No. 895,937. PATENTED AUG. 11, 1908.

J. T. ANDREW.

SAFETY APPLIANCE FOR RAILROAD CARS.

APPLICATION FILED AUG. 21, 1907. RENEWED MAR. 19, 1908.

2 SHEETS—SHEET 1.

Fig. 1.

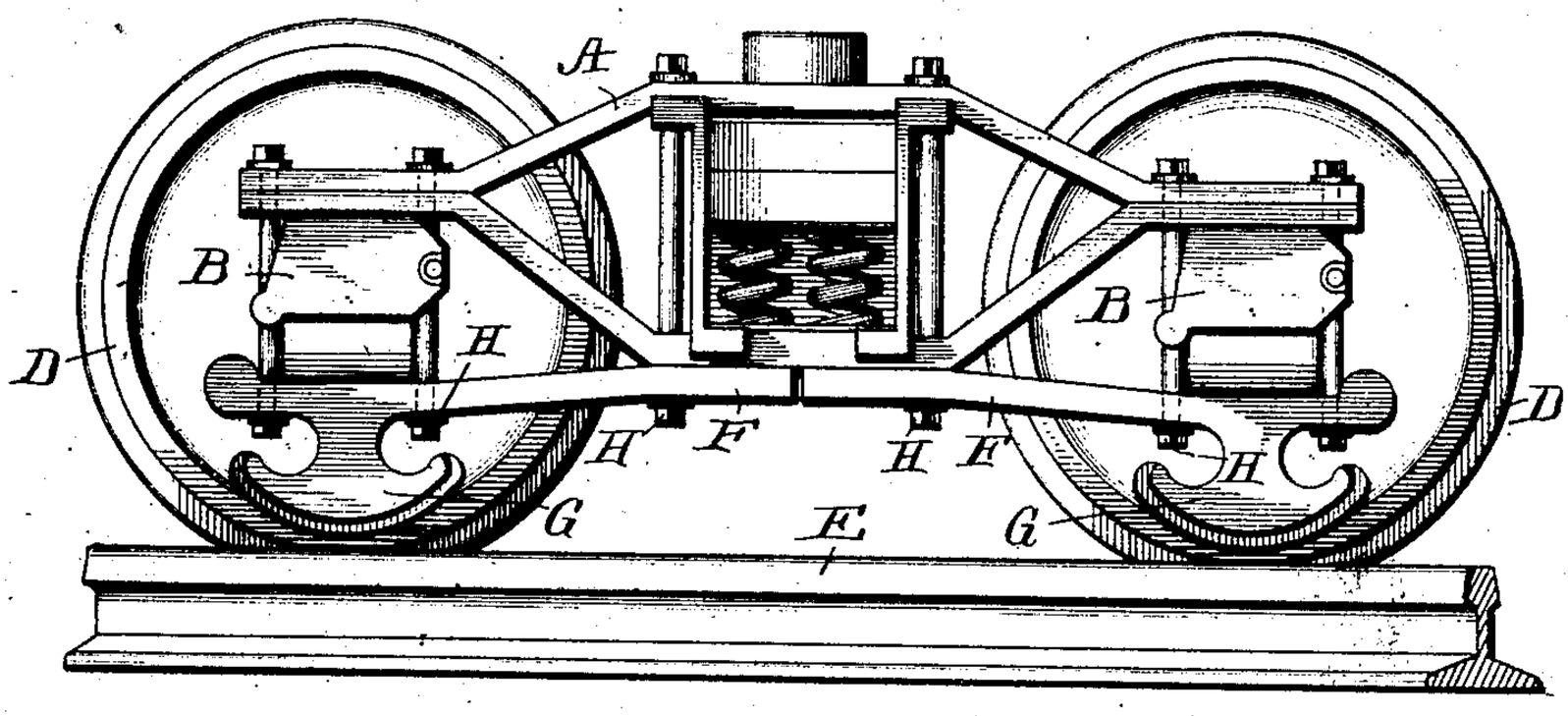
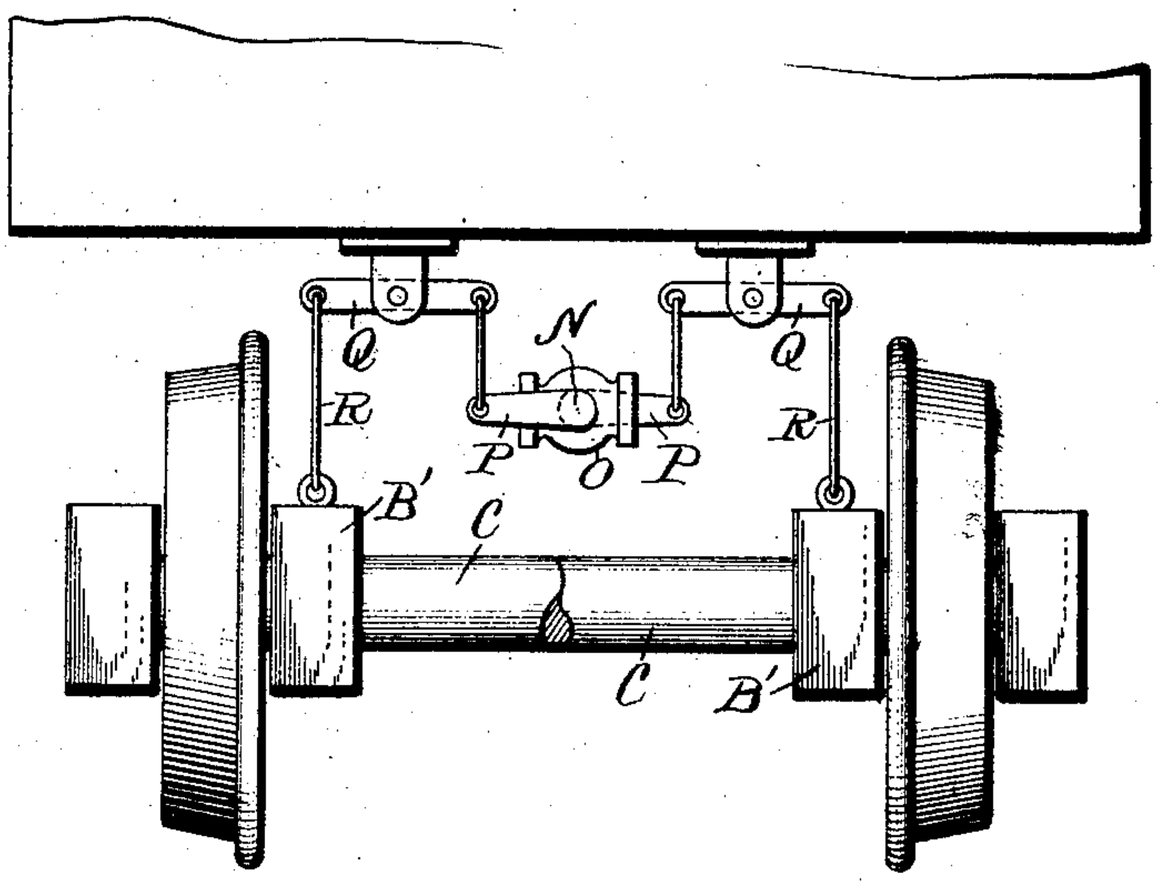


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 2.

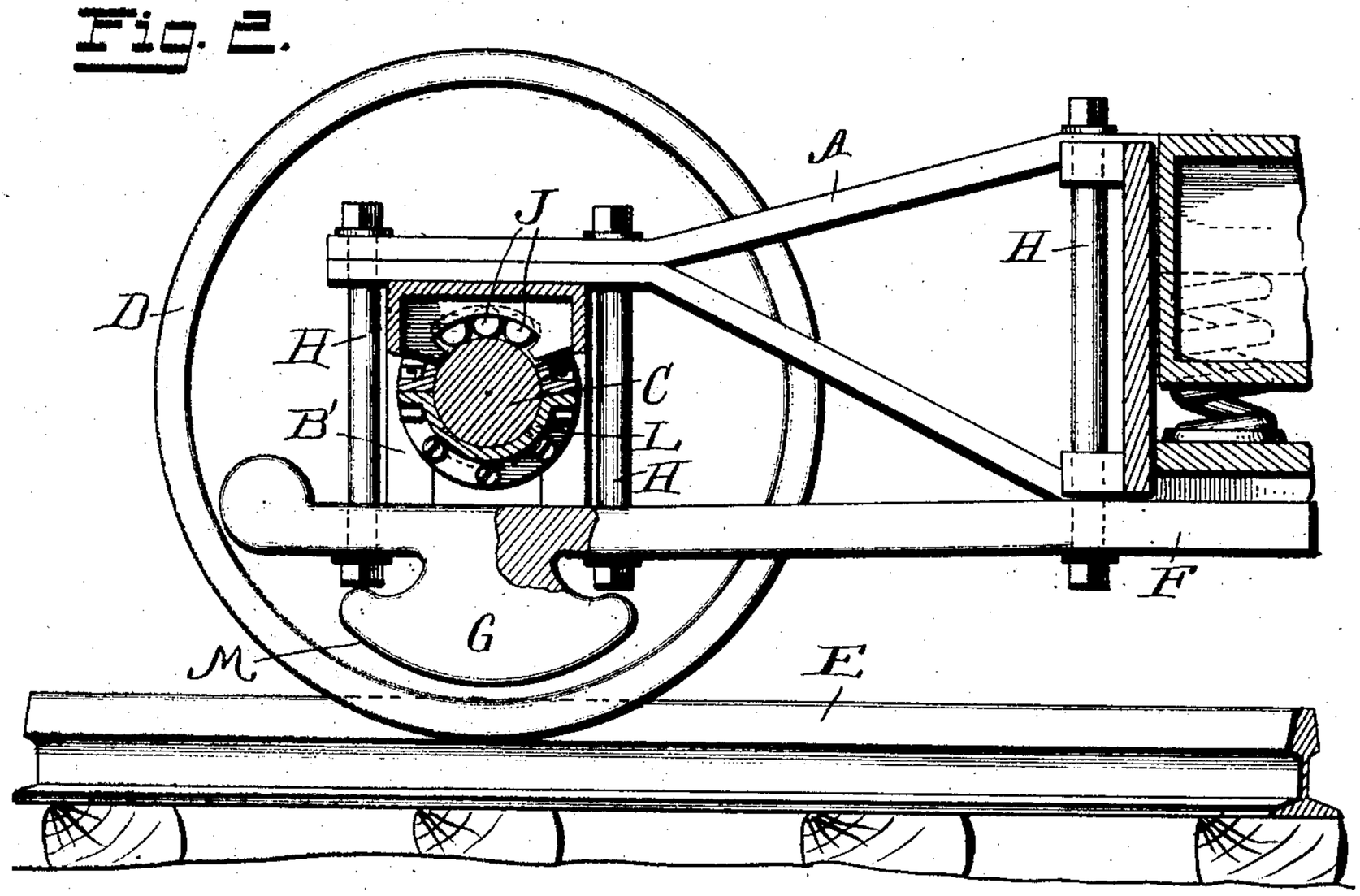
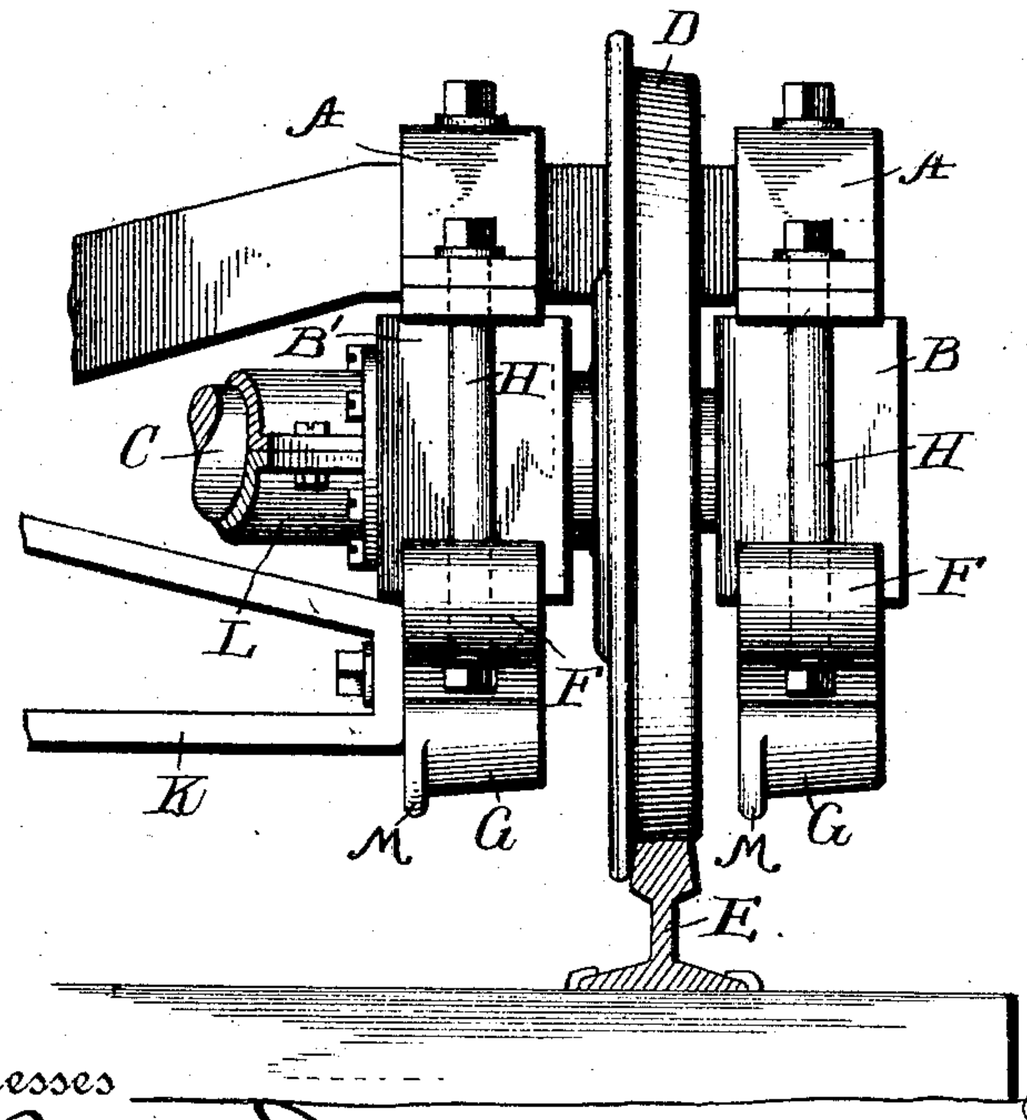


Fig. 3.



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UNITED STATES PATENT OFFICE.

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SAFETY APPLIANCE FOR RAILROAD-CARS.

No. 895,937. Specification of Letters Patent. Patented Aug. 11, 1908.

Application filed August 21, 1907, Serial No. 389,562. Renewed March 19, 1908. Serial No. 422,088.

To all whom it may concern:

Be it known that I, JAMES T. ANDREW, a citizen of the United States, residing at Montgomery, in the county of Montgomery and State of Alabama, have invented certain new and useful Improvements in Safety Appliances for Railroad-Cars; 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 improvements in safety appliances for railroad cars, and the object of my invention is to provide means whereby derailment of a train, with the injurious effects resulting therefrom, shall be rendered practically impossible, this application being in the nature of an improvement upon my former application, Serial No. 349,727, filed September 27, 1906.

My invention is applicable not only to railroad cars, but also to electric cars of all descriptions, and to locomotives, now in use, without any substantial alterations to equipment as it now exists.

With this object in view, my invention consists in the construction and combination of parts, more fully described hereinafter and particularly pointed out in the claims.

Referring to the accompanying drawings forming part of this specification;—Figure 1 represents a side view of a railroad truck, with my invention applied thereto, showing a portion of the rail. Fig. 2 represents a sectional view of a part of the truck looking from the inside of the rails outward, and with my invention applied thereto. Fig. 3 represents a fragmentary view of one corner of a truck, looking down the rails, and showing my invention as applied to each side of the wheel. Fig. 4 represents a means by which the Westinghouse air brakes are automatically applied to the wheels when derailment occurs.

Like letters indicate like parts in all the views.

A represents the usual truss bracing now employed in railroad car trucks; B the usual journal boxes; C the usual axles for the wheels D; and E a rail of an ordinary railroad track. Firmly bolted, or otherwise secured to the truck frame A are the bars F, and to these bars are integrally, or otherwise secured the heavy metal slides G, as shown. These bars F are preferably secured to the truck framing by the bolts H.

I duplicate the framing A on the inside of the wheels. That is to say, there is a truss frame A on each side of each pair of wheels, as best shown in Fig. 3. To each of these frames A is secured journal boxes, as shown, but the journal boxes B′ on the inside of the wheels are not so expensively made as the journal boxes B on the outside of the wheels. These journal boxes B′ are not normally intended to carry as much weight as the journal boxes B, and I preferably provide them with roller bearings J, as best shown in Fig. 2, in order to reduce the friction.

To the lower portion of the truss frames A on the inside of the wheels, I firmly secure, integrally, or otherwise, the cross bracing K, as best shown in Fig. 3. This cross bracing K is preferably secured to the opposite shoe G and to the truck, in the manner disclosed in my pending application above.

L represents tubes or casings firmly bolted to my journal boxes B′ on the inside of the wheels, and encircling the wheel axles C.

The treads of the shoes or slides G are preferably much wider than the tread of the wheels, as shown, and they are provided with the flanges M.

By the structure disclosed, it will be observed that I support the wheels D between pairs of journal boxes B and B′, that I give the truck an additional pair of truss frames A located on the inside of the wheels, and that I further stiffen this latter pair of truss frames by the cross truss bracing frame K. It results directly from this that the axle of the wheels being supported on each side of the same is very much stronger and less liable to break than if it were supported on one side only of the wheel. I am therefore enabled to use a much lighter axle than heretofore. In addition to this, the tubes or casings L, since they surround the axles additionally support the same, and since said casings are firmly secured to the journal boxes B′, and through them to the additional truss framing on the inside of the wheels, it follows that should one or more axles break the casings L would serve to prevent the wheels from leaving the track. It also follows from the fact that I give this additional bracing to the truck on the inside of the wheels, that I greatly strengthen the truck, and thereby enable the car to carry a heavier load than has been possible heretofore where my bracing is not used. The main function of thus strengthening the bearings for the wheels,

and for thus bracing and strengthening the truck as a whole, however, is to enable the truck to stand the severe racking strains when the car is derailed.

Referring now to Fig. 4; N represents the train pipe carrying air to the Westinghouse air brake system, O represents a valve controlling the same, and P, levers connected to said valve. Q represents other levers hung from the bottom of the car and suitably connected with the levers P. R represents suitable connections between the levers Q and the journal boxes B'.

The operation of my device is as follows:—As soon as a wheel of the truck leaves the track, the truck will drop and one of the journal boxes B' will pull upon one of the connections R, and through its connections with the valve O will cause the Westinghouse air brakes to be instantly applied to the train. At the same time, one of the shoes or slides G on one side or the other of the said wheel will impinge upon the track rail, and cause the car to slide along the same. The heavy bracing of the truck, above described, will enable the same to receive the blow incident to the impinging of the said shoe G upon the rail, and the friction along the rail, taken with the friction of the other wheels to which the brakes have been applied, will soon take up the energy due to the momentum of the train.

Where, of course, two or more wheels leave the track, two or more shoes G will impinge upon the rails, in the manner just described, and, of course, the friction will take up the energy of the train that much quicker.

By actual tests during a large number of trials with full-sized cars, engine, and a standard track, and with an apparatus somewhat different from the above, I have abundantly demonstrated in actual practice that the friction due to shoes of this nature, when combined with the action of the Westinghouse air brakes, is ample to use up the energy of a train going fifty miles an hour. And contrary to ordinary expectations, when a train is derailed and guided along a track by an apparatus such as above described, there does not exist the great difficulty of keeping the train on the track, that is commonly supposed. That is to say, I have demonstrated time and again that if the momentum of the train is properly directed in the initial stages of derailment, it can be amply taken care of and the trains can be derailed with perfect safety to the cars and their equipment. Of course, however, in such derailments the journal boxes and wheel axles receive blows, more or less severe, and it is necessary that the trucks be braced to provide against injury from the same. When this latter provision is made, however, the train when derailed simply slides along the track just as any other heavy moving body would do when delivering a glancing blow, and I find that if this glancing blow is analyzed and provided for in the manner above described, the great injury now due to train wrecks can be obviated, because no wheel of a train is ever allowed to hit a cross tie.

In addition to the above advantages relating to the increased safety and carrying capacity of my truck, especial attention is called to the following important features of my invention. That is to say:—It often occurs in regular trains that one or more of the outer journals B, break from hot boxes or other causes. In fact, accidents of this nature constitute one of the most frequent and fruitful sources of present railroad wrecks; for at present, as is well known, on ordinary trucks there is nothing to prevent the journal box when it is broken, from falling to the cross ties, letting the whole tonnage of the car down upon the track, thereby knocking the truck off the center plate and destroying the equipment with all its attendant damages. In my invention, however, when the outer journal B breaks, the tonnage of the car rests upon the journal bearing B' on the inside of the wheels, as above intimated, and this journal at once performs all the functions of the broken journal B, prevents the said journal B from descending to the track, and cross ties, and thereby prevents the wheel from leaving the track and the consequent derailment of the train. In fact, even if all the outer journals B should break, there are provided an equal number of journals B' to perform their functions and since these journals B' are on the inside of the wheels and nearer together and to the center of the axle than are the journals B, they are capable of sustaining with safety, a greater burden than are said journals B.

I do not wish to be understood as confining myself to the exact details of construction and arrangement hereinabove set forth, for it is evident that the same may be varied without departing from the spirit of my invention.

Having now disclosed my invention, what I claim, is:—

1. In a railroad car truck provided with wheels, the combination of a pair of truss frames A on each side of said wheels, a bar F on each side of each wheel secured to said truss frames, slides or shoes G, on said bars, and a cross truss framing K between each pair of inside shoes G, substantially as described.

2. In a railroad car truck, provided with wheels and axles, the combination of a pair of truss frames A on each side of said wheels, a bar F on each side of each wheel secured to said truss frames, slides or shoes G, on said bars and integral therewith, cross truss framing K between each pair of inside shoes, and a pair of journal boxes supported on each

side of each wheel by said frames A, substantially as described.

3. In a railroad car truck, provided with wheels and axles, the combination of a pair of truss frames A on each side of said wheels, a bar F on each side of each wheel secured to said truss frames, slides or shoes G, on said bars and integral therewith, cross truss framing K between each pair of inside shoes, a pair of journal boxes supported on each side of each wheel by said frames A, and a casing or tube L encircling each axle and rigidly secured to said truss frames, substantially as described.

4. In a railroad car truck provided with wheels and axles, the combination of a pair of truss frames A on each side of said wheels, a bar F on each side of each wheel firmly secured to each frame A, slides or shoes G having treads broader than the treads of said wheels, integral with said bars, cross truss framing K between each pair of inside shoes G, a journal box B supported by the frame A on the outside of each wheel, and a journal box B′ provided with ball bearings supported by the frame A on the inside of said wheel, and a casing or tube L made in two parts bolted together, encircling the axle and firmly secured to each journal-box B′, substantially as described.

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

JAMES T. ANDREW.

Witnesses:
R. M. PARKER,
F. C. BACHE.