

H. T. KRAKAU.

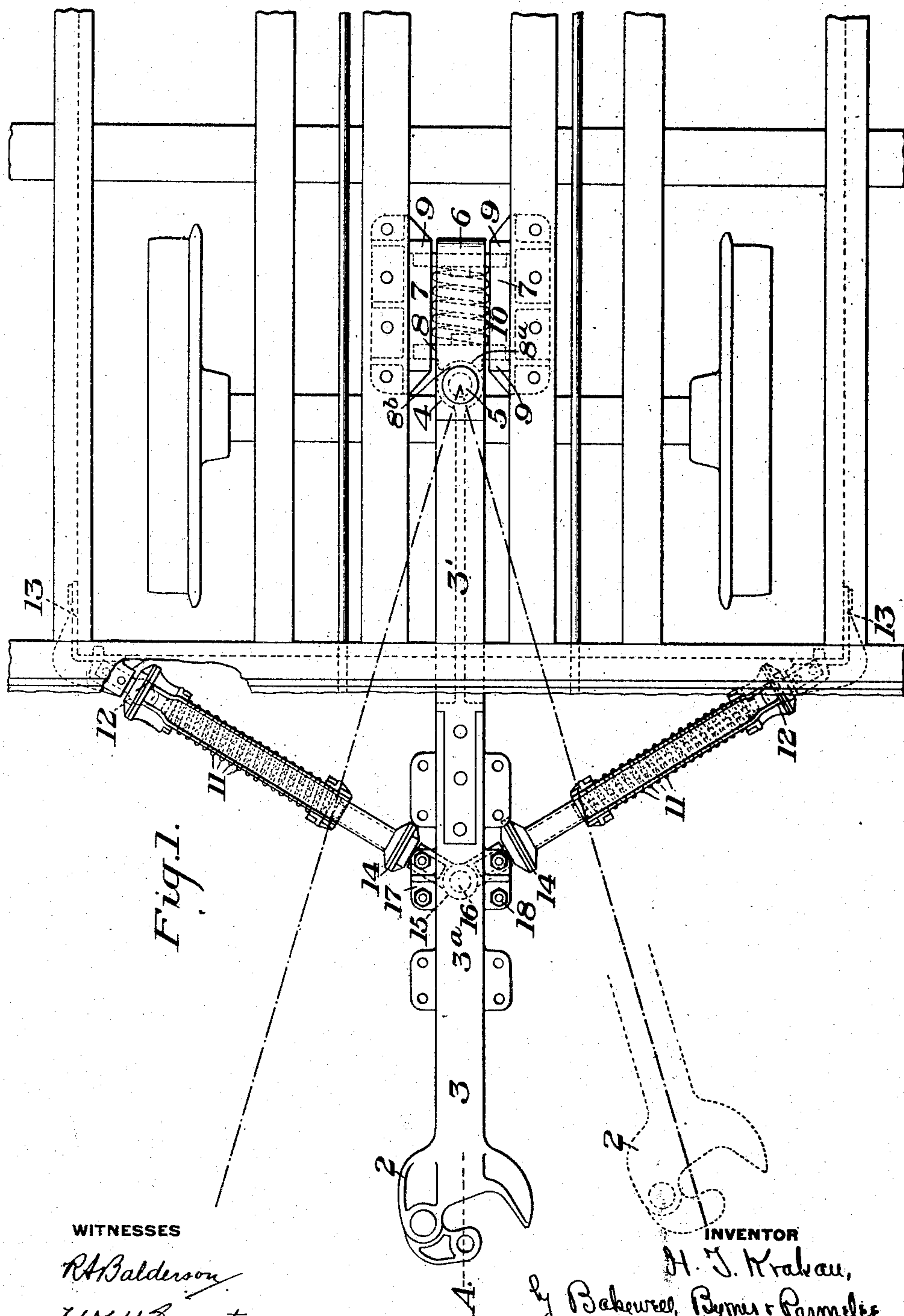
DRAFT GEAR.

APPLICATION FILED MAR 11, 1908.

947,244.

Patented Jan. 25, 1910.

2 SHEETS—SHEET 1.



WITNESSES

R. H. Balderson
W. W. Swartz

INVENTOR

H. T. Krakau,
By Babcock, Byrnes & Parmelee
his Attys.

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DRAFT GEAR.

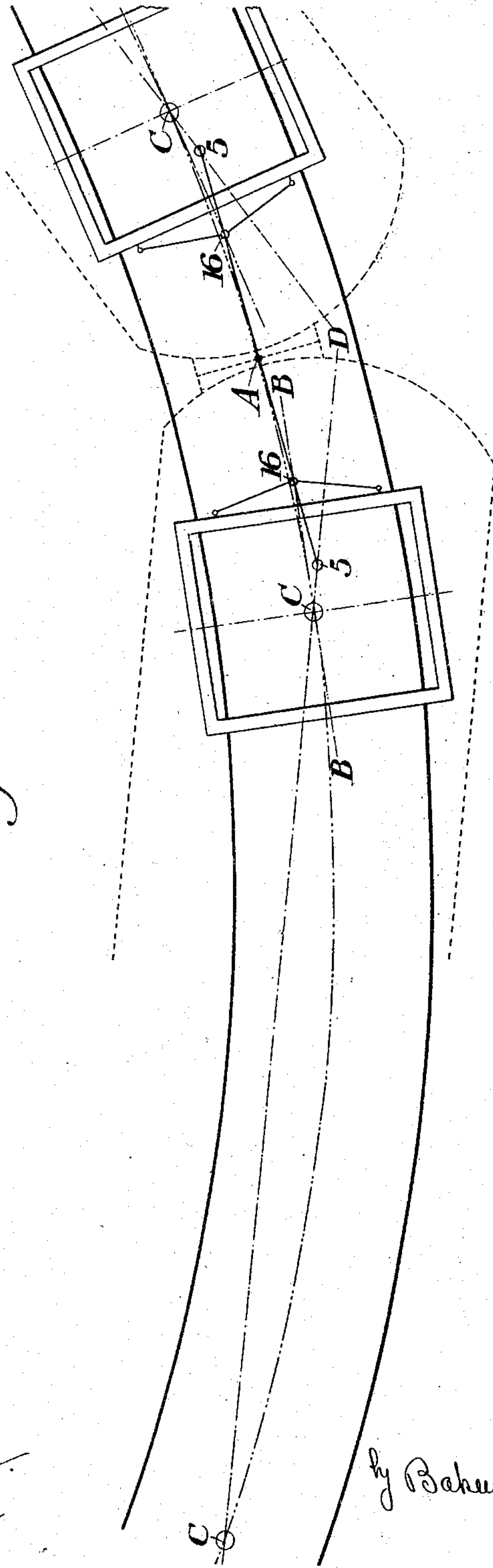
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2 SHEETS—SHEET 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

HARRY T. KRAKAU, OF CLEVELAND, OHIO, ASSIGNOR TO THE NATIONAL MALLEABLE CASTINGS COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

DRAFT-GEAR.

947,244.

Specification of Letters Patent.

Patented Jan. 25, 1910.

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To all whom it may concern:

Be it known that I, HARRY T. KRAKAU, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Draft-Gears, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view showing my draft gear applied to a railway car and showing a preferred form of its embodiment. Fig. 2 is a diagrammatic plan view, illustrating the principles of my invention.

My invention relates to an improvement in radial draft gears for railway cars, that is, draft-gear which is mounted on the car frame, so as to swing in a horizontal plane, and to adapt itself to the motion of the cars as they travel around the curves of the track, and is guided by a connection of the swinging draft gear with the car truck. Prior to this present invention, such draft gears have usually been so mounted and connected with the car truck that they would at all times maintain a position substantially at right angles to the truck frame.

I have discovered that greatly improved results can be obtained by so mounting the draft gear that, instead of maintaining a constant position at right angles to the car truck, it will be guided so that the head of the coupler will be constantly at about the middle position of the car track, not only when the car is on a straight track, but when it is traveling on a curve. The advantage of this is that the coupler is always in position to couple with the coupler of an adjacent car, and couplers are thus freed from strains and are adapted to couple with one another freely under all conditions.

In order that cars may travel freely over curves which are met in practice, the draft gear should have much more side clearance than is now provided, but in that case, unless the position of the coupler is controlled automatically, the brakeman will be required in some cases to go between the cars for the purpose of pushing the coupler into proper position for coupling. This condition is met by my invention, for when the draft

gears are guided automatically, so that the coupler heads will be in the center of the track, whether it is curved or straight, they will always meet and couple and will not do so under any other conditions.

Referring to Fig. 1 of the drawing, 2 represents the car coupler, which has a long rear extension, preferably made in the form of a shank 3, which terminates at the end in a socket 4, for a vertical pivot pin. For convenience, I prefer to make the coupler shank in two parts 3' and 3^a, the rear portion 3' being provided with the socket 4 and being forked so as to fit the sides of the forward portion 3^a. The socket 4 fits within a yoke 6 to which it is attached by the pivot pin 5, and the yoke is mounted between the draft irons 7, 7, followers 8 being set crosswise within the yoke and adapted to bear against stops 9 on the irons. A spring or springs 10 is interposed between the followers, and these parts together constitute the draft rigging. The particular construction of the draft rigging is not essential to my invention.

When the car is in service, the coupler and its shank will turn radially on the axis of the pin 5, being guided by means described below, so that its head will at all times be in approximately the central portion of the railway track. The draft rigging, however, is held from turning laterally by the car sills, and remains in the longitudinal axis of the car, and as the coupler is subjected to the pressure of buffing and draft, the forward follower will be forced back against the spring or the rear follower drawn forward against the spring, as the case may be, the forward stops 9 resisting the force of pulling and the rear stops 9 resisting the force of buffing.

As shown in Fig. 1, the forward follower 8 preferably projects forwardly somewhat and is provided with a curved face 8^a against which a correspondingly curved surface 8^b bears, so as to afford a bearing for the end of the coupler shank in all positions of its lateral adjustment and compression of the spring. To guide the coupler shank and to hold it substantially at the center of the track, I provide it with guiding-rods

which are made with telescopically arranged sections having interposed springs 11. At their rear ends these rods are connected by ball-and-socket joints 12 to brackets 13 at the ends of the truck, and at their forward ends the rods are connected by ball-and-socket joints 14 with an elbow lever or like connection 15, mounted at the middle on a vertical pin 16, which projects downwardly from the coupler shank and is preferably connected therewith by a pad 17, and bolts 18. The pin may, however, be made integral with the coupler shank, or otherwise secured thereto. The elbow lever connects the guiding rods to the coupler shank in such manner that tension exerted upon it on either side will turn it and keep its arm on the other side in the proper line, and the ball-and-socket joints afford the necessary flexibility to the parts.

The car coupler is guided to the center of the track under all conditions by proper correlation of the point 5, where the draft gear is pivoted to the car body, the point 16, at which the guiding rods are connected to the draft gear, and the length of the draft gear itself, that is to say, the distance between the pivotal point and the coupling point (a term which may be used to define the point A, Fig. 1, where the longitudinal center line of the coupler intersects the inner face of the outer arm of its knuckle, or the point of pulling contact between two interlocked knuckles). To determine these points, I fix the pivotal point 5 arbitrarily at a short distance in advance of the bolster. Then having located the coupling point A (Fig. 2) at a point at the center of the track when the car is on a curve, I locate the point 16 as approximately the point where a straight line between the points 5 and A intersects the line B—B, which is the line perpendicular to the truck at its center. The point at which these two lines will intersect is dependent upon the length of the draft gear. I may also determine these points by locating first the point 16 and then locating the point 5 (the pivotal point of the draft gear) at the point where the line between A and 16 intersects the line C—D, which is the center line of the car frame; or I may locate the points 5 and 16 first and then, drawing a straight line therethrough, locate the point A where that line intersects the center line of the curved track. This will determine the necessary length of draft gear when the points 5 and 16 are first located.

By fixing the coupling point in the center of the track, on a curve, and then drawing a line which is tangent to the center line of the curve at that point, and then locating the pivotal point of the draft gear at the point where this line intersects the longitudinal center line of the car frame, and

locating the point of attachment of the guiding connections with the draft gear at the point where this tangential line intersects a line perpendicular to the truck at its center, the coupler head will not only be guided to the center of the track, but the couplers of cars of the same length and overhang will meet in alinement with each other. It will not always be possible, for various reasons, to make the pivotal point for the draft gear at the exact point so found, but, to secure the best result it is desirable to place the pivot as near this point as possible.

The advantages of my invention in assuring certainty of action of the draft gear and in enabling it to couple accurately under all conditions will be appreciated by those skilled in the art, and it will be understood that, observing the principles of my invention, the apparatus may be modified in various ways. For example, the construction of the draft gear, the location of the spring rigging in advance of the pivot 5, instead of at the rear, and the form and arrangement of the guiding connections of the truck may be varied in many ways, since

What I claim is:

1. A radial swinging draft member pivotally mounted on a car and adapted to swing horizontally, and guiding connections between the draft member and the truck, the pivot of the draft member being placed at the point of intersection of the longitudinal center line of the car frame and a straight line drawn from the coupling point at the center of the track through the point of connection of the guiding connections to the draft member.

2. A radial swinging draft member pivotally mounted on a car and adapted to swing horizontally, and guiding connections between the draft member and the truck, the guiding connections being connected to the draft member at the point of intersection of a line perpendicular to the truck at its center and a straight line drawn from the coupling point at the center of the track to the pivotal axis.

3. A radial swinging draft member pivotally mounted on a car and adapted to swing horizontally, and guiding connections between the draft member and the truck, the length of the draft member being determined by fixing the coupling point at the point of intersection between the center line of the curved track and a straight line drawn through the pivotal point and the point of connection of the truck connections to the draft member.

4. A radial swinging draft member pivotally mounted on a car and adapted to swing horizontally, and guiding connections between the draft member and the truck, a straight line drawn from the coupling point and tangent to the curved line of the track

at that point determining, by its intersection with a line perpendicular to the truck at its center, the point of connecting the truck connections to the draft member, and,
5 by its intersection with the longitudinal center line of the car frame the pivotal point of the draft member.

In testimony whereof, I have hereunto set my hand.

HARRY T. KRAKAU.

Witnesses:

ERNEST H. SCHMIDT,
HARRY E. ORR.