

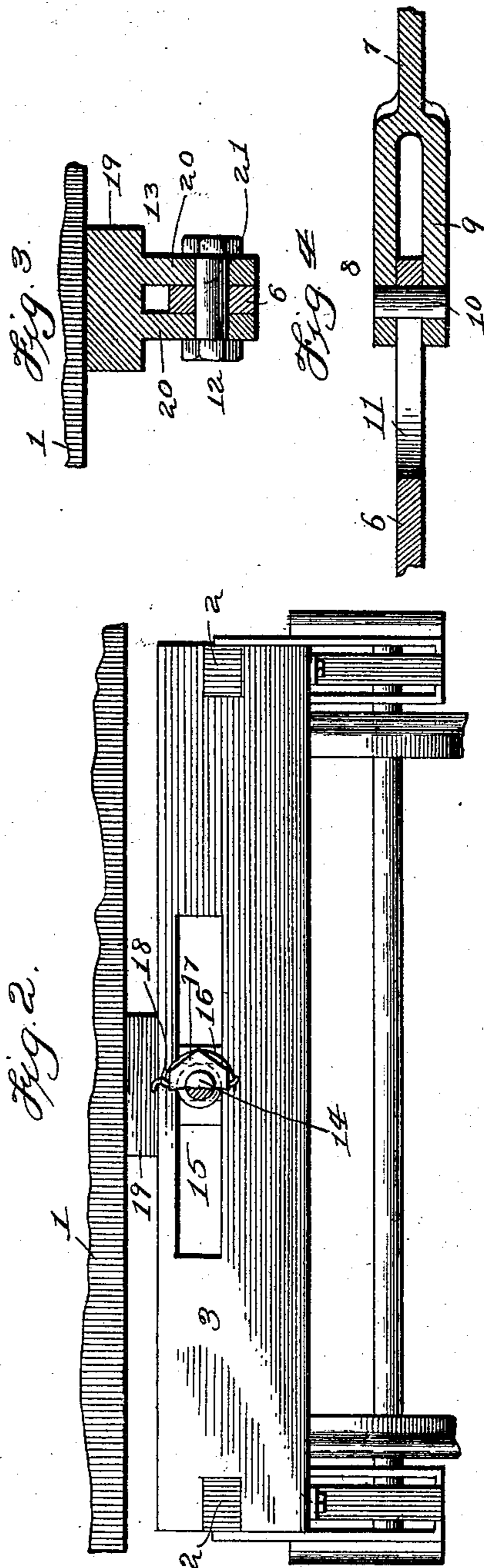
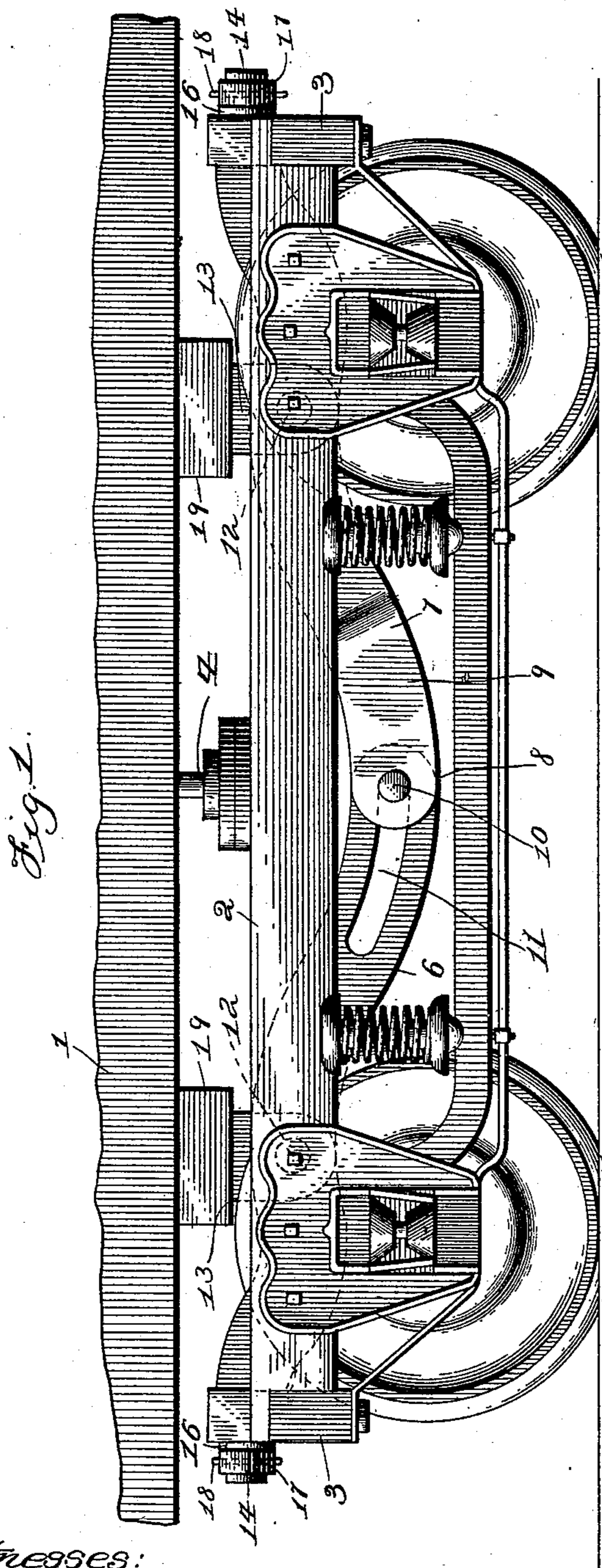
(No Model.)

2 Sheets—Sheet 1.

J. H. HOUSMAN.
EQUALIZER FOR CAR TRUCKS.

No. 570,875.

Patented Nov. 3, 1896.



Witnesses:
Herbert Bradley
Jas. W. White.

Inventor:
James H. Housman
By Knight Bros
Attorneys

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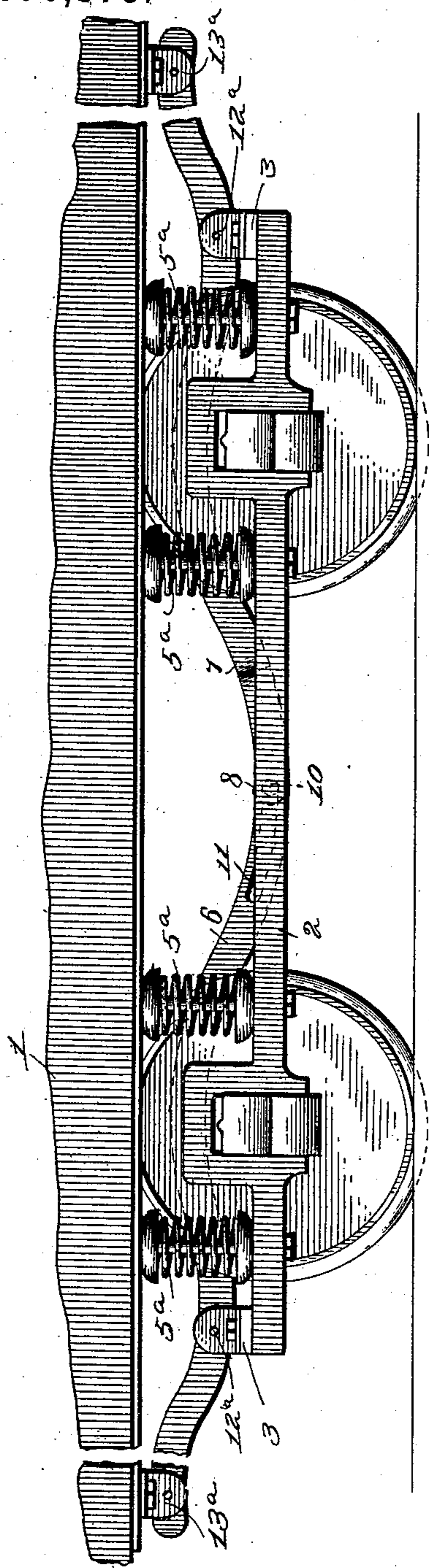
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Fig. 5.



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UNITED STATES PATENT OFFICE.

JAMES H. HOUSMAN, OF CLIFTON FORGE, VIRGINIA.

EQUALIZER FOR CAR-TRUCKS.

SPECIFICATION forming part of Letters Patent No. 570,875, dated November 3, 1896.

Application filed July 25, 1896. Serial No. 600,508. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. HOUSMAN, a citizen of the United States, and a resident of Clifton Forge, in the county of Alleghany and State of Virginia, have invented a new and useful Equalizer for Car-Trucks, of which the following is a specification.

My invention has for its object to provide a railway-car or other vehicle running upon trucks with a lever system which will not interfere with any of the functions or necessary movements of the truck, but will keep both ends of the truck in the same relation with the car at all times.

In the case of single street-cars the invention is especially advantageous in overcoming the rocking movement which the cars perform on the truck.

My invention consists in certain novel features of construction which will be hereinafter described and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of an ordinary pivoted car-truck mounted beneath the car and having my invention applied. Fig. 2 is a detail view showing one form of connection between the levers and the truck. Fig. 3 is a detail view showing one form of connection between the levers and the car. Fig. 4 is a detail view showing the connection between the meeting ends of the levers. Fig. 5 represents a modification in the arrangement as applied more particularly to street-cars.

1 represents the sill or other portion of the car-body, and 2 the side rails, and 3 the end rails, of the truck, which is pivoted at 4 in the usual manner beneath the car.

5 represents springs which, in the form of trucks shown, are interposed between the portion of the truck which receives the load of the car and that portion which is supported upon the wheel-journals.

6 and 7 represent a pair of doubly-curved toggle-levers, which have a sliding connection at 8, formed by a fork end 9 on one of the levers, constructed to receive the end of the opposite lever, and a pin 10, which is fixed in one of the levers, (which is shown to be the forked lever,) and a slot 11, formed in the other lever. These levers, as shown in Fig. 1, are fulcrumed at 12 in hangers 13, secured to the sill of the under portion of the car-body,

while the outer ends 14 of said levers have a laterally-yielding but vertically-fixed connection in the end rails 3 of the car-truck. This connection is shown in Fig. 2, in which it will be seen that the end rails 3 are provided with slots 15, which receive the ends 14 of the levers 6 and 7, said ends being preferably provided with friction-washers 16 and being held against displacement by nuts 17 and cotters 18.

The hangers 13, as will be seen from Fig. 2, consist of an attaching-plate 19, having downwardly-projecting ears 20, between which the levers 6 or 7 work and upon which said levers are fulcrumed by bolts 21.

From the foregoing description it will be seen that the vertical action of the truck-springs and the swivel or pivoted action of the truck as a whole will in no wise be interfered with, the latter movement being permitted by the slots 15 in the end rails 3; but it will be impossible for either end of the truck to move up or down without imparting a similar movement, through levers 6 and 7, to the other end of the truck. The truck is therefore held at all times substantially parallel with the car, and the action of the truck in bearing down at the forward end when the brakes are applied is entirely prevented.

If it is desired to apply the invention to single-truck cars, such, for instance, as street-cars, and to prevent the rocking movement of such cars upon the trucks, as frequently takes place on long cars, the manner of mounting the lever on the truck and car may be varied, as shown in Fig. 5. In Fig. 5 the fulcrum 12 is upon the end rail 3 of the truck, while the load of the car is imposed upon the ends of the levers, as shown at 13^a. In this form of arrangement the springs 5^a are between the car and a portion of the truck upon which the levers are fulcrumed; but while the levers have the effect of overcoming the rocking movement the action of the springs is in no way interfered with for the reason that the toggle-joint 8 permits the ends of the levers to move up and down simultaneously without opposition. In all these forms the same principle of leveling the truck is present, and in addition to those advantages above described the levers offer the additional advantage of securely bracing the

truck with reference to the car fore and aft and thus assist in meeting a problem which is always present in street-car trucks—viz., taking up longitudinal thrust between the car-truck and car without interfering with the freedom of the vertical action of the springs.

There are several advantages which arise from making the equalizing-bars of the double-curved form shown, among which are the following: It adapts the bars to extend from one pair of the pivoting-bearings to the other pair, which are in a different horizontal plane, and it brings the meeting ends of these bars together at a point where they have plenty of room for play. A further advantage is that the several curves bring all of the bearing portions of the bars in a position horizontal with respect to their bearings, so that the load imposed by the several bearings is in a direction transverse to the length of the bar, and in this way relative movement which takes place between the bars and their bearings is provided for in a longitudinal direction, so that the bearings may be perfectly rigid vertically and no lost movement occur in this direction. This is very important in my invention, wherein the object is to make it impossible for one end of the truck to move independently of the other. With such a construction in cars having more than one truck it is possible for one pair of wheels to give way entirely and for the whole load of that end of the car to be carried upon the remaining wheels without permitting the disabled end of the truck to fall. In making the meeting ends of the bars curve downwardly they are forced toward each other in action, and the slot formed in the end of one of them follows the curve of the bar and thereby makes the friction of the joint very much less than it would be if the bars were straight.

I prefer to have one pair of the bearings located upon end rails of the car-truck outside of the wheels, as this offers the best control over the truck and offers opportunity for making the long arms of the levers out of the ends which are joined together by the sliding joint.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. The combination of a car-body, a car-truck having rails across its ends outside of the wheels, a pair of vertically-rigid bearings

carried by said end rails, a pair of rigid pivoting-bearings secured to the under side of the car-body, and a pair of doubly-curved equalizing-levers having their ends secured in one of the pairs of bearings and having corresponding intermediate points fitted in the other pair of bearings; said equalizing-bars having their meeting ends curved downwardly and connected together by means of the fork and slot-and-pin connection, of which the slot follows the curve of the bar in which it is formed, substantially as herein explained and for the purposes set forth.

2. The combination of a car-body having a pair of pivot-bearings on its bottom, a car-truck having end rails carrying another pair of bearings, and a pair of doubly-curved equalizing toggle-levers having downwardly-curved meeting ends connected together by a fork and slot-and-pin connection of which the slot follows the curve of the end in which it is formed; said levers having their ends fitted in one pair of the bearings and corresponding intermediate points fitted in the other pair of bearings and the curves of said levers being disposed so that the levers will properly extend from the point of their connection to the respective bearing-points in different planes and so as to bring the parts of said levers at their bearing-points substantially transverse to the direction of the load, substantially as and for the purposes set forth.

3. The combination of a car-body having hangers, a car-truck having slotted end rails and a pair of doubly-curved equalizing toggle-levers having a fork and pin-and-slot connection and pivoted to the hangers of the car-body and secured at their outer ends to the slotted rails of the car-truck; substantially as described.

4. In combination with a car-body and a truck for supporting said body, having end rails formed with horizontal slots, the herein-described equalizing-levers having fixed bearings upon the under side of the car-body, having a yielding connection at their meeting ends, and having their other ends working in the slots in the end rails, substantially as and for the purpose set forth.

JAMES H. HOUSMAN.

Witnesses:

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