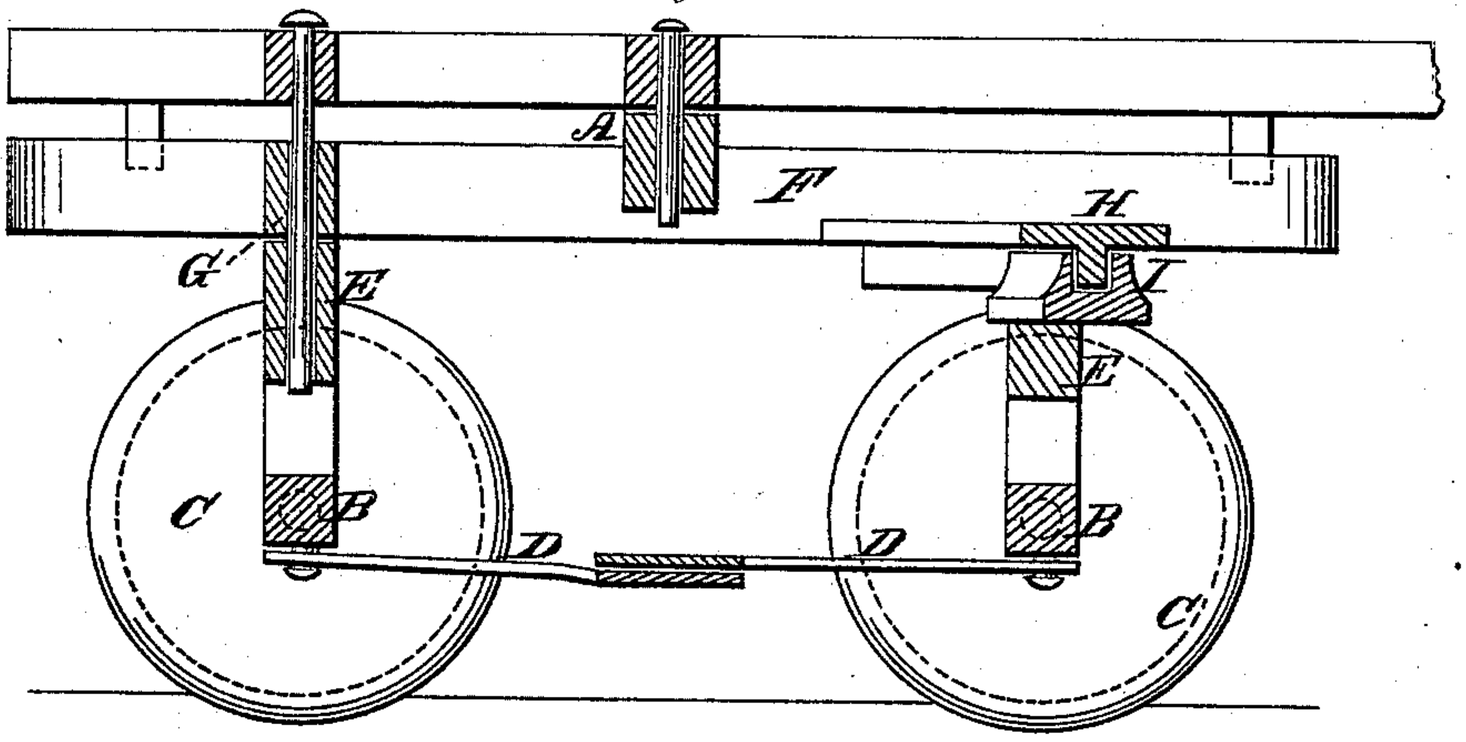
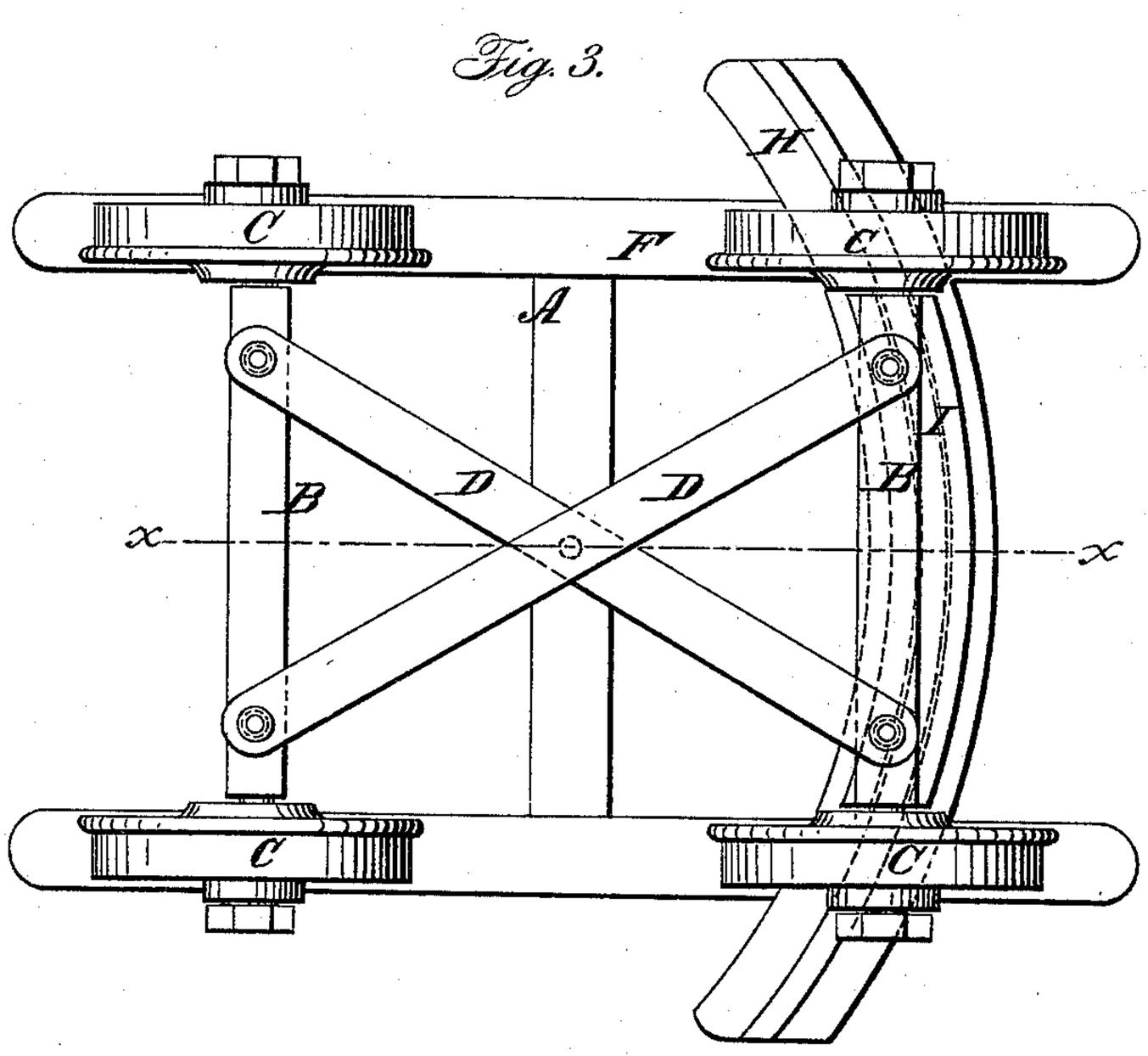


Fig. 3.



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Car Truck.

2 Sheets—Sheet 2.

No. { 2,163. / 33,167. }

Patented Aug. 27, 1861.

Fig. 2.

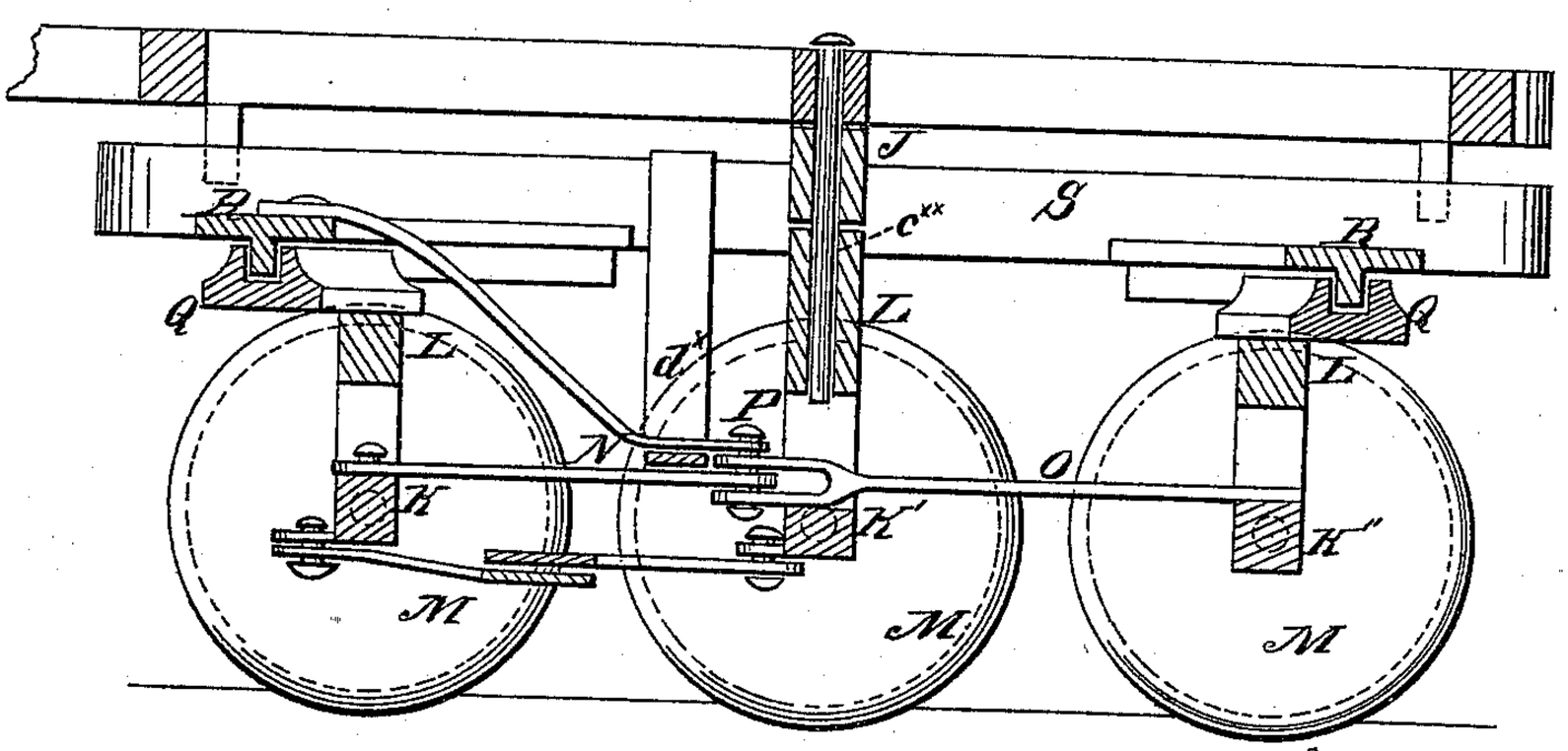


Fig. 4.

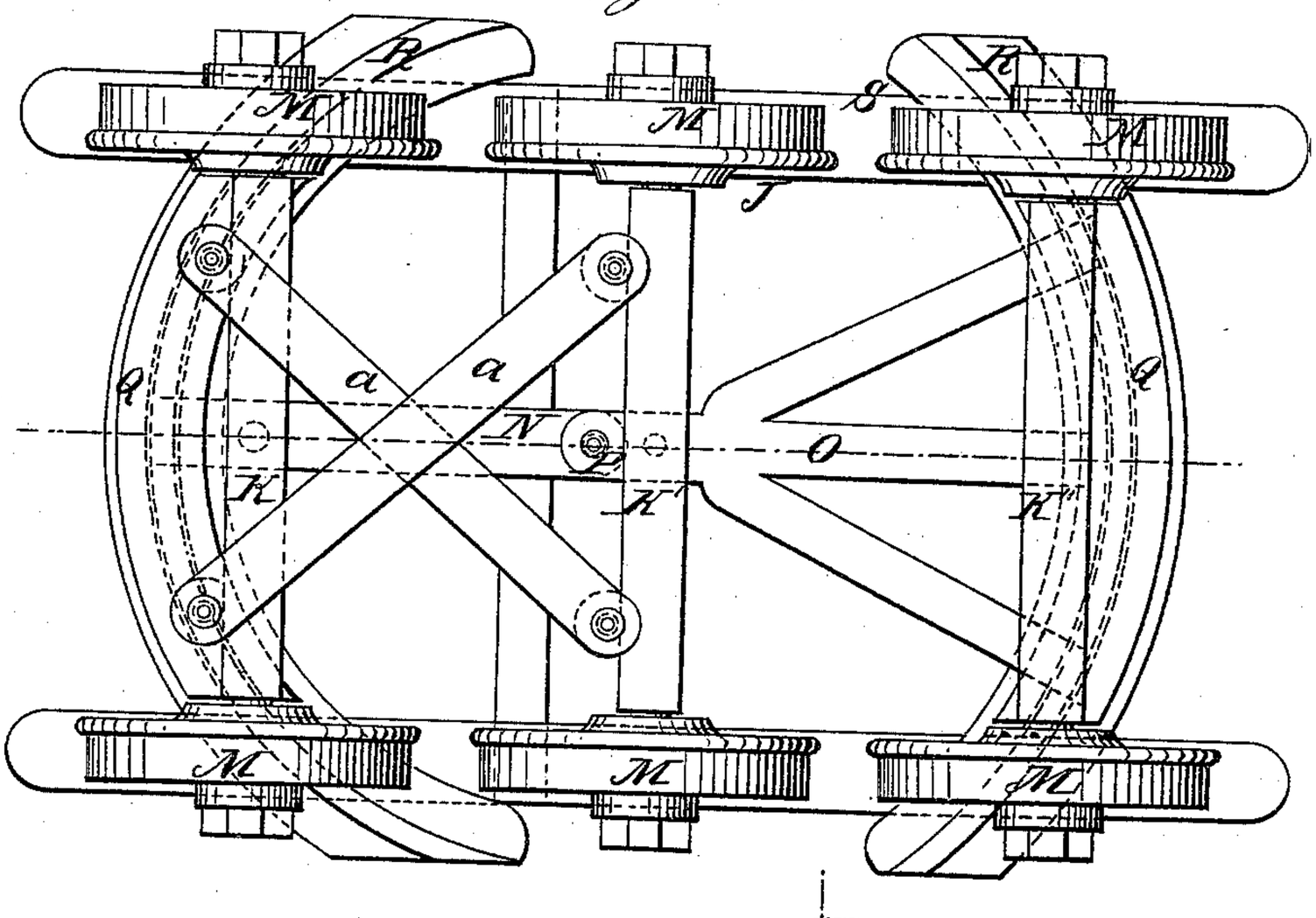
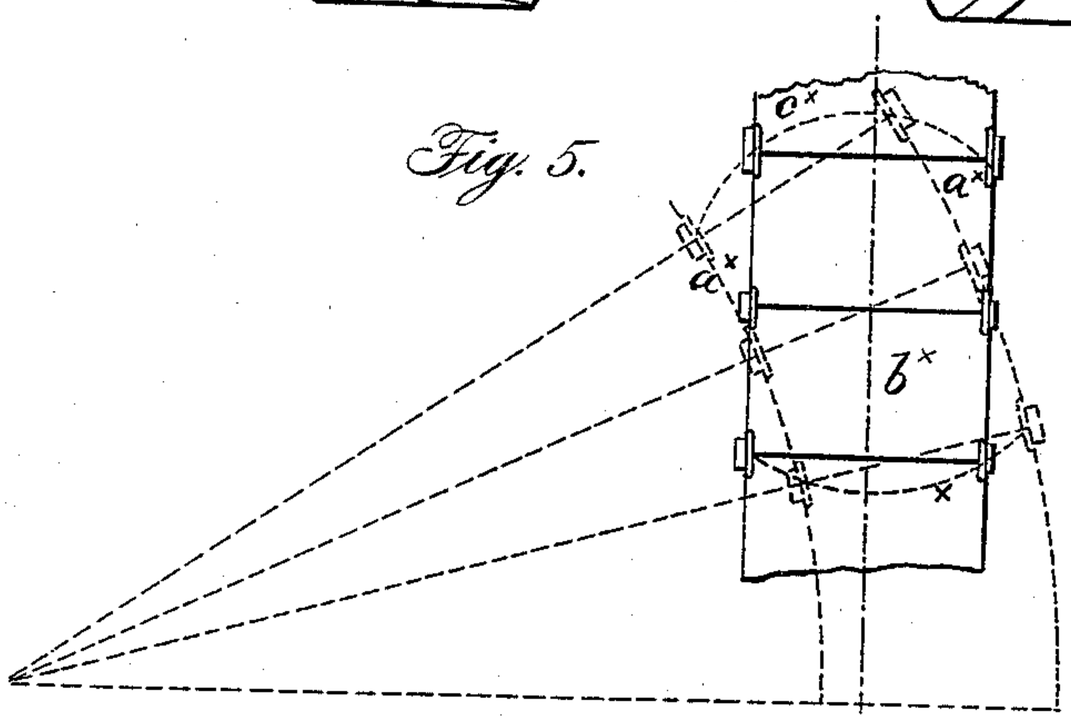


Fig. 5.



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UNITED STATES PATENT OFFICE.

WALTER YOUMANS, OF WATERFORD, NEW YORK.

IMPROVEMENT IN RAILROAD-CAR TRUCKS.

Specification forming part of Letters Patent No. **33,167**, dated August 27, 1861.

To all whom it may concern:

Be it known that I, WALTER YOUMANS, of Waterford, in the county of Saratoga and State of New York, have invented a new and useful Improvement in Car-Trucks; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figures 1 and 2 are side sectional views of my invention; Figs. 3 and 4, inverted plan or top views of the same; Fig. 5, a diagram showing the manner in which the curved or segment guide is obtained.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to obtain a car-truck which will admit of the axles, as the trucks pass over curves of the road, assuming positions corresponding to the radii of the curves, thereby avoiding much friction hitherto attending the passing of car-trucks over curves, and the consequent wear and tear attending the same, and at the same time to prevent the deflection of the axle and consequent danger of throwing the car from the track by an obstruction on the rail.

The invention consists in having the axles of the truck arranged to turn or adjust themselves from a certain center, which is found in the manner hereinafter described, the movement or adjustment of the axles being controlled or retained in proper position by curved or segment guides, which are attached to the truck bed or body.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A, Figs. 1 and 3, represents a car-truck, which is provided with two axles B B, on which their wheels C are placed loosely, the axles not being allowed to turn, as in ordinary trucks. The axles B B are connected by cross plates or bars D D, as shown in Fig. 3, and to each axle a wooden bolster E is secured, on the upper surfaces of which the truck-bed F rests, said bed being secured to one of the bolsters E by a pivot-bolt G, and at the opposite end of the bed F there is a curved or segment guide H, which is of metal, said guide being attached to the underside of the bed F and fitted in a corresponding curved socket I, which is attached to the other bolster E.

The car-truck J (shown in Figs. 2 and 4) is provided with three axles K K′ K″. These axles are also attached to wooden bolsters L, and their wheels M are placed loosely on them. The axles K K′ are connected by cross-bars *a* *a* precisely in the same way as the axles of truck A, while the axle K has a bar N attached to it at right angles, said bar N extending inward and being connected to a similar bar O of axle K″ by a bolt P.

To the upper surface of the end bolsters L L of the axles K K″ there are secured curved sockets Q Q, one to each bolster. These sockets, like the socket I of truck A, are formed of two curved plates or upright ledges, and each socket receives a corresponding shaped guide R, attached to the under side of the bed S of the truck. The sockets Q Q and the guides R R are portions of concentric circles the center of which is formed as follows: Two curved red lines $a^{\times}$ $a^{\times}$ are drawn, as shown in Fig. 3. These lines represent the two rails at a curve of the road, and a line $b^{\times}$ is drawn tangential to the inner line $a^{\times}$, the line $b^{\times}$ passing through the centers of the axles when the latter are parallel with each other and at right angles with line $b^{\times}$. On this line the center P is formed, one leg of a pair of compasses being placed on said line at such a point that will admit of arcs *c* being drawn, the ends of which will intersect the ends of the outer axles when the latter are in a radial position, as shown in red in Fig. 5. These arcs correspond to the sockets Q Q and their guides R R, which admit of the axles assuming a radial position when the truck is passing over a curve, as shown in red in Fig. 5. The length of the radius of the curve is immaterial. The truck J is secured by a bolt $c^{\times\times}$ to the bolster of the central axle K′, and the car is connected to truck J, the latter being stationary and the axles turning beneath it. The truck J also has a bar $d^{\times}$ attached, through which the bolt P passes. The center of the socket and guide I H of truck A is formed in the same way as that of truck J.

The connecting of two of the axles of a truck together by means of cross-bars insures the axles moving equally and simultaneously in opposite directions, so that the axles may

quickly adjust themselves in a proper radial position.

I do not claim the connecting of the truck-axles together by cross-bars D D *a a*, for they have been previously used; nor do I claim, broadly, the employment or use of adjustable axles for car-trucks. Neither do I claim the use of a segmental guide connected to the bolster; but I know of no previous instance in which a non-rotating axle has been rigidly attached to a segmental guide eccentric to the vertical pivot of the truck, so as to support the wheels endwise of the car, but permit them to yield easily to lateral pressure.

What I do claim as new, and desire to secure by Letters Patent, is—

1. The application to a car-truck provided with adjustable axles of sockets and guides, when said sockets and guides are formed of portions of circles $c^{\times}$ the center of which is in a line $b^{\times}$ that bisects the axles centrally when parallel with each other and at right angles to said line, and which line is tangential with the inner line or rail $a^{\times}$ of the curve, the arcs $c^{\times}$ intersecting the ends of the outer axles when the latter are in a radial position, substantially as and for the purpose set forth.

2. The combination of the loose wheels C or M, non-rotating axle B or K″, bolster E or L, and eccentric socket and guide I H or Q R, arranged and operating substantially as and for the purposes shown and explained.

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