J. H. WOOD, Jr.

RAILWAY CAR.

APPLICATION FILED MAR. 18, 1914.

1,101,110.

Patented June 23, 1914.

4 SHEETS—SHEET 1.

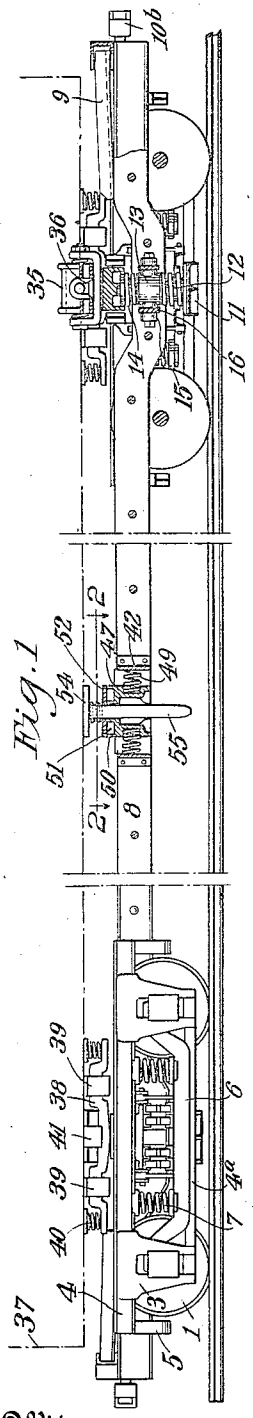


Fig. 1

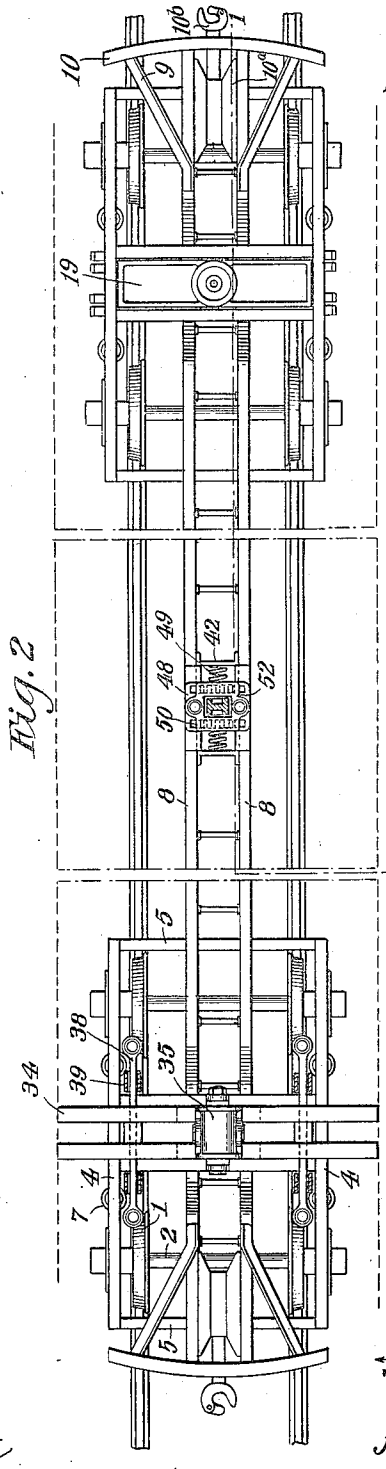


Fig. 2

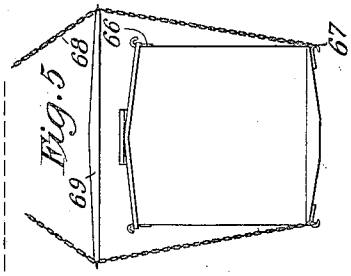


Fig. 5

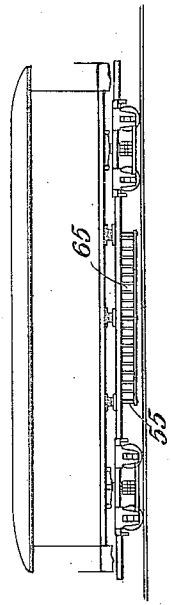


Fig. 4

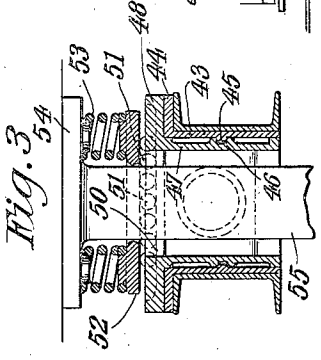


Fig. 3

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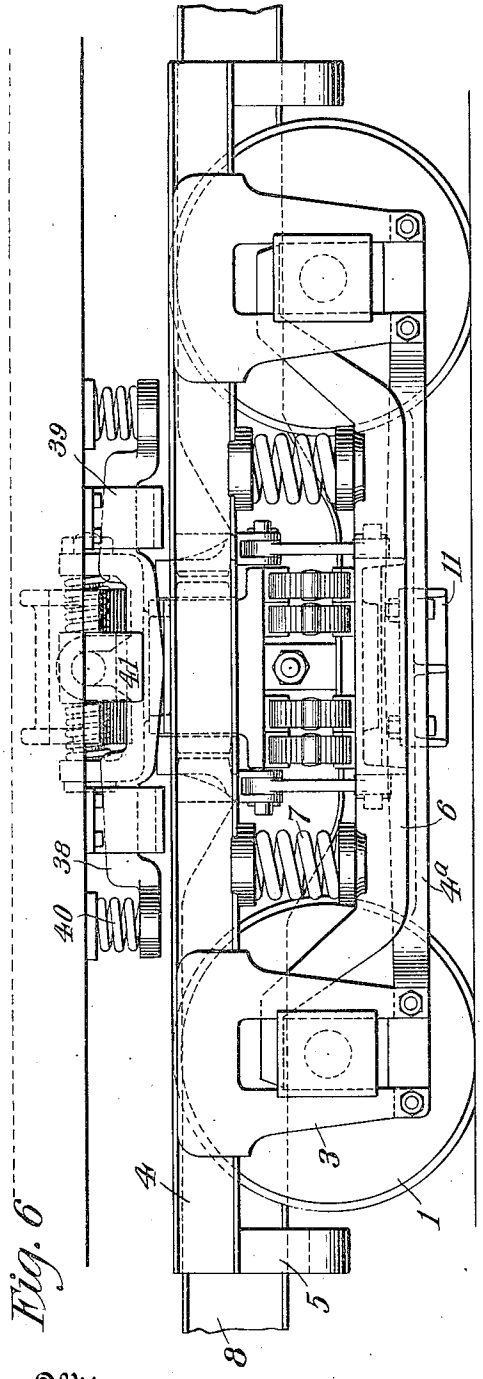


Fig. 6

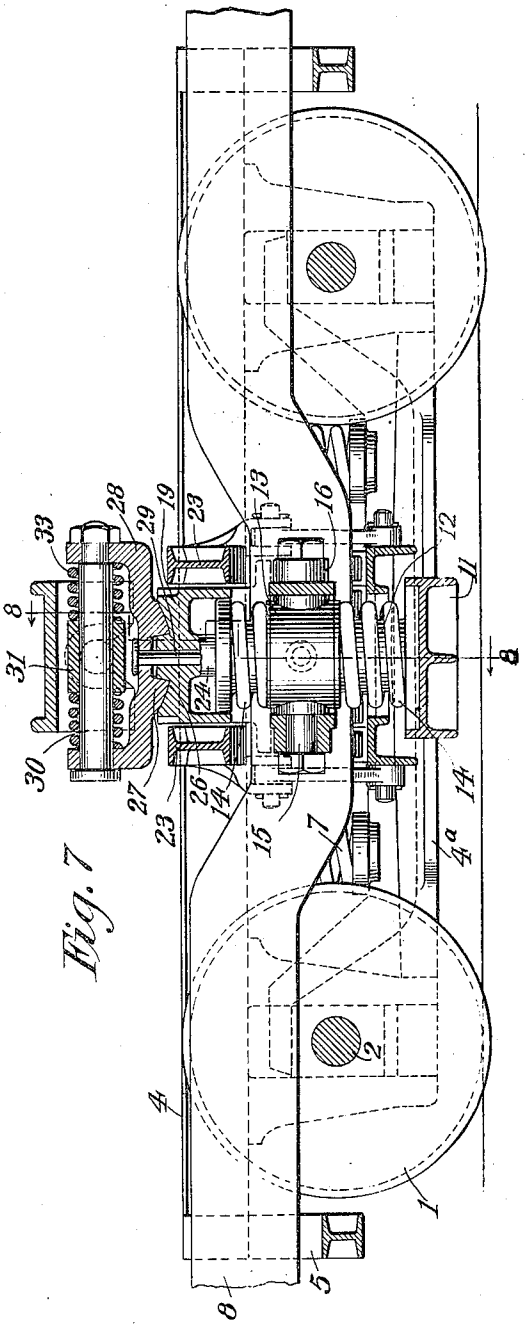


Fig. 7

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4 SHEETS—SHEET 3.

Fig. 8

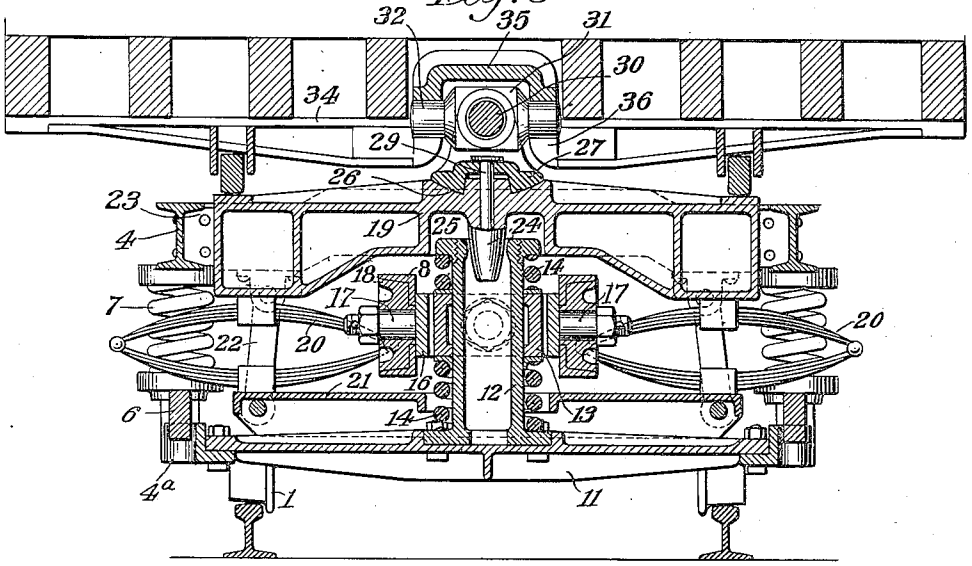


Fig. 9

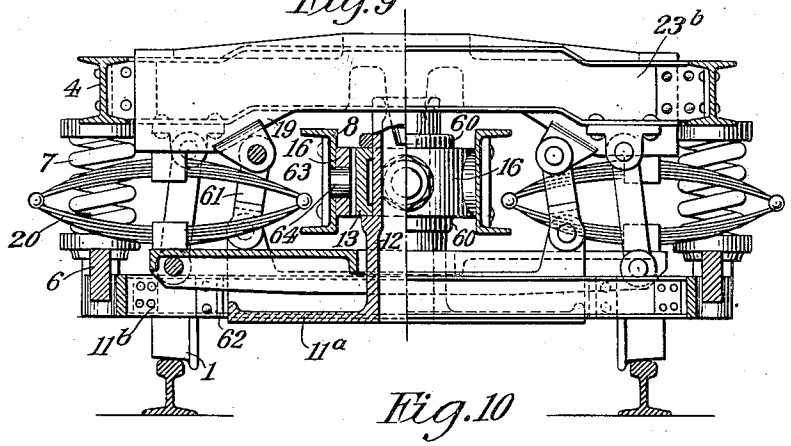
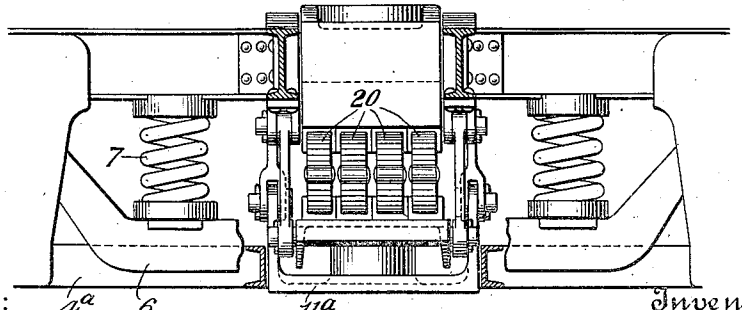


Fig. 10



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4 SHEETS—SHEET 4.

Fig. 11

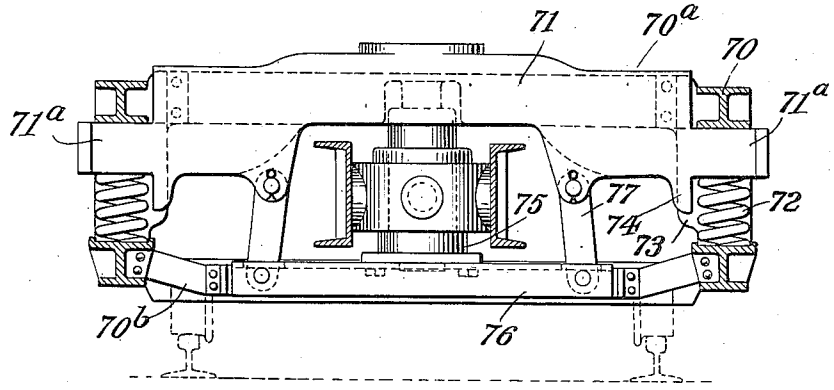


Fig. 12

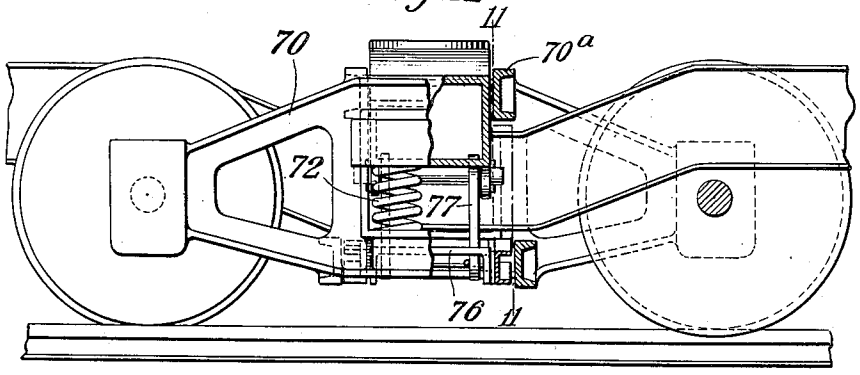
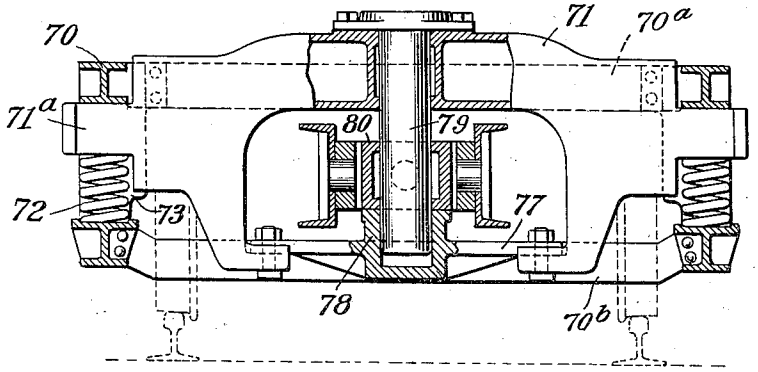


Fig. 13



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UNITED STATES PATENT OFFICE.

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RAILWAY-CAR.

1,101,110. Specification of Letters Patent. Patented June 23, 1914.

Continuation in part of application Serial No. 788,561, filed September 8, 1913. This application filed March 18, 1914. Serial No. 825,443.

To all whom it may concern:

Be it known that I, JAMES HARVEY WOOD, Jr., a citizen of the United States, residing in the city, county, and State of New York, have invented or discovered certain new and useful Improvements in Railway-Cars, of which the following is a specification.

My invention relates to railway cars for both passenger and freight service, and contemplates, as a general principle of car construction, a railway car consisting of two separate and distinct units,—a car carriage or running gear, and a car body. Each unit is constructed independently of the other, and is so designed that any running gear of a given class or type may be used with any car body of a corresponding class, type, or capacity. To this end these two units are so designed as to permit of simple and quick removal of a car body from a running gear, and of readily interchangeable usage of either with different running gears or with different bodies of the same respective types. The running gear embodies trucks, draft member, couplings, and all equipment and appliances (including air brakes which are not shown in the drawings) essential or incidental to the operation of a car as a train unit. Heating, lighting and other equipment pertaining to the car body exclusively, is attached to the body. Each unit will be designed for its particular functions. The car body will be designed for its load, without the necessity of considering its strength in relation to its use as part of a train unit, as the running gear will be designed to meet that function, in connection with its other functions. Therefore the position of the car body, whether light or heavy, in the make-up of a train, becomes of minor consequence since it is not a train resistance unit and its running gear will be of proper minimum and possibly standard strength for various types or classes of running gear and respective bodies.

Other and more specific objects of my invention are to provide a car construction which will afford greater safety to passengers, to freight, and to the car body itself; which is less liable to be damaged under all contingencies of its operation; that is cheaper in first cost than under present methods of construction; that is less expensive to maintain and to operate than cars for similar uses as at present constructed; that affords greater utility, increases the scope or use of cars, and provides other advantages not heretofore possible; that does not alter the substantial constants of height of coupler and car floor above the rails; and that does not resolve the downward or top-of-rail pressure into a rigid-horizontal or rail-spreading force.

Other objects and advantages of my invention and the manner in which I realize them will be obvious from an explanation and from the following description of the embodiment which I have chosen to illustrate it as shown in the drawings accompanying and forming a part of this specification.

Referring to the drawings: Figure 1 is a vertical section of a car embodying my invention, taken on the line 1—1, Fig. 2, looking in the direction of the arrow, the car body being indicated by dot and dash lines; Fig. 2 is a plan view similar to Fig. 1 with car body removed, and with the combination body support or bearing and longitudinal buffer device taken on the line 2—2, Fig. 1, looking in the direction of the arrows; Fig. 3 is an enlarged detail in vertical section of the body bearing and longitudinal buffer device looking in a direction at right angles to Figs. 1 and 2; Fig. 4 is a side elevation of a car showing several of the combination body bearing and longitudinal buffer devices referred to under Fig. 2 and Fig. 3, and showing the vertical buffer members extended below the draft member and supporting at their lower ends a detachable truss which in turn supports battery boxes or other usual car floor appendages; Fig. 5 is an end elevation of a car body indicating methods of lifting same from running gear; Fig. 6 is a side elevation of a car truck; Fig. 7 is a similar elevation partly in section; Fig. 8 is a vertical section on line 8—8 of Fig. 7, looking in the direction of the arrows; Figs. 9 and 10 are end and side views respectively of a different but preferred construction, both taken partly in section; Figs. 11 and 12 are end and side views respectively of my invention applied to a truck for freight cars, a type in general use being shown for purposes of illustration, Fig. 11 being taken on line 11—11, Fig. 12, and Fig. 12 being

shown partly in elevation; Fig. 13 is a view similar to Fig. 11 showing a construction similar in principle to that shown in Fig. 11, but with structural changes and comprising the preferred embodiment of my invention as applied to trucks for freight cars.

Referring in detail to the drawings, the fundamental construction of the running gear is similar to that in ordinary use, consisting in the main of wheels 1, axles 2, wheel pedestals 3, truck frame comprising side pieces 4 and end pieces 5, equalizing bars 6, and springs 7.

In ordinary car construction, the car body has heavy longitudinal draft beams incorporated therein as part of its necessary structure. In my invention these draft beams, indicated by reference numerals 8, are mounted on the trucks, separately from the car body, and constitute part of the running gear. As to form, the draft member is shown depressed at trucks after clearing axles for the purpose of keeping the car body pivot as near its position in present construction as possible. However, this depression is designed to be so slight as not to subject the draft member to jar or vibration upon solid impact and it is obvious that the draft member may be of a straight line construction from end to end by raising the truck bolster. Also the draft member shown in the drawings is of two beam laterally reinforced construction, it being assumed, however, as obvious, that this draft member may be of any approved construction. The draft beams are provided with end braces 9 and end pieces 10 and have mounted thereon draft rigging 10^a and couplings 10^b.

In the construction shown in Figs. 1, 2, 6, 7, and 8, the draft members are mounted on each truck by springs and by a universal bearing device constructed as follows: Rigidly secured to the bottom of the wheel pedestals 3 are lower side pieces 4^a on which is mounted a column seat 11, having thereon a vertical column 12. On this column is slidably mounted a collar 13, maintained normally in any desired position thereon by springs 14. Collar 13 is provided with collar trunnions 15 on which is pivoted a yoke 16 having yoke trunnions 17 which fit in bearings 18 secured to draft beams 8. By this construction the draft beams are maintained and their weight supported directly by springs 14 and are indirectly supported on the equalizing bars by a downward pull instead of downward pressure on the equalizing bar springs, thus permitting lighter and more sensitive springs to be used between the car body and the trucks. This construction, embodying a form of universal bearing, also insures full, free, and easy truck play within the limits of established requirements and without excess or loose flexibility, facilitating a true spiral movement of the car body in rounding curves, particularly banked curves.

The truck is adapted to receive the weight of the car body on a truck bolster 19, which rests on bolster springs 20, supported on a seat member 21, connected by links 22, with transoms 23, rigidly attached to side pieces 4 of the truck frame. The bolster is confined between upper transom members 23, as in ordinary construction, which transmit the longitudinal thrust on same to upper side frame 4. Truck bolster 19 is provided with a central bolster pivot 24 having a conical shaped head fitting within the top of column 12, thereby permitting lateral tilt of the truck bolster 19 when bolster springs 20 are compressed unequally, and this bolster pivot is so proportioned at its greatest diameter as to permit of vertical movement, without jamming, in the column 12 when the bolster springs are compressed. The top of column 12 fits within a rectangular recess 25 on the under side of the truck bolster, and the upper end of the column is slightly flattened on the two opposite sides facing the ends of the car body in order to support this end of the column by pressure against the straight sides of the recess and at the same time permit dip of the truck bolster when the bolster springs are compressed unequally. On the top of the truck bolster 19, in the center, is provided a bearing seat 26 in which fits a pedestal 27 having yoke arms 28 (Fig. 7). The pedestal is held in position by pin 29 extending through said pedestal and into a socket provided therefor in the top of the truck bolster 19, which socket extends downward into bolster pivot 24 to a sufficient extent to accomplish its purpose of preventing displacement of the parts. This construction affords a firm and a non-wobbling seat for the center bearing construction. The yoke arms 28 are provided with a bearing bolt 30 on which is slidably mounted a block 31 provided with block trunnions 32 (Fig. 8) and yieldably maintained in the center of the yoke by yoke springs 33 (Fig. 7). Pin 29 is placed in position before bearing belt 30 is mounted in yoke arms 28.

Car body 37, shown in dot and dash lines (Fig. 1), detachably engages the center construction of truck bolster 19 by means of a body bolster 34 (Fig. 8) secured to the car body and having an arched section 35 provided with open end bearing sockets 36 adapted to fit over block trunnions 32. The sides of the car body are supported on the truck bolster 19 by means of longitudinal bearing bars 38, which are vertically movable and are held in guide sockets 39 secured to the bottom of the car body. Springs 40 are provided between each end of the longitudinal bearing bars 38 and the

car body to allow proper flexibility of movement of truck and car body with respect to each other. An additional guide member 41 secured to the car body is provided for the center of each longitudinal bearing bar 38. The guiding sockets 39 retain the longitudinal bearing bar 38 in position when the car body is raised from the running gear, and the additional guide member 41 aids in resisting any twist of the longitudinal bearing bar. The obvious reverse of this construction would be to secure guide sockets, springs and bar to truck bolster so that the bearing bars would operate against suitable bearing surfaces on the car floor frame.

A combination car support and longitudinal buffer device between the car body and draft member 8 is provided at various points of the car length, according to requirements and advantages. One such device is shown in Figs. 1 and 2 and in some detail in Fig. 3, while Fig. 4 illustrates application of three of these devices between trucks; none being shown or suggested for points between ends of car and truck centers. A box-like construction is formed between draft beams 8, consisting of end members 42 secured to the draft beams, and side members 43 provided with flanges 44 to fit over the draft beams. These side members 43 have longitudinal ribs 45 fitting into slidable grooves 46 provided therefor in the sides of a carriage 47. The carriage has supporting flanges 48 adapted to slide on the tops of flanges 44 of side members 43, and is yieldingly maintained against longitudinal movement by springs 49 bearing on each end of carriage 47 and on each rigidly fixed end member 42. The top of carriage 47 is provided with a transverse or lateral roller seat 50 at right angles to the draft beams 8, in which are mounted rollers 51. A plate 52 rests on these rollers to which is secured springs 53, which in turn are secured at their upper ends to the base plate 54 of the plunger or buffer member 55 rigidly attached to car floor frame and extending vertically downward through carriage 47, its lower end being adapted to support a truss and pendulum weight as explained under Fig. 4, where more than one such member is provided. This construction therefore affords a means of supporting the car body on the draft member beams as well as at truck centers, it being possible by regulating strength or lifting power of the springs 53 and by varying the number of such seats between trucks to transfer to and further utilize the necessarily strong draft member construction and through its support to transmit to the journals such part of the car body weight and load as may be practical without lifting too great a proportion of the load from the top centers of truck bolsters. The buffer element of this device is adapted to resist longitudinal movement or momentum of the car body and its load with relation to draft member and truck centers, by the resistance of springs 49 acting on the car body through carriage 47, plunger 55, and its base plate 54. The two sides of plate 52 toward the car ends bear lightly against plunger 55, and the other two sides permit slight clearance and are rounded on their inner edges, so that when the car body is laterally tilted from the vertical and springs 53 are compressed unequally, the plunger 55 will not bind against the sides of the plate 52. The roller construction permits tilted or hinged movement of the car body with respect to draft member 8 without binding and it will be noted that the lateral or swing play of the plunger buffer member 55 between the sides of the carriage 47 is ample to permit of the maximum operating displacement of car body from the vertical position. It is obvious that these parts may be reversed, in which case plunger 55 is attached rigidly to draft member 8, and carriage 47 with its constituent parts is built in the floor of the car body. This would be a preferable construction for freight cars as it would relieve them of the awkward projection of plunger 55 when removed from the running gear. In addition, a downward projection of plunger 55 is not needed on freight cars to carry batteries or other appendages such as indicated in Fig. 4.

In the construction shown in Figs. 9 and 10, which is preferred for heavy car bodies and loads over that just described, the weight of draft member 8 is not supported by springs 14 on each side of collar 13 on column 12, but is transmitted to bolster springs 20 by means of the following construction: Collar 13 is free to turn about column 12 but is restricted against vertical slide thereon by flanges 60. The column 12 is supported on column seat 11^a but instead of said seat being rigidly connected by lower side pieces 4^a to the bottom of pedestals 3, it is supported by links 61 from truck bolster 19. Cross members 11^b are secured to the lower side frame members 4^a as in the case of column support member 11 (Fig. 8). These members 11^b, however, constitute lateral guides or lower transom members which confine the column seat 11^a and transmit the longitudinal thrust on same to lower side frame 4^a in the same manner that the upper transom members 23^b confine the bolster 19 (from which the column seat 11^a is suspended) and transmit the longitudinal thrust on same to upper side frame 4. The seat 11^a is guarded against excessive lateral swaying by longitudinal guide members 62 secured on cross members 11^b which are rigidly connected to lower side pieces 4^a. If desired, the column seat 11^a may be made in one piece

or of rigid construction with bolster 19 instead of suspended therefrom by links 61, as indicated for freight trucks in Fig. 13. Figs. 9 and 10 also show a modification of the connection of draft beams 8 to column 12 by a reversal of parts, in which yoke 16, instead of being provided with yoke trunnions 17 adapted to engage bearings 18 on the draft beams, is provided with bearings 63 adapted to receive trunnions 64 mounted on the draft beams. A comparison of Figs. 8 and 9 shows that this construction permits bolster springs 20 to clear the center construction so that they need not be spaced apart as shown in Fig. 6, but can be spaced equally, as shown in Fig. 10. This construction also maintains a substantially fixed distance between the draft member and the car floor, which is desirable when a material part of the load is to be transmitted to draft member through the body bearings on same.

Fig. 4 illustrates an additional function of the combination car support and longitudinal buffer device, as above described, applied in particular to passenger or other car bodies of the suspended spring supported type, although it may apply to cars of other types as well. The figure shows a method of supporting battery boxes or other car floor appendages on a specially constructed and easily removable truss which may be hung with its load from the ends of the extended plunger or buffer members 55. This weight with its rigid leverage on car floor frame will serve to steady the car body against sudden or jerky lateral rock or displacement, while the trucks with their flexibility of play conform to track grades, banking and irregularities without transmitting these movements to the car body as violently as in the case of cars of present construction.

Fig. 5 discloses two methods by which the car body may be lifted from the running gear. The first method consists of providing hooks or similar devices 66 at the upper ends of tension side members, which are attached at their lower ends to the underframe of the car body and to which lifting apparatus may be attached. The second method consists in supplying hooks or similar means 67 at the bottom of the car body, to which lifting apparatus may be attached. Chains or ropes 68 attached to hooks 67 may be kept from harmful contact with the car body by a spreader 69 which also protects car body against inward or crushing pull upon lifting when not uniformly loaded.

In the modified construction shown in Figs. 11, 12, and 13, I have employed trucks with side frames 70 of a construction commonly employed for freight cars. The bolster 71, instead of being supported in the manner shown in Figs. 8 and 9, is provided with extended ends 71^a resting on spring 72 mounted in frames 70, as in ordinary freight car trucks. Upper transom members 70^a and lower transom members 70^b are provided, their functions being similar to the function of corresponding transom members described with reference to Figs. 9 and 10. The frame is provided with guide bearing surfaces 73 adapted to maintain bolster 71 in position against twist by sliding contact with extension 74 on the bolster. In the construction shown in Figs. 11 and 12, the column 75 is supported on a platform 76, which in turn is supported from bolster 71 by links 77. Instead of this link construction, a preferred form may be used as shown in Fig. 13, where the platform 76 is rigidly secured or made integral with the bolster 71, thereby forming a strong, serviceable, one piece bolster construction. Fig. 13 also shows a modified form of column consisting of a lower part 78 made integral with platform 76, and a shaft 79 secured to the bolster and passing through the draft member-supporting-collar 80 and into lower part 78. Upper and lower transom members 70^a and 70^b, respectively, perform similar functions to upper and lower transom members previously described.

It is obvious that the parts above mentioned may be secured together or made in one piece as may seem best in practice without departing from the principles of construction set forth, and it is further assumed to be obvious that this construction may be applied to any truck now in general use.

It will be evident from the foregoing that my improved construction conduces to safety by lowering the center of gravity of the car, by increasing the relative strength of its parts, by increasing braking efficiency, by producing a non-telescoping structure, and by producing a uniform control of the spiral movement of the car body at less torsional strain. The cost of maintenance and of equipment is decreased and a greater availability or utility of equipment made possible. Thus, in passenger service, light summer bodies may be substituted for heavy winter bodies, and vice versa, and in freight service, rail and water shipments may be made in car lots by transferring the entire body without unloading from one means of transportation to the other. In freight terminals restricted to ground area, the car bodies may be removed from the trucks and stored loaded or unloaded at various levels, such facilities thus being limited only by the number of floors in the terminal building.

The application of my invention to a six-wheel truck is assumed to be obvious, as well as the application of strengthening means where needed, as for instance, the strengthening of the lower side frames against twist at their point of connection with the wheel pedestal, as applied particularly to the passenger car construction.

Having described one embodiment of my invention, which may be modified or the parts reversed to meet various conditions without departing from the spirit thereof, what I claim is:

1. The combination in a railway car of a car body, a pair of trucks, a separately constructed draft member extending to the ends of said car body, and pivotal means to connect said draft member and said car body to said trucks permitting restricted longitudinal movement with respect to each other, substantially as described.

2. The combination in a railway car of a car body, a pair of trucks each comprising upper side frame members, wheel pedestals attached at their upper ends thereto, lower side frame members attached to lower ends of said wheel pedestals, and a lateral cross member attached to said lower side frame members and thereby supported at the ends of said wheel pedestal, a draft member and means to support said draft member on said lateral cross member, substantially as described.

3. The combination in a railway car of a car body, trucks thereunder, truck bolsters supported by said trucks, a pedestal mounted on each of said bolsters and extending upwardly and supporting said body, a draft member formed independently of said body, located beneath the same and connected to said trucks, for the purpose described.

4. The combination in a railway car truck of a lower truck frame, a column seat and means rigidly to secure said column seat to said frame, substantially as described.

5. The combination in a pair of car trucks of a lower truck frame on each of said trucks, a column secured to each of said frames, a draft member extending between said trucks, and means to support said draft member on said column, substantially as described.

6. The combination in a pair of car trucks of a lower truck frame for each of said trucks, a car body and a separately constructed draft member extending between said trucks, and means to support said draft member pivotally at each truck center, substantially as described.

7. The combination in a pair of car trucks of lower truck frames, a column secured to each of said frames, a draft member extending between said trucks, and means to support said draft member on said column comprising a universal bearing, substantially as described.

8. The combination in a pair of car trucks of a lower truck frame for each of said trucks, a column secured to each of said frames, and a draft member extending between said trucks and yielding means to support said draft member on said column, substantially as described.

9. The combination in a pair of car trucks of lower truck frames, a column secured to each of said frames, a draft member extending between said trucks, and means to support said draft member on said column comprising springs and a universal bearing, substantially as described.

10. The combination in a railway car of a car body, trucks thereunder, truck bolsters supported by said trucks, and a pedestal on each of said bolsters extending upwardly and supporting said body, substantially as described.

11. The combination in a car truck of a truck frame, a truck bolster supported on said frame and provided with a seat on the top thereof, a pedestal fitting said seat and adapted to engage a car body, substantially as described.

12. The combination in a car truck of a truck frame, a truck bolster supported on said frame and provided with a seat on the top thereof, means adapted to engage a car body and adapted to fit said seat, and a pin to secure said last named means and said truck bolster from displacement relative to each other, substantially as described.

13. The combination in a railway car of a car body, a body bolster secured to said car body provided with open end bearing sockets, a truck comprising a truck bolster provided with a seat on the top thereof, means adapted to engage said body bolster and adapted to fit said seat, and a pin to secure said last named means and said truck bolster from displacement relative to each other, substantially as described.

14. The combination in a railway car of a car body, a truck element, a body bolster element on said car body, and trunnions on one of said elements adapted to fit in open end bearings on the other of said elements, substantially as described.

15. The combination in a railway car of a car body, a body bolster secured to said car body having an arched portion provided with open end bearing sockets, a truck comprising a truck bolster provided with a seat on the top thereof, means adapted to engage said body bolster and adapted to fit said seat, and a pin to secure said last named means and said truck bolster from displacement relative to each other, substantially as described.

16. The combination in a railway car of a car body, a truck, a truck bolster on said truck provided with a device to engage said car body comprising yoke arms, a bolt in said yoke arms, a carriage provided with trunnions on said bolt, springs on said bolt between said carriage and each yoke arm, and means on said car body to engage said trunnions, substantially as described.

17. The combination in a railway car of a car body member, a pair of trucks, a draft

member connecting said trucks, and co-acting means on said members adapted to permit and restrict movement of said members toward each other, substantially as described.

18. The combination in a railway car of a a car body, a separately constructed draft member, and a spring cushioned bearing seat for said car body on said draft member, substantially as described.

19. The combination in a railway car of a car body member, a pair of trucks, a draft member connecting said trucks, and longitudinal buffer means on said members comprising a plunger on one of said members co-acting with a longitudinally yielding carriage on the other of said members, substantially as described.

20. The combination in a railway car of a car body member, a pair of trucks, a draft member connecting said trucks, and longitudinal buffer means on said members comprising a plunger secured to one of said members co-acting with a carriage on the other of said members, springs to resist longitudinal movement of said carriage and means to permit lateral movement of said plunger, substantially as described.

21. The combination in a railway car of a car body member, a pair of trucks, a draft member connecting said trucks and longitudinal buffer means on said members comprising a plunger secured to one of said members co-acting with a longitudinally yielding carriage on the other of said members, springs between said members to resist movement of said members toward each other, and anti-friction means between said members, substantially as described.

22. The combination in a railway car of a car body member, a pair of trucks, a draft member connecting said trucks, longitudinal co-acting buffer means on said members, and a detachable truss attached to said buffer means adapted to support car appendages, substantially as described.

23. The combination in a railway car of a car body element, a truck element, yielding means comprising sockets secured to one of said elements and supporting a longitudinal bar adapted to bear against the other of said elements, substantially as described.

24. The combination in a railway car of a car body element, a truck element, and yielding means comprising sockets secured to one of said elements and supporting a longitudinal bar adapted to bear against the other of said elements and springs between the element to which said sockets are secured and said longitudinal bar, substantially as described.

25. The combination in a railway car of a car body element, a truck element, and yielding means comprising sockets secured to one of said elements and supporting a longitudinal bar adapted to bear on the other of said elements and a device to prevent lateral twisting of said bar, substantially as described.

26. The combination in a railway car of a car body, a pair of trucks each comprising a truck bolster and a vertical column at the center of each truck, a draft member formed independently of and located beneath said car body connected with said column, and draft rigging mounted on the outer end of said draft member, substantially as described.

27. The combination in a railway car of a car body, a pair of trucks, a truck bolster mounted on each of said trucks, a draft member formed independently of said car body connecting said trucks and extending to the ends of said body, draft rigging and end pieces mounted on said draft member, and a pedestal mounted on each of said bolsters and arranged to support said body, substantially as described.

28. The combination in a railway car of a car body, a pair of trucks, a truck bolster mounted on each of said trucks, a draft member formed independently of said car body connecting said trucks and extending to the ends of said body, draft rigging and end pieces mounted on said draft member, and means mounted on each of said bolsters extending upwardly and supporting said body by pivot connections, substantially as described.

29. The combination in a railway car of a pair of car trucks each comprising side frames and truck bolsters, links suspended from each of said bolsters, platforms suspended from said links, a draft member, and means on each of said platforms to support said draft members, substantially as described.

30. The combination in a pair of car trucks of side frames, truck bolsters yieldingly mounted in said side frames, links suspended from said bolsters, platforms suspended from said links, a draft member connecting said trucks, and means to support said draft member on said platforms, substantially as described.

31. The combination in a pair of car trucks of side frames and equalizing bars, truck bolsters supported indirectly on said equalizing bars, links suspended from said bolsters, platforms suspended from said links, a draft member connecting said trucks, and means to support said draft member on said platforms, substantially as described.

32. The combination in a car truck of side frames, a bolster yieldingly mounted in said side frames and provided with a lower rigid platform, a draft member, and means to support said draft member on said platform, substantially as described.

33. The combination in a car truck of side

frames, a truck bolster yieldingly mounted therein comprising a lower extension having a hollow column, a shaft fixed to the top of said bolster and extending into said column, and a collar mounted on said shaft, substantially as described.

34. The combination in a pair of railway trucks of side frames therefor truck bolsters yieldingly mounted on said side frames provided with a lower platform having a vertical column, a draft member connecting said trucks, and means to connect said draft member to said column comprising a universal bearing, substantially as described.

35. The combination in a pair of railway trucks of side frames therefor, bolsters yieldingly mounted on said side frames provided with a lower extension having a vertical column, a draft member connecting said trucks, and means to connect said draft member to said column comprising a universal bearing consisting of a collar on said column provided with trunnions, a yoke mounted on said trunnions and a journal bearing between said draft member and said yoke, substantially as described.

36. The combination in a railway car of a car body, a pair of trucks, means to connect said car body to each of said trucks at the truck center, a separately constructed draft member, and separate means to connect said draft member to said trucks at the truck center, substantially as described.

37. The combination in a railway car of a car body, a pair of trucks, a draft member, means to connect said car body and said draft member to said trucks, said means being separately constructed and attached to said trucks so as to permit longitudinal movement between said car body and said draft member, substantially as described.

38. The combination in a structure of the kind described, of a truck frame, a platform supported therefrom, a column supported on said platform, a yoke surrounding said column, and a draft member on said yoke, substantially as described.

39. In a structure of the kind described, a truck frame, a platform supported therefrom, a column supported on said platform, a ring surrounding said column and adapted to slide thereon, a yoke surrounding said ring and supported thereby, and a draft member journaled on said yoke, substantially as described.

40. The combination in a railway car of a pair of pivoted trucks comprising truck bolsters, a draft member connecting said trucks, pivotally connected therewith and disposed beneath said truck bolsters, a car body located over and independent of said draft member and end pieces mounted on said draft member, substantially as described.

41. The combination in a railway car of a car body, a pair of trucks therefor, a vertical column supported at the center of each truck, a spring surrounding said column and a draft member extending from truck to truck and connected to said columns and supported by said springs, substantially as described.

42. The combination in a railway car of a truck, a bearing bolt mounted thereon, a body journaled on said bolt and adapted to slide thereon and buffer springs on said bolt and arranged to limit the sliding movement of said body on said bolt, substantially as described.

JAMES HARVEY WOOD, JR.

In the presence of—
WARREN H. SMALL,
PERLIE P. FALLON.