

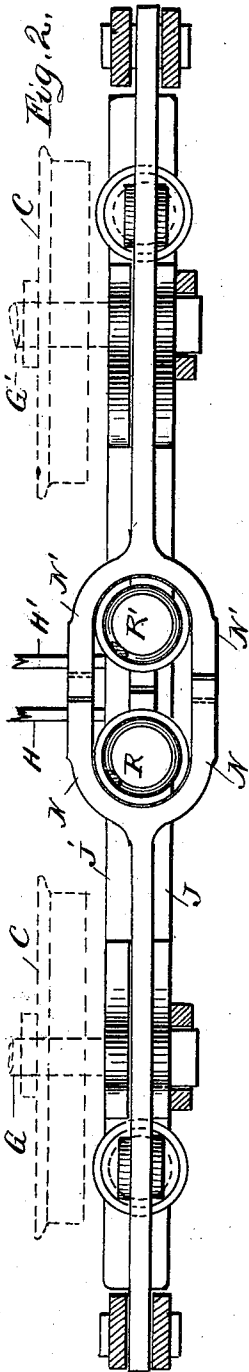
(No Model.)

2 Sheets—Sheet 1.

C. FITZGERALD.
CAR TRUCK.

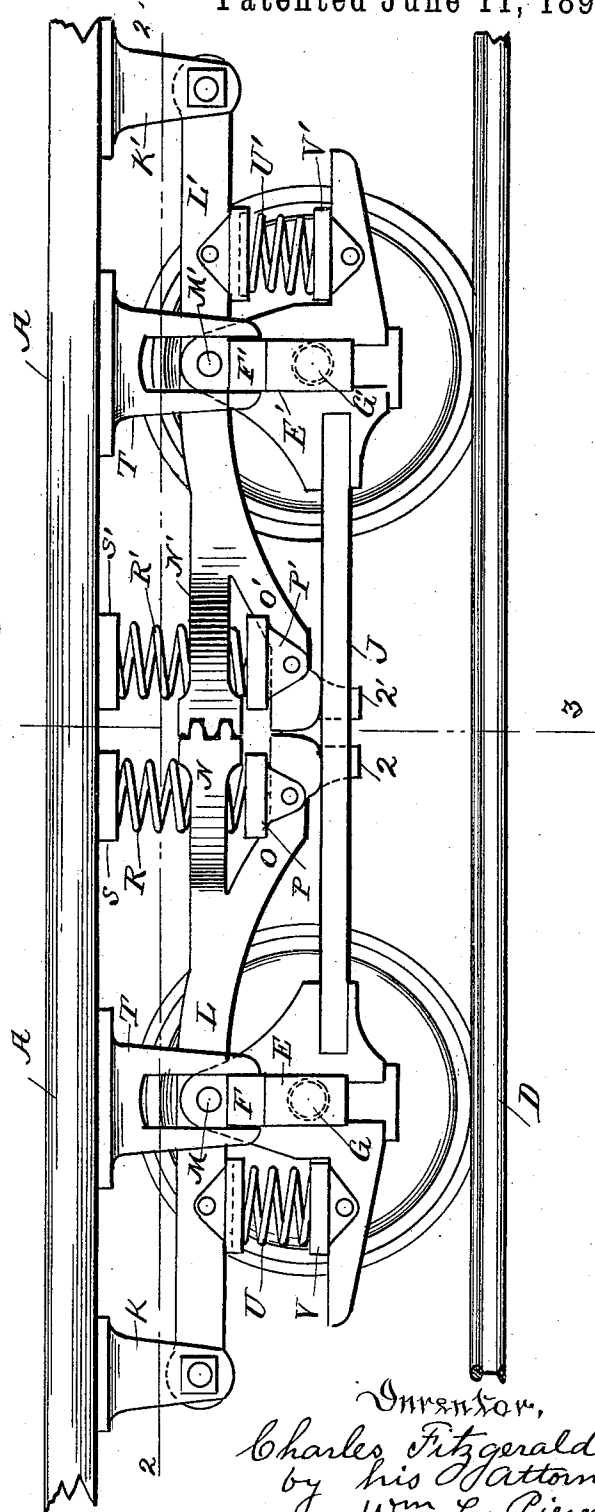
No. 540,831.

Patented June 11, 1895.



WITNESSES:
W. E. Harrison
William Beal

Fig. 1.



Inventor,
Charles Fitzgerald,
by his Attorney,
Wm L. Pierce.

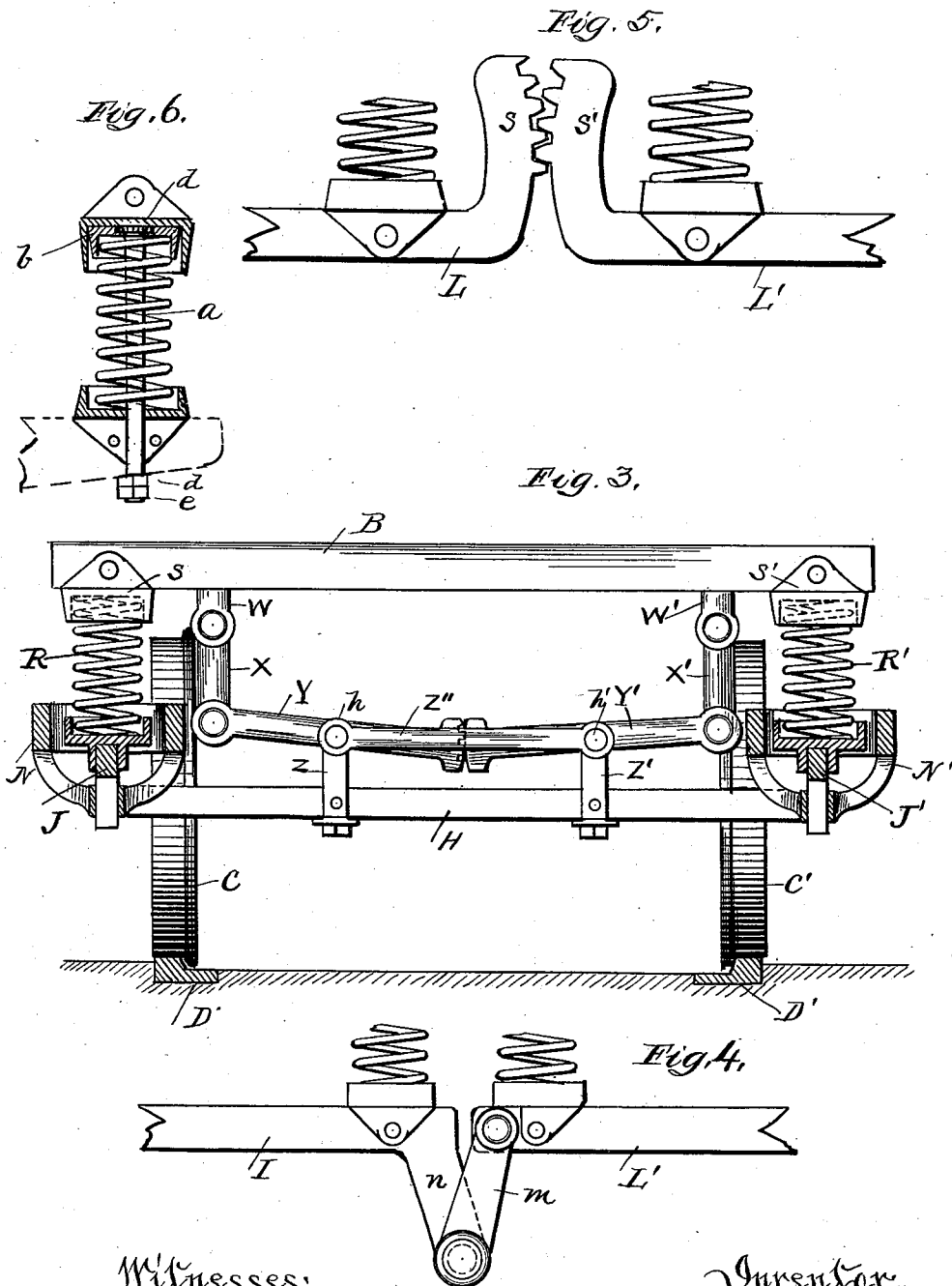
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Witnesses:
M. C. Harrison,
William Beal

Inventor,
Charles Fitzgerald
by his Attorney,
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UNITED STATES PATENT OFFICE.

CHARLES FITZGERALD, OF PITTSBURG, PENNSYLVANIA.

CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 540,831, dated June 11, 1895.

Application filed October 23, 1894. Serial No. 526,671. (No model.)

To all whom it may concern:

Be it known that I, CHARLES FITZGERALD, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered new and useful Improvements in Car-Trucks, of which the following is a specification.

In the accompanying drawings, which make part of this specification, Figure 1 is a side elevation of my improvement applied to a street-car truck. Fig. 2 is a section of the same on line 2 2 of Fig. 1. Fig. 3 is a section on line 3 3 of Fig. 1. Fig. 4 is a detail view of a modification of the inner ends of the equalizing-levers in broken side elevation. Fig. 5 is a like view of another modification of same; and Fig. 6 is a detail showing spring and compression-bolt in elevation, but top and bottom spring-sockets in section.

The purposes of my invention generally stated are to apply a spring device to a car truck whereby both end motion and lateral motion shall be equalized. I thus reduce to a minimum the jolting of the passengers, the racking of the car body and the vibration of the motor, should that style of propulsion be used. The rails and road bed are also less liable to be destroyed; also to support the car upon springs at three points and about equally spaced from each other, whereby the load will be more uniformly distributed; further to provide the car with two sets of springs, one set of which is only called into action, when the car is exceptionally loaded, thereby proportioning the number of springs which shall support the car with varying loads and preventing an excessive burden being carried by any one set. Besides the broader features of my invention consisting of a general combination of levers and springs whereby I obtain the above results, I have also made improvements in the specific shape of the levers, location of the springs and other details which I specifically claim. I also illustrate and describe three modified ways of making the contact or connection between the inner ends of the equalizing levers.

My invention is applicable more especially to street railway cars, whether electric, pneumatic, cable or horse power. It can also be

advantageously employed on the trucks of steam engines or steam cars.

In the accompanying drawings, which make part of this specification, I have illustrated my invention as applied to a four wheeled electric street car truck and with the equalizing levers shown in substantially a horizontal position, indicating that the car is loaded to its seating capacity. One set of springs only are therefore in action, but the other set is about at the point of being brought into play, when the standing room in the car shall commence to be occupied.

In the several views, A is the car sill.

B, is the cross beam of the car; C, C', the wheels; D, D', the rails; E, E', the pedestals; F, F', the boxes; G, G', the axles; J, J', the side bars of the truck secured to the pedestals, and H, H' the bars for carrying motor supported by side bars of the truck.

Thus far the parts are old and well known in their combinations as shown.

On the underside of sill A are secured forked brackets K, K', in the forks of which are pivoted equalizing levers, L, L'. Said levers are fulcrumed at M, M', to the pedestals. The upper end of these levers terminates in forks N, N', provided with gear teeth. The gear teeth mesh in arcs struck from equal opposite centers. The lower inner ends O, O' of the equalizing levers have spring cups P, P' and extension guides Q, Q' working vertically in the slotted side bars J, J'.

R, R' are four springs supported in said spring cups and in spring cups S, S' secured to under side of car sill.

T, T', are guide yokes secured to under side of car sill and moving vertically upon upper part of pedestals.

U, U' are springs supported in suitable spring cups V, V' on under side of equalizing levers near outer end and on pedestals.

In Fig. 6 these springs are shown as having a compression bolt *a*, tapped into inner cup *b*, said bolt being secured by nuts *d, e*, on under side of pedestals. Upper spring cup V slides vertically on inner cup *b*.

The devices for preventing lateral swaying are best seen in Fig. 3.

W, W' are brackets secured to under side of cross beam and carrying links X, X'. To

these links are pivoted transverse equalizing levers Y, Y', fulcrumed at h, h' to fulcrum posts Z, Z', which have stiffening bar Z'', fulcrum posts being supported on motor carrying bar H. The inner ends of equalizing levers Y, Y' are provided with gear teeth meshing on arcs struck from equal opposite centers.

In Fig. 4, I show a construction wherein the inner ends of the equalizing levers L, L' are connected by link m , pivoted to inner end of lever L, said link being also pivoted to elbow n on lever L.

In Fig. 5, I show the inner ends of equalizing levers terminating in upwardly projecting elbows S, S', provided with gear teeth. This does away with the forked ends of the levers and is adapted to a car having the body set high.

The operation of the apparatus is as follows: The four central springs R, R', have for example a tension of one thousand pounds each. Hence it will require eight thousand pounds of load to balance them. Eight thousand pounds will represent roughly the weight of the ordinary car body loaded to its seating capacity. When additional load is added, the car will settle and when it has sunk about an inch and a half the four auxiliary springs U, U' will also assist in assuming the load by reason of the levers L and L' coming in contact with them. These springs by compression bolts a, a' are preferably set at eight hundred pounds each and their total resistance will be three thousand two hundred pounds. This will sustain the average added standing load. It will be further noted that the load is supported at three points, viz: at the center and at the two ends.

Freedom from end and side vibration is secured in the following manner, viz: Should one end of the car tend to sink, for instance the right hand end of Fig. 1, the inner end of lever L' would be thrown up, raising inner end of lever L, depressing outer end of lever L and tending to lower left hand of car simultaneously with the right hand end. In like manner should the car tend to sway sideways, the levers Y and Y' will equalize the motion and keep the car substantially level.

A great variety of modifications in details of my invention may obviously be made, such as changes in points of attachment, configuration, position of fulcrum points, number of springs used, &c.

When desired the supplemental group of springs U, U' may be omitted but the construction will be inferior. The transverse system of levers may also be omitted.

Having described my invention, I claim—

1. The combination of a car body; running gear; a pair of equalizing levers running lengthwise of the car pivotally connected at their outer ends to the car body, intermeshing at their inner ends and fulcrumed at in-

termediate points; a group of springs located between the inner ends of said levers and the car body, and a group of supplemental springs located below said equalizing levers and between the fulcrum and the outer ends of said levers.

2. The combination of a car body; running gear; a pair of equalizing levers running lengthwise of the car pivotally connected at their outer ends to the car body, loosely connected at their inner ends and fulcrumed at intermediate points; a group of springs located between the inner ends of said levers and the car body, and a group of supplemental springs located below said equalizing levers and between the fulcrum and the outer ends of said levers.

3. The combination of a car body; running gear; a pair of equalizing levers pivotally connected at their outer ends to the car body, their inner ends terminating in geared forks intermeshing with each other, said levers being fulcrumed at intermediate points; a group of springs between the inner ends of said levers and the car body, and a group of supplemental springs located below said equalizing levers and between the fulcrum and the outer ends of said levers.

4. The combination of a car body; running gear; a pair of equalizing levers pivotally connected at their outer ends to the car body, their inner ends terminating in geared forks intermeshing with each other, said levers being fulcrumed at intermediate points; guides attached to the inner ends of said levers adapted to work vertically in suitable ways; a group of springs between the inner ends of said levers and the car body, and a group of supplemental springs located below said equalizing levers and between the fulcrum and the outer ends of said levers.

5. The combination of a car body; running gear; a pair of equalizing levers pivotally connected at their outer ends to the car body, their inner ends terminating in geared forks intermeshing with each other, said levers being fulcrumed at intermediate points and springs between the inner ends of said levers and the car body and embraced by said forks.

6. The combination of a car body; running gear; a pair of equalizing levers running lengthwise of the car, pivotally connected at their outer ends to the car body; loosely connected at their inner ends and fulcrumed at some intermediate point; and a pair of transverse equalizing levers pivotally connected to the body of the car at their outer ends, loosely connected at their inner ends and fulcrumed at some intermediate point.

In testimony whereof I have hereunto set my hand this 13th day of October, A. D. 1894.

CHARLES FITZGERALD.

Witnesses:

WM. L. PIERCE,
ANDREW S. MILLER.