(No Model.) 3 Sheets—Sheet 1.

L. K. JEWETT.

BEARING FOR RAILWAY CARS.

No. 418,028. Patented Dec. 24, 1889.

Fig. 1.

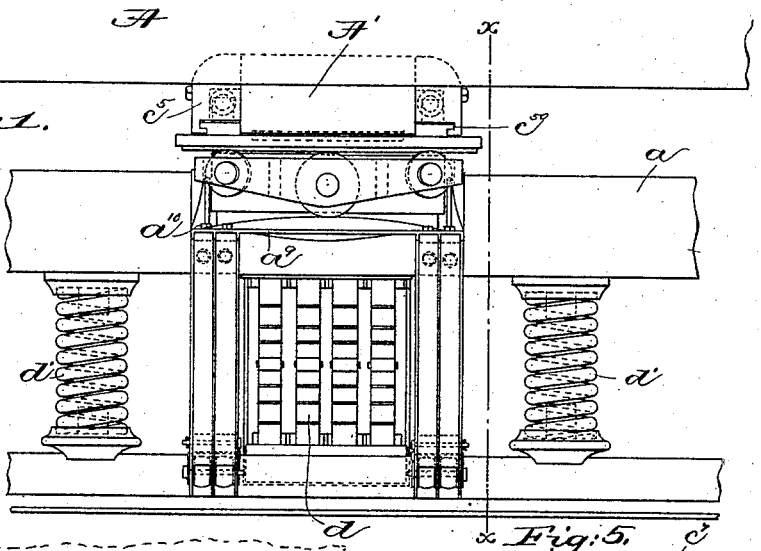


Fig. 2.

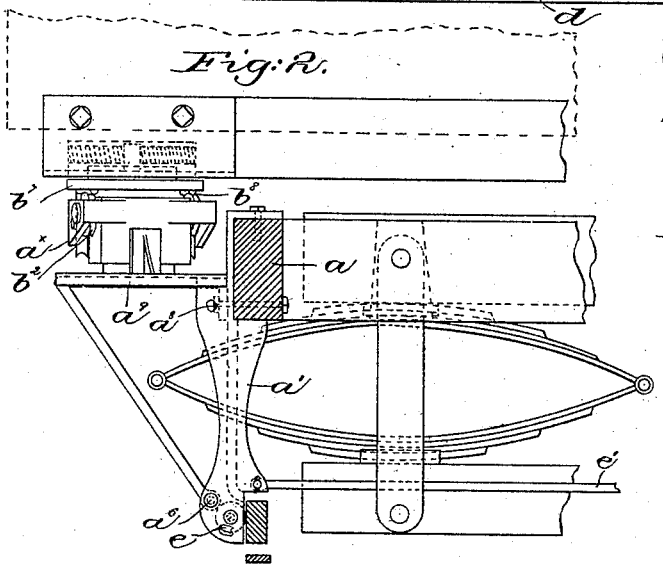


Fig. 5.

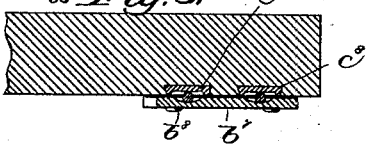


Fig. 4.

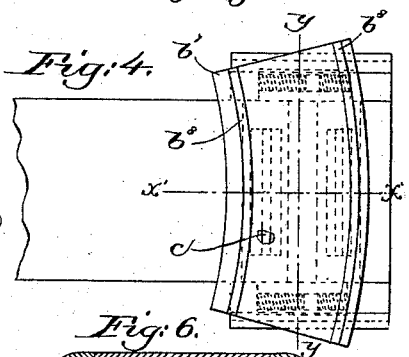


Fig. 6.

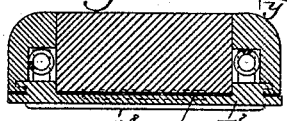
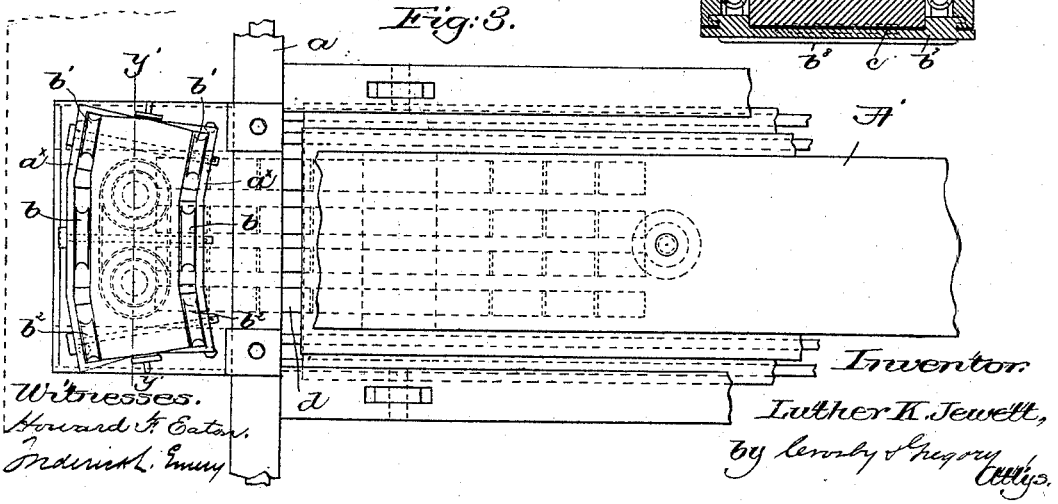


Fig. 3.



Witnesses.
Howard P. Eaton.
Frederick L. Emery

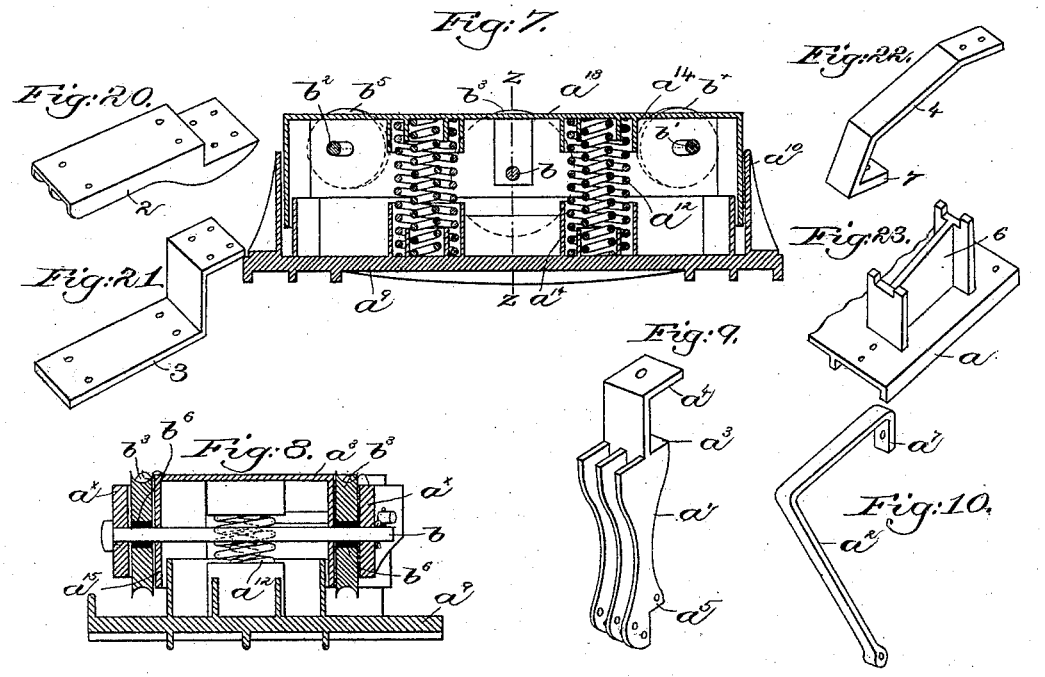
Inventor.
Luther K. Jewett,
by Lemby & Gregory
Attys.

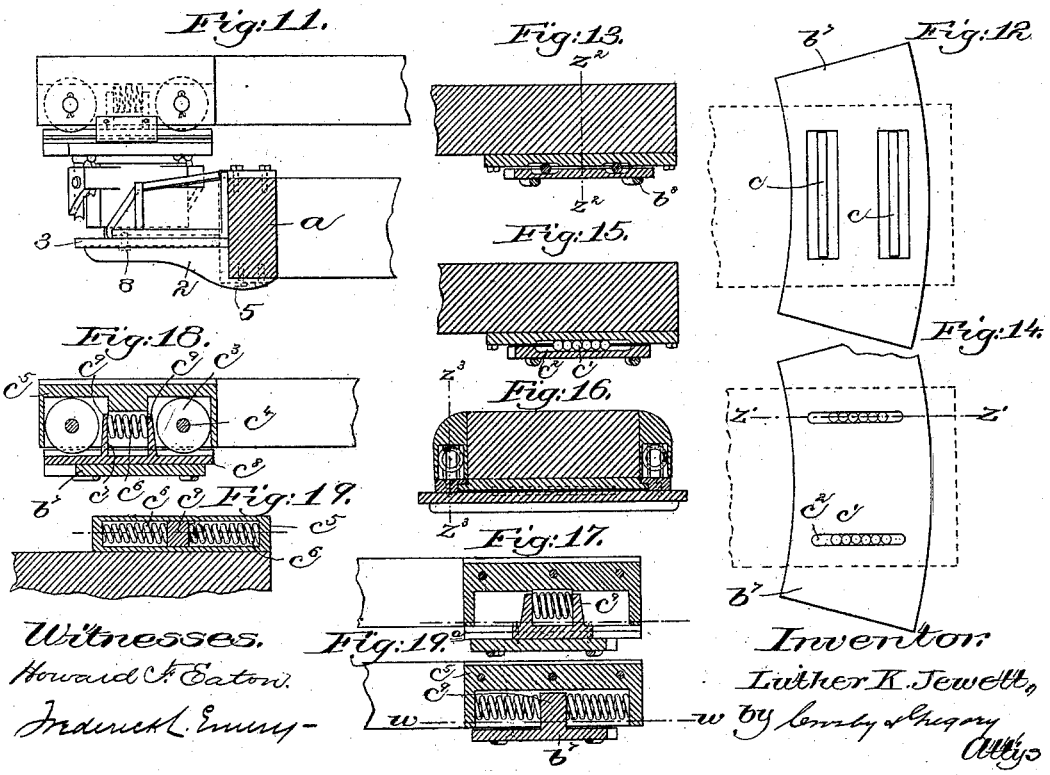
(No Model.) 3 Sheets—Sheet 2.

L. K. JEWETT.

BEARING FOR RAILWAY CARS.

No. 418,028. Patented Dec. 24, 1889.





Witnesses.
Howard A. Eaton.
Frederick L. Emery.

Inventor:
Luther K. Jewett,
by Lemby & Gregory
Attys

N. PETERS, Photo-Lithographer, Washington, D. C.

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L. K. JEWETT.

BEARING FOR RAILWAY CARS.

No. 418,028. Patented Dec. 24, 1889.

Fig. 24.

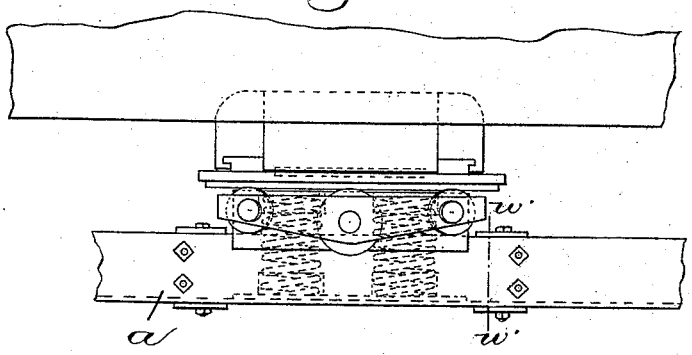


Fig. 25

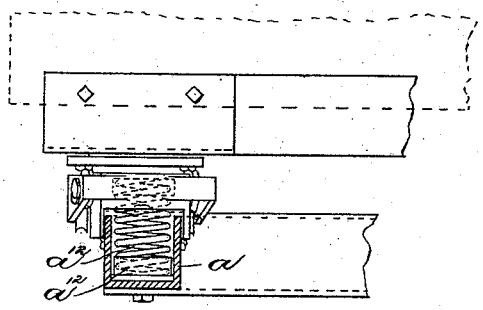


Fig. 26.

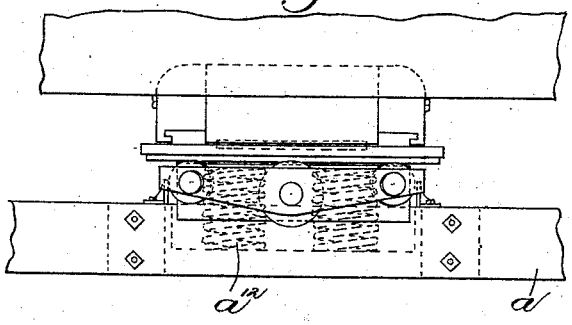
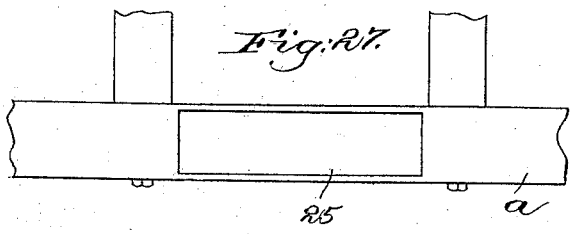


Fig. 27.



Witnesses,
Howard K. Eaton.
Frederick L. Emery.

Inventor,
Luther K. Jewett,
by Lemby & Hagan
Attys

UNITED STATES PATENT OFFICE.

LUTHER K. JEWETT, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE JEWETT SUPPLY COMPANY, OF PORTLAND, MAINE.

BEARING FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 418,028, dated December 24, 1889.

Application filed March 9, 1889. Serial No. 302,657. (No model.)

To all whom it may concern:

Be it known that I, LUTHER K. JEWETT, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Bearings for Railway-Cars, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to railway-cars, and has for its object to provide the car with a side support, as will be described, whereby a firm and steady support is obtained for the car when rounding curves in the track, so that the car may ride easier and be maintained substantially level and be enabled to run at a greater speed around curves in the track than has been heretofore possible.

Prior to my invention car-bodies now commonly constructed and known to me are supported at their sides when rounding curves by a curve-plate secured to the bolster of the car-truck. On the curves of railway-tracks the rails are in the arcs of two different circles, and the outer rail, or that in the arc of the greater circle, is raised or made higher than the inner rail of the track. As the car-body is carried around a curve in the road, the car-truck is on an incline and the car-body is thrown by centrifugal action onto the side of the truck running on the higher rail, and the car-body, supported on the outer curve-plate on the bolster of the car-truck, shuts up or compresses the springs supporting the said bolster, and if the curve in the track is a sharp one the weight of the car-body exerts a greater compressing force upon the bolster-sustaining springs than the said springs can bear, and the excess of weight compresses the equalizer-springs and shuts up and frequently "sets" the same—that is, destroys the elasticity of the said equalizer-springs. In this condition the friction of the car-body upon the bolster curve-plate is very excessive, as is also the friction of the flange of the outer wheels upon the sides of the outer rail, thus necessitating the slowing down of the train, and the car-body at such time is tipped or inclined.

My invention has for one of its objects to obviate the setting or compressing of the bolster-sustaining springs and also of the equalizer-springs, and thereby reduce the friction or wear of the flange of the wheel upon the side of the outer rail and obtain an easier-riding car. I accomplish this feature of my invention by providing the car-body with a side support, as will be described, by which the side of the car-body is firmly or rigidly supported when the car-body is tipped on rounding a curve in the track.

Another feature of my invention consists in providing the car-body with an anti-friction device, as will be described, which is sustained by the side support referred to as the car is rounding a curve, whereby the friction between the car-body and its support is diminished or reduced to a minimum, thus still further reducing the friction between the flange of the wheel and the side of the rail, and as a result obtaining an easier-riding car.

The anti-friction device referred to will preferably be provided with buffers or compensating springs to take up the oscillation or side movement or sway of the car-body, thus obviating jars or shocks, especially to passengers, or it may be to merchandise carried by freight-cars, to which my improvements are applicable as well as to passenger-cars. As the truck of the car is rounding a curve, the car-body is maintained substantially level, as herein shown, by its anti-friction device bearing upon the side support of the car-body. The side support will be constructed, as will be described, so that the extent of tipping of the car-body may be controlled as desired.

The particular features of my invention will be pointed out in the claims at the end of this specification.

Figure 1 is a side elevation of a sufficient portion of a car-body mounted on an ordinary truck and provided with one form of my improved side support for the car-body to enable my invention to be understood; Fig. 2, a transverse section on line *x x*, Fig. 1, looking toward the left. Fig. 3 is a top or plan view of the car-truck and of the car-bolster shown in Fig. 1, the latter being broken off and the car-body being omitted; Fig. 4, an under side view of the car-bolster with the

anti-friction device attached; Fig. 5, a sectional detail on line x' x', Fig. 4; Fig. 6, a sectional detail on line y y, Fig. 4; Fig. 7, a sectional detail to be referred to, the section being taken on line y' y', Fig. 3; Fig. 8, a sectional detail in line z z, Fig. 7; Figs. 9 and 10, details to more clearly show the construction of the side support shown in Fig. 1; Fig. 11, a modification to be referred to; Fig. 12, a detail of a portion of the anti-friction device to show the oscillating rollers; Fig. 13, a sectional detail of a modified form from that shown in Figs. 5 and 12; Fig. 14, a detail of a modified form of a portion of the anti-friction device shown in Fig. 12; Fig. 15, a sectional detail on line z' z', Fig. 14; Fig. 16, a detail section on line z^2 z^2, Fig. 13; Fig. 17, a sectional detail on line z^3 z^3, Fig. 16; Fig. 18, a modification to be referred to; Figs. 19 and 19^a, sectional details to be referred to, Fig. 19 being a section of Fig. 19^a on line w w; Figs. 20 to 23, details of parts of a modified form of side support; Fig. 24, a detail, in elevation, of a modified form of side support; Fig. 25, a section on line w' w', Fig. 24; Fig. 26, a modification, in elevation, to be referred to; and Fig. 27, a detail to be referred to.

The car-body A, provided with the car bolster or rocker A′ and the car-truck A^2, may be of any desired or usual construction, such as now commonly used on railways. The car-body on each side, substantially in line with the car-body bolster A′, is provided with a side support, and both side supports being alike I shall specifically describe but one. Each side support is preferably composed of two side pieces, each made in two parts a' a^2, (see Figs. 2, 9, and 10,) and a connecting bar or plate a^9, secured to said parts. The part a' of the side support is preferably cast to leave at its upper end a shoulder a^3 and a flange a^4 to embrace or fit over the side frame a of the truck, (see Fig. 2), and at its lower end the part a' is also preferably provided, as shown in Fig. 9, with a shoulder a^5, for a purpose to be described. The part a^2 of the side support is preferably made of wrought-iron, bent substantially as shown in Figs. 2 and 10, and secured at its lower end, as by a bolt or pin a^6, to the lower end of the casting a', and at its upper end the said part is bent to form a flange a^7, which is secured by bolts a^8 to the part a'. (See Fig. 2.)

The connecting top or plate a^9 preferably forms the bottom of a box a^{10}, (see Fig. 7,) within which are located, preferably, two or more sets of springs a^{12}, which support a cover a^{13} for the said box, the said springs being guided and maintained in position, as herein shown, by guides a^{14}, secured to the said box and cover. The cover a^{13} is provided with sides a^{15}, (see Fig. 8,) which extend down over the sides of the spring-box a^{10}, and are provided with side plates or bars $a^{\times}$, secured to or forming part of the sides a^{15}, the said side plates or bars and sides a^{15} forming bearings for, preferably, three shafts b b' b^2, (see Fig. 7,) which have mounted upon them on opposite sides of the said box wheels or rollers b^3 b^4 b^5, respectively, the said wheels or rollers being preferably provided with metaline or other self-lubricating bushing b^6. (See Fig. 8.)

The spring-box a^{10} and its cover a^{13} and wheels or rollers constitute or form one part or portion of my improved anti-friction device, the remaining portion or part consisting of an independent plate b^7, detachably secured to the car-body, as will be described, and provided on its under side, as herein shown, with curved tracks b^8, (see Fig. 14,) having a radius corresponding to the radius of the car-truck and fitting into the grooves of the wheels or rollers, so that as the car-truck moves around a curve in the railway-track the friction between the flange on the outer wheels and the side of the outer rail and also the friction between the car-body bolster and the car-truck are largely diminished and reduced substantially to a minimum by the wheels or rollers b b' b^2 and the track b^8.

I prefer to employ three sets of wheels b b' b^2, the wheels b' b^2 being made smaller than the wheels b, as a firmer and better support is obtained for the independent plate b^7, especially on sharp curves. The independent plate b^7 may be provided on its top or upper side with an anti-friction bearing for the car-body bolster or rocker, by which the friction between the said car-body bolster or rocker and the plate b^7, caused by the side swaying or oscillation of the car-body, may be reduced to a minimum.

The anti-friction bearing referred to may consist of one or more rollers c, (see Figs. 4 and 12,) or one or more rows of balls c', (see Figs. 14 and 15,) fitted to move in grooves c^2 in the plate b^7, or the said anti-friction bearing may consist of, preferably, two wheels or rollers c^3, (see Fig. 18,) mounted upon shafts c^4, having bearings in the sides of a box c^5, secured to the sides of the car-body bolster or to the sills of the car-body. The box c^5 is cut away or recessed to receive one or more buffers, preferably one or more spiral springs c^6, (see Figs. 2, 19, and 19^a,) fitted in the said box. The plate b^7, or it may be a separate plate or bar c^8, (see Figs. 18 and 19^a,) bolted or otherwise secured to the plate b^7 at or near its ends, so as to be on opposite sides of the car-body bolster, is provided with one lug or projection c^9, as shown in Figs. 19 and 19^a, which extends up into the box c^5 between the springs c^6, the said springs being compressed to admit the lug c^9 between them, or the said plate may have two lugs c^9, as shown in Figs. 17 and 18, to act on opposite ends of a single spring c^6. It will be noticed that the anti-friction bearings have a movement sidewise of the car-body or in a direction substantially at right angles to the direction of movement of the independent plate b^7, which moves substantially in the direction of the length of the car.

I prefer to employ one or more of the rollers *c*, and when the car-body bolster is made of wood the said bolster may be cut out transversely at its under side to receive metal boxes c^7, (see Fig. 5,) the said boxes being preferably grooved or recessed to co-operate with the groove in the plate b^7 and form a pocket in which the roller *c* is located. The boxes c^5, containing the buffer c^6, are bolted or otherwise secured to the sides of the car-body bolster at or near its ends, so that the said boxes and springs move with the bolster and car-body.

In operation the weight of the car-body is normally sustained when running on a level by the usual bolster-sustaining springs *d* and equalizer-springs *d'*, assisted by the springs a^{12}, thus obtaining a much easier riding car than if the springs a^{12} were omitted, as in cars such as now commonly constructed. On rounding a curve the car-truck is tilted and the wheels running on the outer or raised rail of the track are lifted or raised. The weight of the car-body is thrown by centrifugal action upon the outer wheels when the car is running at a high speed and the springs a^{12} and the bolster-sustaining springs *d* on that side of the car-truck are compressed. When the car-truck strikes a sharp or short curve, the springs a^{12} are excessively or abnormally compressed and the cover a^{13} of the box a^9 is shut or closed, and it may be said to be seated on the side support, which, as shown in Figs. 1 and 2, is secured to the truck-frame. When the cover a^{13} of the box a^9 is closed, as described, the equalizer-springs *d'* are compressed until, as shown in Fig. 2, the shoulder a^5 of the side support rests upon the upper side of the equalizer-bar, and when the said shoulder rests upon the equalizer-bar a solid support is obtained for the car-body, and the said car-body is prevented from being tipped farther and is maintained substantially on a level. Although the car-body is solidly supported against tipping action, as described, the car-truck is still free to curve with a minimum amount of friction by means of the anti-friction device—viz., the rollers or wheels *b b'*, &c.—acting on the independent plate b^7, and at the same time the car-body is free to oscillate or sway sidewise with a minimum amount of friction by means of the anti-friction bearings *c*, &c., the side movement or swaying of the car-body being taken up by the buffers c^6, which are gradually compressed as the car-body is swayed in one direction, and which gradually expand as the car-body moves back in the opposite direction or toward the center of the track. To reduce the friction between the ends of the side support (shown in Fig. 2) and the outer side of the equalizer-bar, small friction rolls or wheels *c* (see dotted lines, Fig. 2) are carried by the said side support. The shoulder a^5 may be formed upon the part *a'* of the chair, so that it may be a greater or less distance from the equalizer-bar, as desired, to regulate the amount or extent to which the equalizer-springs may be compressed, and at the same time regulate or control the tipping of the car-body. It will thus be seen that "setting" of the equalizer-springs and of the bolster-sustaining springs is absolutely prevented.

I prefer to employ two springs c^6 to take up the shock caused by side swaying or oscillation of the car-body, for on the movement of the car-body in one direction one spring c^6 on one side of the projection c^9 is compressed, while the spring c^6 on the opposite side of the said projection elongates, by reason of its being compressed somewhat when the projection c^9 is fitted between the said springs, and when the car-body moves in the opposite direction the elongated spring is compressed, and the spring which has been compressed returns to its normal or elongated condition; but good results may be obtained with only one spring, as shown in Figs. 16 and 18.

In practice the side supports on opposite sides of the car-truck, when made as shown in Fig. 2, will preferably be united by a tie-bar *e'*. (See Fig. 2.)

I do not desire to limit my invention to the particular form of side support shown in Fig. 2, as other forms of side support may be used—as, for instance, such as shown in Figs. 11, 20, 21, and 22, wherein the side support is shown as made in three parts, 2, 3, and 4. The part 2 is secured to the under side of the side frame *a* of the truck, as by screws or bolts 5, and the part 3 is secured to the part 2 and to the top of the side frame *a*. The plate a^9 is fitted upon the part 3, and is provided with an upright 6, having its ends notched, as shown in Fig. 23, to receive the part 4 of the side support, the said part 4 being preferably a wrought-iron bar, having one end bolted to the top of the side frame and its other end bent, as at 7, and secured to the part 3, as by bolts 8. (See Fig. 11.) With the side support constructed as shown in both Figs. 2 and 11 it will be noticed that the said side support is firmly fastened to the side frame *a* of the truck, and a solid support is thus obtained for the car-body when the latter tips, as on rounding a curve in the track.

The springs a^{12} are herein shown as spiral in form; but they may be elliptical springs, or they may be buffers of rubber or like yielding material.

I have thus far described the side support as constructed of parts which are secured to the car-truck, and, while I may prefer such construction for many purposes, I do not desire to limit myself to this construction of side support, as the frame of the car-truck may be employed as the side support—for instance, as indicated in Figs. 24 to 27, inclusive.

Referring to Figs. 24 and 25, the side frames *a* of the car-truck are represented as made of bars of channel-iron, and in this instance the springs a^{12}, supporting the anti-friction

device referred to, rest upon the bottom of the said channel-iron. So, also, when the side frames a are made of wood, they may be hollowed or cut out, as at 25, (see Fig. 27,) to form a pocket or chamber in which the springs a^{12} may be placed. In either case it will be noticed that as soon as the springs a^{12} are excessively compressed, as when the car-body is tipped, the side frames of the car-truck form the support for the car-body, the latter at such time being free to curve with a minimum friction by means of the anti-friction device above described.

The independent plate b^7 is detachably secured to the boxes c^5, as shown in Fig. 1, by a flange c^{50}, fitted to slide in a guideway in the said box.

I prefer to employ the springs a^{12} to assist the equalizer-springs and the bolster-sustaining springs to support the car-body; but it is evident the springs a^{12} may be omitted and the anti-friction device firmly supported, as by the car-truck, and with this construction the friction would be reduced to a minimum; but the yielding support for the car-body would not be so great as when the said springs are used.

I claim—

1. The combination, with a car-body and its truck, of an anti-friction device, substantially as described, and a side support to sustain said anti-friction device, whereby a firm or rigid support is obtained for the car-body and the friction between the wheels and rails is reduced to a minimum, substantially as described.

2. The combination, with a car-body and its truck, of an anti-friction device, substantially as described, springs to support said anti-friction device, and a side support to sustain said springs, substantially as described.

3. The combination, with a car-body and its truck, of an anti-friction device, substantially as described, springs to support said anti-friction device, and a side support to sustain said springs, an independent plate b^7, supported by the anti-friction device, and an anti-friction bearing for the car-body to reduce the friction caused by the oscillation of the car-body, substantially as described.

4. The combination, with a car-body and its truck, of an anti-friction device, substantially as described, a side support to sustain said anti-friction device, the independent plate b^7, and anti-friction bearing between said plate and car-body, substantially as described.

5. The combination, with a car-body and its truck, of an anti-friction device, substantially as described, a side support to sustain said anti-friction device, the independent plate b^7, anti-friction bearing between said plate and car-body, a box c^5, secured to the car-body and provided with a buffer, and a lug or projection to operate on said buffer, substantially as described.

6. The combination, with a car-body and its truck, of an anti-friction device, substantially as described, and a side support to sustain said anti-friction device, consisting of the parts a' a^2, the part a' being provided with a shoulder, as a^5, to co-operate with the equalizer-bar, substantially as described.

7. The combination, with a car-body and its truck, of an anti-friction device interposed between the sides of the said truck and the car-body, and a firm support for said anti-friction device, substantially as and for the purpose specified.

8. The combination, with a car-body and its truck provided with an equalizer-bar on its opposite sides, of an independent chair or support on each side of the truck adapted to shoulder or rest upon the equalizer-bar to form a solid support for the car-body when tipped, substantially as described.

9. The combination, with a car-body and its truck provided with an equalizer-bar on its opposite sides, of an independent chair or support on each side of the truck adapted to shoulder or rest upon the equalizer-bar to form a solid support for the car-body when tipped and an anti-friction device interposed between said car-body and chair or support, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LUTHER K. JEWETT.

Witnesses:
JAS. H. CHURCHILL,
B. DEWAR.