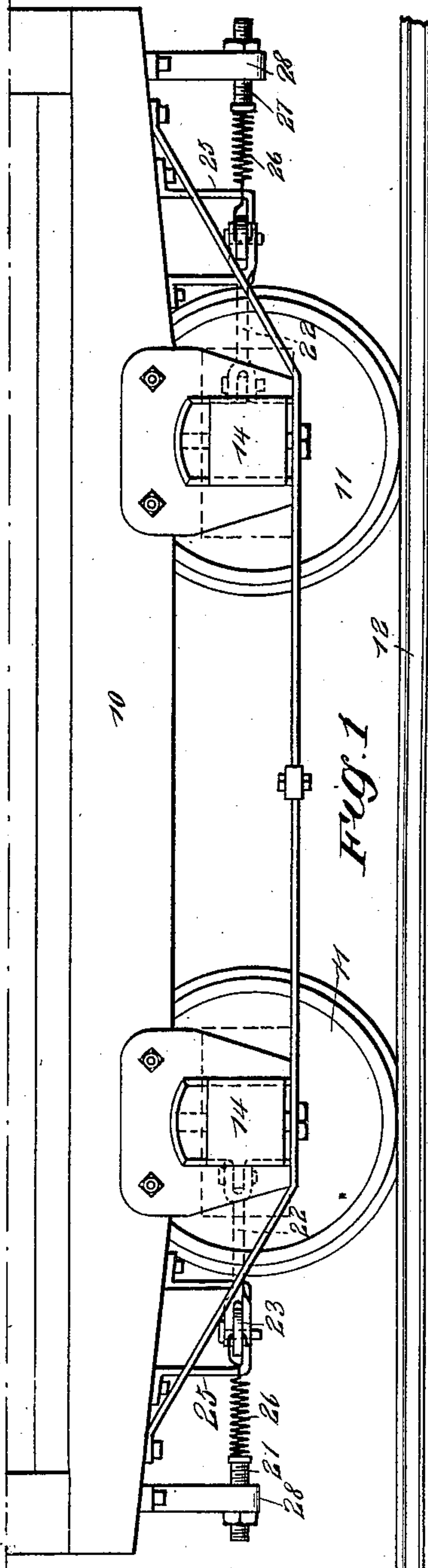


B. F. ALLEN.  
CONSTRUCTION OF RAILWAY CARS.

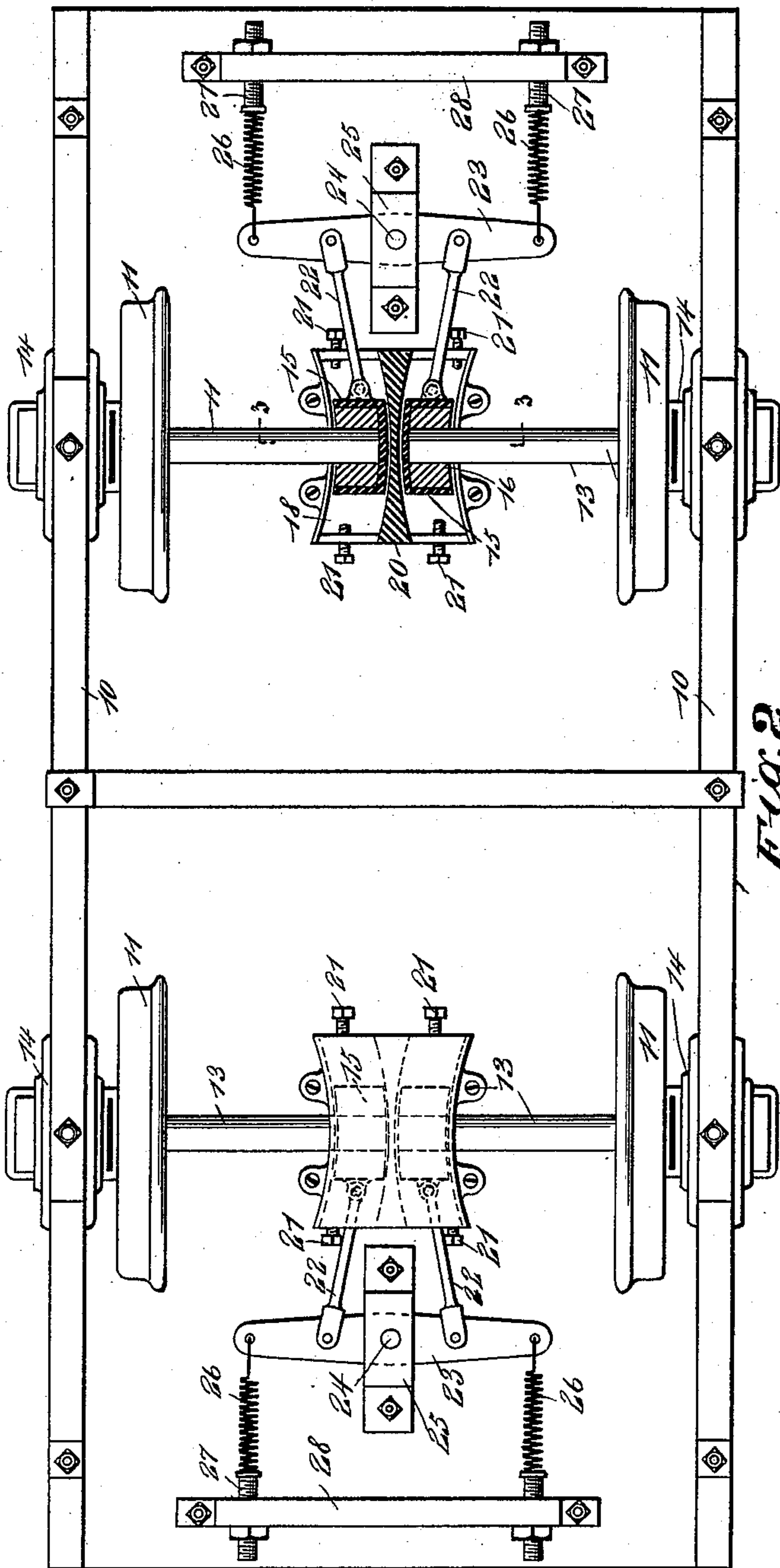
No. 532,937.

Patented Jan. 22, 1895.



WITNESSES:

*John Bergstrom*  
*W. B. Hutchinson*



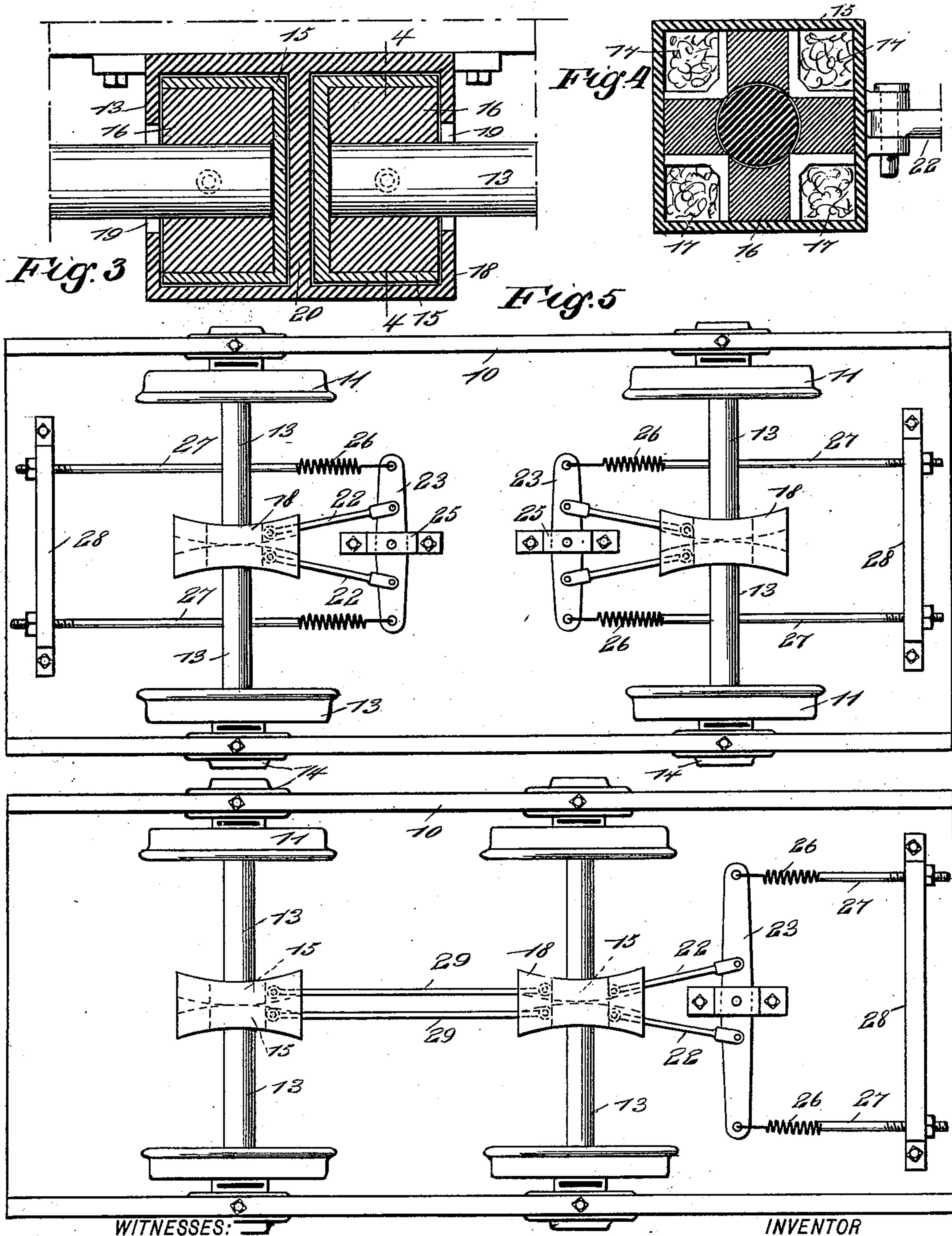
INVENTOR

*B. F. Allen*  
BY *Munn & Co*  
ATTORNEYS.

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*W. O. Hutchinson*

*Fig. 6*

INVENTOR  
*B. F. Allen*  
BY *Munn & Co*  
ATTORNEYS.



# UNITED STATES PATENT OFFICE.

BENJAMIN F. ALLEN, OF MOBILE, ALABAMA.

## CONSTRUCTION OF RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 532,937, dated January 22, 1895.

Application filed September 26, 1894. Serial No. 524,173. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN F. ALLEN, of Mobile, in the county of Mobile and State of Alabama, have invented certain new and useful Improvements in the Construction of Railway-Cars, of which the following is a full, clear, and exact description.

My invention relates to improvements in the construction of railway cars and more particularly to the construction of car axles and the manner of hanging them. In order that a car may go easily around a curve, the axles and wheels are placed under the car as far as possible, thus giving the car a tendency to rock and, moreover, where a rigid axle is used, there is a great deal of friction on the wheel and rails when the car rounds a curve and besides there is a loss of power in pulling the car.

The object of my invention is to obviate these difficulties and to produce a two-part axle, which is hung in such a way that in rounding a curve the wheels will swivel slightly in relation to each other so as to follow the rails smoothly without friction, also to arrange the parts so that the wheels may be placed near the ends of the car if desired and will follow the track safely, and further, to make my improved construction as simple and durable as possible.

To these ends my invention consists of certain features of construction and combinations of parts, which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of a railway car truck provided with my improved mechanism. Fig. 2 is an inverted plan of the same. Fig. 3 is a detail section on the line 3—3 of Fig. 2, and shows in cross section the inner boxes of an axle. Fig. 4 is a cross section on the line 4—4 of Fig. 3, of one of the inner boxes. Fig. 5 is an inverted plan view of the truck, showing the equalizing levers arranged between the axles; and Fig. 6 is an inverted plan view of the truck, showing a pair of axles connected so as to work in unison, this construction being such as would be employed

where two axles are arranged at each end of the car.

The truck frame 10 may be of any usual kind and it is mounted on the ordinary car wheels 11 which run on the customary track rails 12. Wheels, however, are secured to two-part axles 13, the outer ends of which are journaled in the customary boxes 14, but the axles and boxes have sufficient play to permit the inner ends of the axle sections to have the necessary oscillating movement, as presently described.

The inner ends of the axle sections are carried in sliding boxes 15, which are provided with suitable brasses 16, and the brasses are preferably of cross shape, as shown in Fig. 4, so that the corners of the boxes may be utilized for holding oil and waste, as shown at 17 in Fig. 4. The boxes are open on their outer sides, as shown in Fig. 3, and their inner sides are preferably of steel and serve as abutments to take the thrust of the axle sections.

The boxes 15 slide back and forth in a slideway 18 which is fastened beneath the car and is longitudinally slotted or left open in the sides, as shown at 19 in Fig. 3, so as to provide for the movement of the axle sections. The slideway is also provided with a vertical longitudinal partition 20 which is concave on the sides and which serves as a guide for the boxes 15. In the ends of the slideway are set screws 21 which may be adjusted to limit the movement of the boxes. The boxes 15 connect by rods 22, see Fig. 3, with a tilting lever 23, which extends transversely of the car, that is, parallel with the axle, and the lever is pivoted near the center, as shown at 24, in a bracket 25 or other suitable support.

The opposite ends of the lever 23 are secured to springs 26 which are attached to screws or bolts 27 in a suitable hanger 28 near the front end of the truck and beneath the car, and these bolts may be adjusted so as to regulate the tension of the spring. The springs need not be very heavy, as the movement of the boxes 15 is slight and the wheels following the rails will, of themselves, easily bring the axle sections back to normal position, but the springs are connected so that in case there should be a tendency to stick the spring will obviate the difficulty.



It will be seen that when the car rounds a curve one axle section will have a tendency to move forward and the other backward, and the movement is made regular and equalized by the equalizing lever 23 and the connecting rods 22 and this equalizing arrangement also causes the axle sections to return easily to their normal position. In some cases it is necessary to have the equalizing levers arranged between the axles of the car, as shown in Fig. 5, and to do this it is only necessary to hang the brackets 25 between the axles, to fulcrum the levers 23 on the brackets, connect them with the slide boxes 15, as specified, and use bolts 27 long enough to make suitable connections between the springs and the hangers 28.

In case two or more axles are arranged at one end of a car, the slide boxes 15 may be connected up in series, as shown in Fig. 6, and they work precisely as already indicated, that is to say, the slide boxes on the axle nearest the car end are connected with the equalizing lever 23 in the manner already described, which lever is arranged, as shown in Fig. 2, and the slide boxes 15 of the next axle sections 13 are connected by rods 29 with the first mentioned slide boxes, and thus the four boxes are similarly and coinstantaneously moved.

When the car rounds a curve the wheels move in true concentric circles, the inner ends of the opposite axle sections swinging slightly in opposite directions, and when the car

strikes the straight track, the wheels cause the axle sections to return to normal position, this action being facilitated by the equalizing levers 23 and the springs 26.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of a frame, a two part axle journaled and pivoted therein, wheels on the two parts of the axle at the outer portions thereof, a lever pivoted on the frame, connecting rods connecting the ends of said lever with the inner ends of the parts of the axle respectively, and springs connected with said lever, substantially as set forth.

2. The combination of a frame, a two part axle having its outer ends pivoted and journaled in the frame, wheels on the parts of the axle, a slideway having a central guide wall provided with opposite curved faces, the curves of which are drawn with radii from the pivotal points of the respective adjacent parts of the axle as center, boxes for the inner adjacent ends of the parts of the axle, mounted to slide on the curved faces of the guide wall of the said slideway, a lever pivoted on the frame, connecting rods connecting the opposite ends of said lever with the respective boxes, and springs for said lever, substantially as set forth.

BENJAMIN F. ALLEN.

Witnesses:

WINFIELD S. LEWIS,  
THOMAS J. HENRY.