

June 16, 1931.

C. CARRY ET AL

1,810,876

RAILWAY CAR

Filed Jan. 2, 1931

4 Sheets-Sheet 1

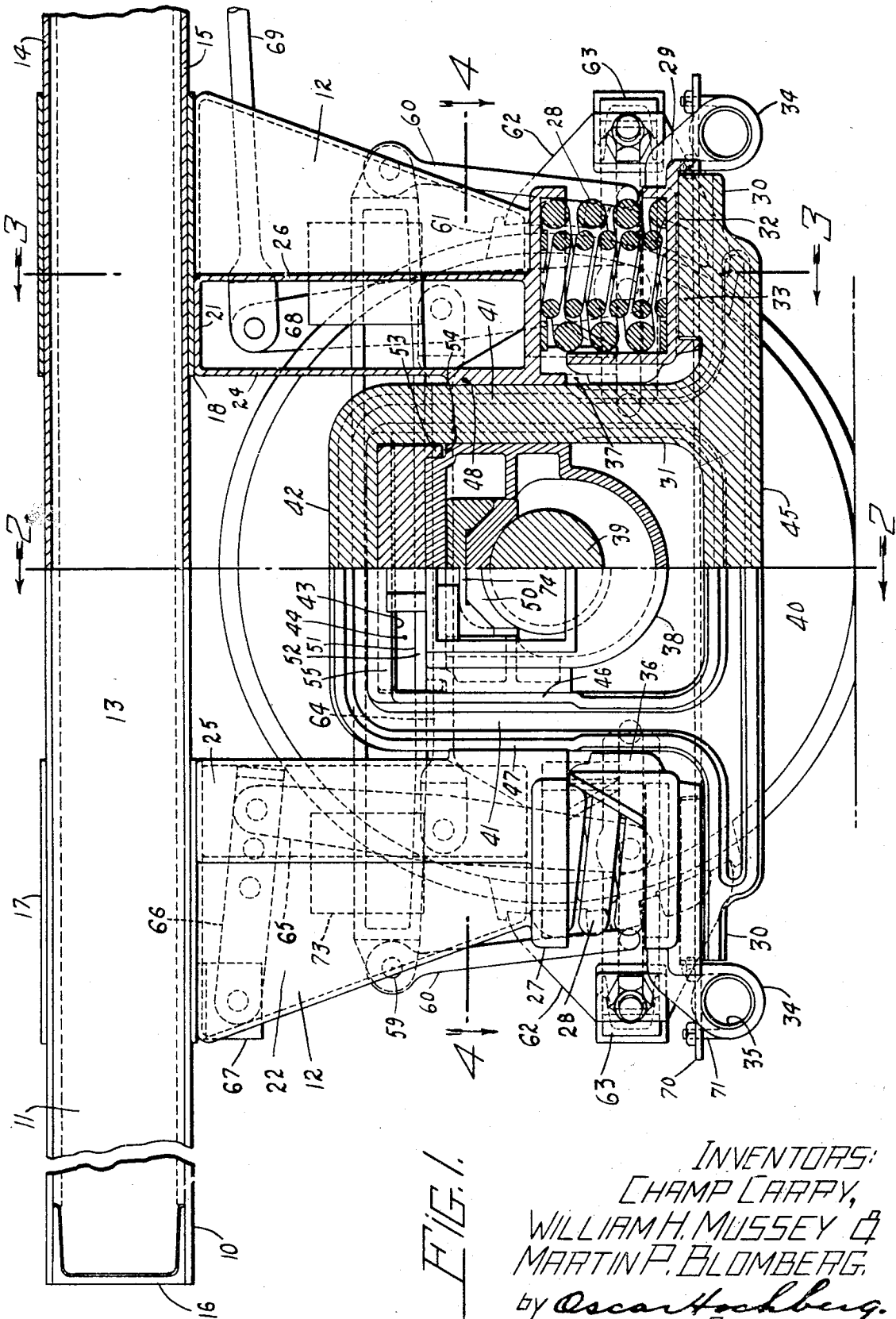


FIG. 1.

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4 Sheets-Sheet 2

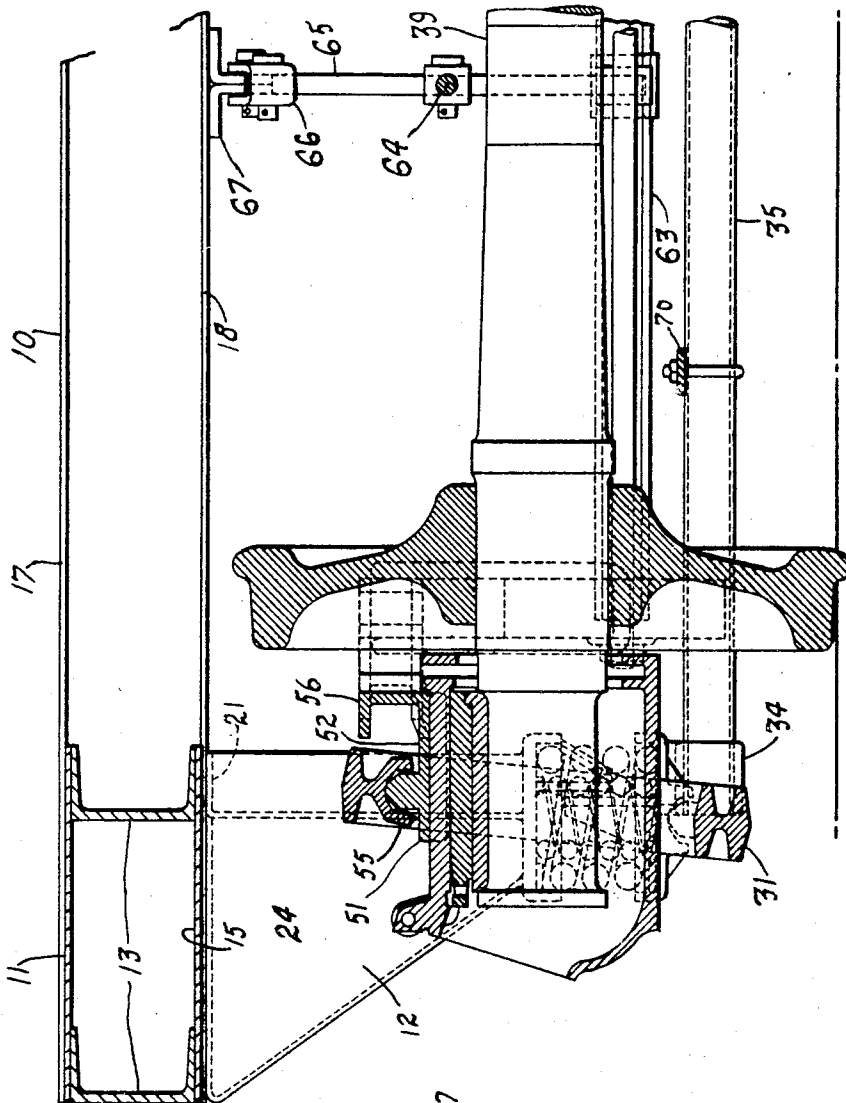


FIG. 2.

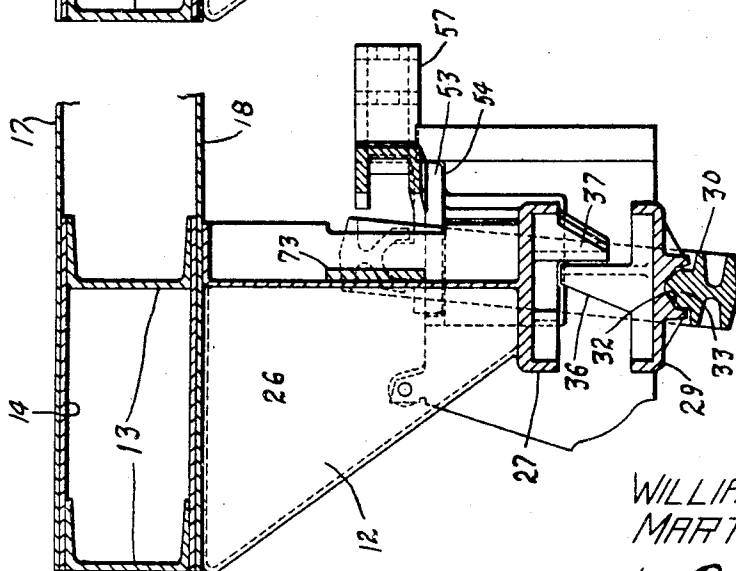


FIG. 3.

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4 Sheets-Sheet 3

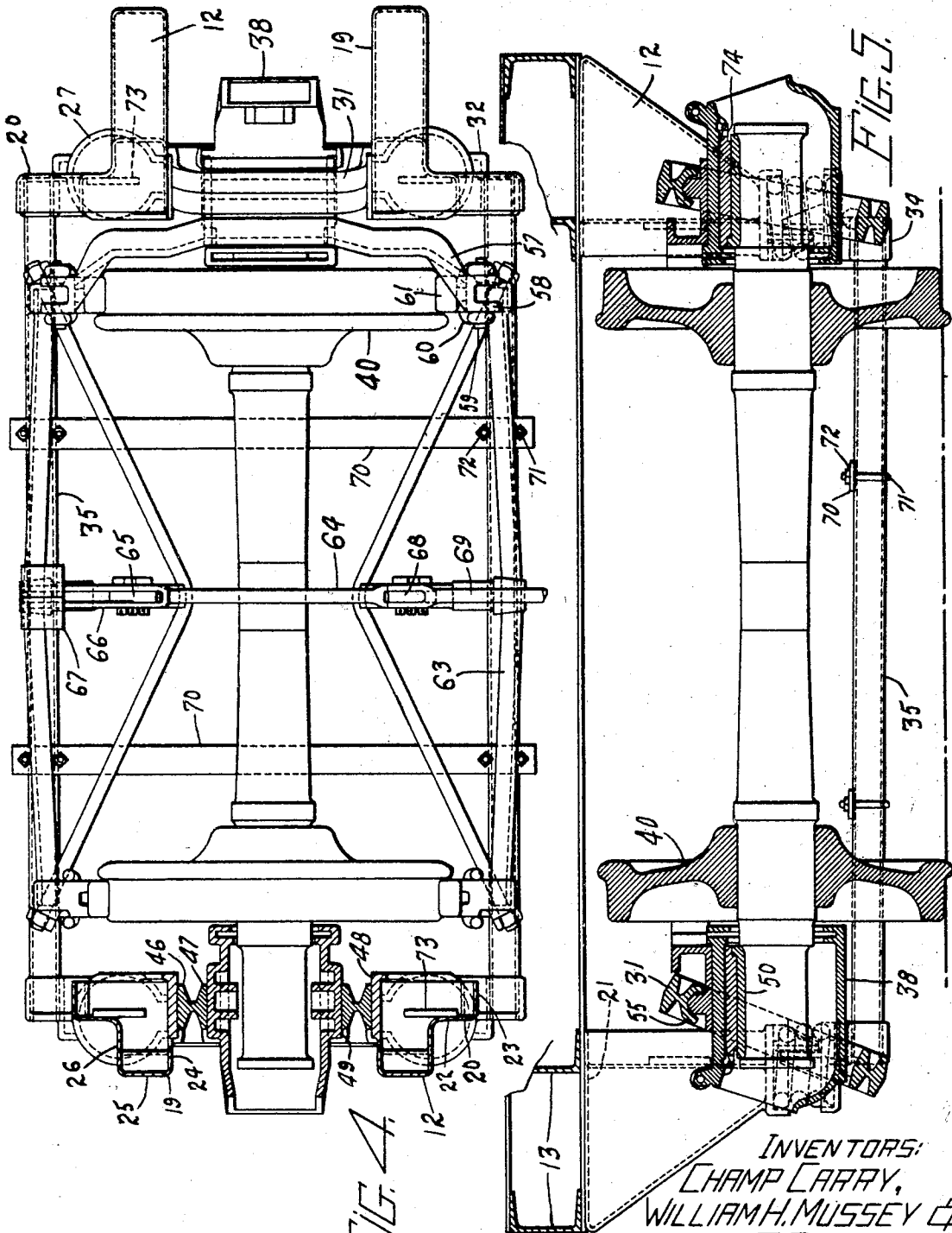


FIG. 4.

FIG. 5.

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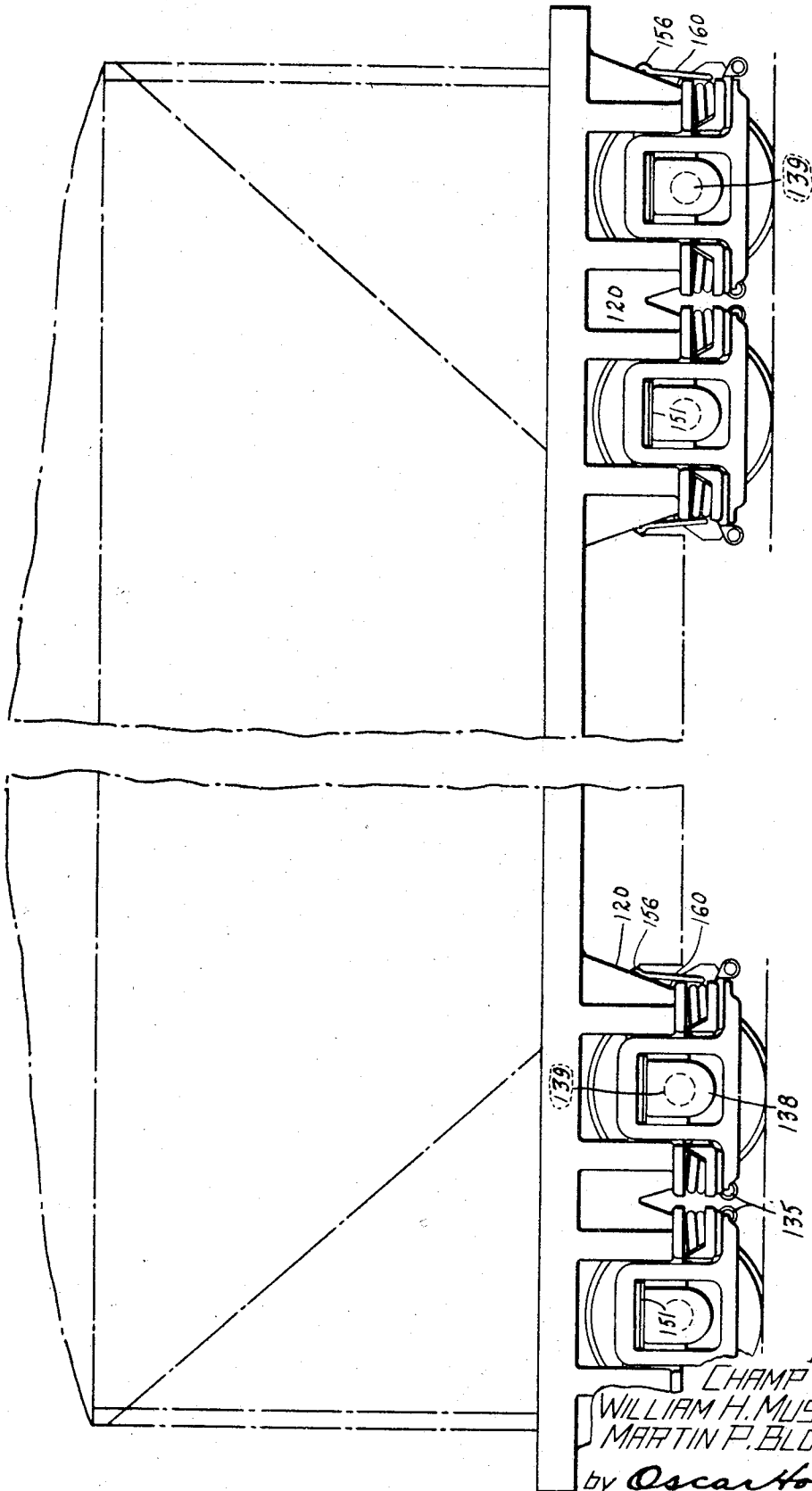


FIG. 6.

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# UNITED STATES PATENT OFFICE

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## RAILWAY CAR

Application filed January 2, 1931. Serial No. 506,110.

The invention proposes construction designed to provide support from the running gear of the car directly to the car side without the intervention of the customary body and truck bolsters with their concomitants of side and center bearings incident to trucks of the swiveling type heretofore used, and dispenses with the side frames used in such trucks.

The invention further contemplates the use of one or more pairs of wheels mounted upon axles shiftable transversely of the car and independently of the other axles to avoid objectionable angularities between the wheel flanges and respectively adjacent rail heads.

The construction permits the placing of the wheels close to the ends of the car whereby the capacity and efficiency of hopper and other drop bottom cars may be substantially increased. The system provides desirable flexibility of movement of the supporting parts with respect to the car to prevent derailments resulting from excessive rolling of the car body when rounding curves, wherefore the principal object of the invention is to provide means compensating for the shifting of the load from one end of an axle to the other whereby the floor of the car will be maintained substantially horizontal with respect to the track at all speeds.

Another object is to provide suitable means for suspending the brake rigging whereby the brake shoes will be held in operative relation to the wheels.

A further and important object is to prevent tilting of the suspension springs resulting from the relative movements of axles and car body, the means for this purpose being adapted also to provide safety supports for the brake beams.

The foregoing and other objects are attained by the mechanism illustrated in the accompanying drawings, in which

Figure 1 is a dual elevational and sectional

view of one embodiment of the running gear of the invention showing the method of mounting the car body thereon;

Figure 2 is a transverse sectional view thru running gear and car body taken on line 2-2 of Figure 1, showing the normal relation of the supporting swing hanger, brake hanger, and journal box assembly with portions of the brake beam support and transverse hanger connecting bars indicated;

Figure 3 is a similar view taken on line 3-3 of Figure 1 thru one of the suspension springs and showing the spring seat rockably mounted upon adjacent hanger arm and the relatively fixed spring cap portion on the pedestal with their respective guide portions in operative contiguity;

Figure 4 is a dual top view of the running gear assembly in its normal position of rest, showing half of the assembly in plan and half in horizontal section taken on line 4-4 of Figure 1, thru the supporting hanger and associated journal box and pedestals with their respective limiting stops to prevent abnormal lateral swing of the hangers;

Figure 5 is a vertical section transversely of the car thru opposite journal box assemblies, showing the relation of the parts with the several pedestals and supporting hangers indicated in their extreme positions with respect to adjacent wheels; and

Figure 6 shows a hopper car mounted upon running gear constructed in accordance with the invention, and illustrating the use of two pairs of wheels at each end of the car, and indicating ample clearances between the inner axles and the discharge opening for the accommodation of door operating mechanism and other equipment.

In the drawings, 10 represents the car underframe designed to suit the particular type of car desired. It consists essentially of longitudinal side supporting sills 11 to which the several pedestals 12 are preferably attached. As indicated in the drawings,

these side sills are each made up of a pair of longitudinal members 13 spaced apart and connected by top and bottom cover plates 14 and 15 and together defining a hollow girder of rigid formation to transmit the forces of draft and buffing loads to the pedestals.

As indicated most clearly in Figures 1, 2, and 3, the sills thus fabricated are connected at their respective ends by end sills 16 and intermediate their ends at the pedestal positions and reinforced at other points, by transverse top and bottom plates 17 and 18 or equivalent members of any approved form and designed to connect the longitudinals and provide attaching means for any suitable draft gear or buffer device whereby shocks imposed at the car end will be transmitted to the car sides.

The pedestals 12 are preferably of general angular configuration and of substantially hollow section as shown, to provide sufficient strength and rigidity to function as supporting columns in the construction, and may be welded or otherwise secured to the car body. As best shown in Figures 1 to 4 inclusive, the pedestals are shaped to provide the wings 19 and 20 laterally and longitudinally of the car, respectively, to brace them against the thrust and shift of the running gear. The pedestals are formed with an upper attaching wall 21 secured to the underside of reinforcing plates 18, with depending wall portions 22 and 23 defining the longitudinal wing portion 20 and the wall portions 24, 25, and 26 comprising the lateral wing portion 19, all of the walls being disposed at an angle with respect to each other as shown, and connected at their bases by extended portions 27 forming spring caps for the springs 28 of the assembly to be presently described.

The springs rest upon plates 29 supported upon brackets 30 projecting from adjacent sides of hangers 31. As best shown in Figures 1 and 3, plates 29 on their undersides are formed with closed end bearing grooves 32 designed to interlock with bearings 33 rising from the hanger brackets 30 to maintain proper operating relation with the springs and spring caps. The spring seat bearings 33 are preferably pitched in cross-section with their crests slightly rounded to conform somewhat to the contour of respective companion bearings 32 to permit relative rocking movement of the spring seats to accommodate them to the springs under thrust of pedestal movement. Spring seats 29 are further provided with sleeved bracket portions 34 extending outwardly from the seat to provide supports for the ends of transversely extending bars 35 for connecting the spring seats on opposite sides of the car for the purpose of relieving the springs of forces tending to unduly stress them by maintaining the spring seats in substantial

parallelism with the spring caps 27 on the pedestals. The spring seats carry stop lugs 36 rising from one side thereof and extending in overlapping relation with a similar lug 37 depending from the companion spring caps 27 whereby the spring seats are caused to move simultaneously with the spring caps on the pedestals to thereby prevent any possible tendency of the springs to tilt under the lateral thrusts of the pedestals.

The supporting hangers 31 are pivotally hung upon journal boxes 38 mounted upon the axles 39 connecting the wheels 40. The hangers here involved comprise each a pair of links 41 connected at their upper ends to a cross bar 42 formed on its underside with a bearing groove 43 shaped to straddle an upstanding bearing portion 44 on the journal box, and the lower ends of the links connected by a crossbar 45 disposed beneath the journal box and extending with its opposite ends beyond the links, to provide the brackets 30 for rockably supporting spring seats 29, before noted.

Through the medium of the transverse connecting bars 35, functioning as struts, the hangers are held normally inclined as best shown in Figure 2, to facilitate return of the car to centered position upon leaving curves and irregularities in the track. When the car enters a curve, the inertia of the body tends to continue in a straight line but the running gear will follow the change in the direction of the track whereupon the hangers thus normally inclined will permit the car body floor to be maintained relatively parallel to the track. As the wheel flanges are thrust against the rail head, the angularity of the hangers begins to change with the bodily shift of the wheels and axles transversely with respect to the car body, until they assume one or the other of the positions indicated in Figure 5.

The hanger on one side of the car moves outwardly and upwardly as the hanger upon the opposite sides moves inwardly and downwardly then upwardly from their normal inclined positions indicated in Figure 2. The angularity thus maintained between the hangers operates to decelerate the lateral movements of the car body to prevent undue vibration resulting from irregularities in the track.

The hangers may be forged or cast with the links 41 and upper and lower crossbars 42 and 45 preferably integral to facilitate assembly. The hanger parts are of general I-beam configuration and disposed with the inner and outer flanges 46 and 47 of the link portions 41 presenting bearing surfaces for the journal box 38 and respectively adjacent faces 24 of the pedestals, as shown in Figures 1 and 4. For this purpose the pedestals are formed with bearing embossments 48 extended downwardly to also provide the stop

lugs 37 depending from the spring caps 27, as best indicated in Figure 3, and the sides of the journal box bulged to provide bearing embossments 49 in substantial alinement with the pedestal embossments 48.

With the boxes 38 held from lateral displacement upon the axles 39 by the usual wedges 74 and journal brasses 50, a virtually solid column of metal from one pedestal to the other is provided to transmit traction thrusts to axle and wheels where the springs 28 are held from distortion in the direction of car movement since the bracket extensions 30 of the lower crossbars 45 transmit such forces simultaneously to both spring caps and seats.

It will be noted that the hangers 31 have been described as having a pivotal bearing upon the journal box. In the preferred embodiment, the upstanding bearing portion 44 supporting the hanger forms part of a pillow block 51 having oppositely extending base flanges 52 traversing the journal box and terminating in depending lip portions 53 entered in notches 54 on the journal box to prevent displacement of the block under stress of hanger movement.

As in the case of the spring seat bearings 33, the upstanding bearing portion 44 on the journal box is preferably pitched with the crest slightly rounded, whereby the bearing groove 43 would rockably engage the rounded crest of bearing 44 to afford an ample range of movement for the hanger. To this end, the flanges 55, defining the bearing groove 43 on the underside of the upper crossbar 42 of the hanger, are flared downwardly, as best shown in Figures 2 and 5, to clear the journal box and bearing 44 when hangers reach their extreme limits of movement.

Secured to the journal box, is a brake-hanger beam 56, in this embodiment forming an integral part of the pillow block, extending from opposite sides of the journal box and parallel to and beyond the periphery of adjacent wheel 40. The ends of the brake hanger beam are offset upon opposite sides of the journal box as best indicated in Figures 2, 3, and 4, to clear respectively adjacent pedestals, with portions 57 of the beam ends deflected inwardly across the tread of the wheel 40 and provided with brakehanger jaws 58.

The jaws are preferably spaced apart laterally as best shown in Figures 2 and 4 to provide a rigid bearing for brake pins 59 supporting the brake hangers 60 to insure stability of the hangers against lateral movement whereby the brake shoes 61 supported by them will be held in operative relation with the wheels 40. The brake hanger beam 56 is preferably channel shape in cross section and formed with its lower flange portion as an integral extension of

adjacent flange 52 of the pillow block 51 on the journal box, whereby the beam will be held from displacement resulting from stresses due to braking operations. Obviously, both hanger bearings and brake hanger brackets may be made integral parts of the respective journal boxes 38 or separately secured, but the method of holding these several parts interlocked by the weight of the car through the medium of the hangers, as shown, facilitates assembly of the running gear and permits ready replacement of the several parts.

The brake shoes 61 are removably secured to brake heads 62 fixed to brake beams 63 disposed upon opposite sides of each pair of wheels, where single pairs of wheels are used, and extending from side to side of the running gear, as indicated in Figures 2 and 4. The brakes are actuated in this embodiment by levers fulcrumed at their lower ends to the beams and connected intermediate their ends by tension rod 64 secured to such levers at a point above the axles 39, as shown in Figures 1, 2, and 4. The dead lever 65 is fulcrumed at its upper end to guide bracket 66 pivotally secured to fulcrum bracket 67 on the body of the car, and the live lever 68 connected at its upper end to an operating rod 69 leading to the brake cylinder lever (not shown) on the car, whereby a pull on rod 69 will cause the shoes on the brake beam carrying the live lever 68 to first engage that side of the wheel, whereupon the pull exerted upon the intermediate connecting rod 64 actuates dead lever 65 upon the opposite side of the wheel to force brake shoes on the adjacent beam against the wheel, as will be understood.

To prevent the dropping of the brake beams on the rails and possible resulting derailment, due to failure of the beam suspension, there is provided a pair of safety bars 70 extending beneath both brake beams at points intermediate the center of the beams and their respective ends. These bars are supported at their ends upon the transverse connecting bars 35 and secured by means of U-bolts 71 embracing the connecting bars and taking the safety bars 70 to which they are held by fastening nuts 72, as best illustrated in Figures 1, 2, and 4.

To prevent abnormal lateral movement of the body of the car with respect to the running gear, limiting stops 73 are provided, in this embodiment in the form of plates secured to walls 22 of the pedestals by welding or otherwise, and disposed for engagement with the brake hanger beam 56 on the journal boxes 38. As indicated in the drawings these stops are positioned to engage the flanges of the hanger beams proportioned to function as abutments for the stops.

The application of the invention to cars

of heavy capacity is indicated in Figure 6, showing a hopper car equipped with two pairs of wheels at each end, each pair of wheels with their respective axles functioning independently of the others. For use in pairs, the assembly is modified only with respect to the form of the brake hanger beams and the slight shift of the transverse connecting bars between the wheels. In this embodiment the pedestals 120 between the journal boxes may be formed in one piece if desired, but in all other particulars the assemblies will be similar to that depicted in the other figures of the drawings.

Instead of extending to opposite sides of journal boxes 138 as in the first adaptation, the brake hanger supports 156 are in the form of cantilevers supported at one end on the journal box with their opposite ends projecting to provide brackets for adjacent brake hangers 160. As in the case of the first embodiment said cantilevers are preferably integral with adjacent pillow blocks 151 for stability.

Since each axle assembly moves laterally of the car independently of the companion assembly, it will be necessary to shift the inner transverse connecting bars 135 more closely to their respective axles 139 to provide sufficient clearance to avoid interference between them during car movement. In this embodiment also the same system of brake rigging will be available except that but one beam will be used for each pair of wheels instead of the clasp brake for each pair of wheels as in first adaptation.

For use with hopper cars of restricted length and with a single discharge opening between the inner pairs of wheels, the invention is of particular value in that adjacent pairs of wheels may be brought more closely together to provide greater clearance between the ends of the discharge opening and adjacent inner pairs of wheels for the door operating mechanisms commonly used on such cars.

From the foregoing it will be apparent that there has been provided a running gear that may be shipped knocked-down and in which the parts may be assembled with facility and a minimum of materials and labor. The parts are rugged and relatively few in number and require but little finishing to adapt them for interlocking in the assembly, and except for the bolting of the brake beam safety supports to the transverse connecting bars 35, no separate fastenings are required to hold the parts in proper operating relation.

The brake beam safety supports 70 and the spaced connecting bars 35 together provide a rectangular rigidifying frame to prevent displacement of the hangers affecting their parallelism with the wheels and to insure positive equilibrium in the hanger as

sembly under traction thrusts from the pedestals.

Although the hangers 31 are preferably in the form of a unitary casting or forging, it is conceivable that within the scope of the invention the upper and/or lower crossbars connecting the links 41 at their upper and lower ends may be formed as separate members, or the lower crossbar 45 alone may be made separate and removable to permit the dropping of the wheels, axles, and journal boxes without disturbing the remainder of the assembly.

The lower crossbar functions as a column to hold apart the lower ends of the links under the load upon the springs 28 tending to force the lower ends of the links towards each other. The frame-work comprising the crossbars 35 and brake beam safety supports 70 above referred to function to supplement this crossbar through the medium of the interlocking connection between the spring seats and the bearings 33 on the supporting brackets 30 on the hangers, as best indicated in Figure 1.

What we claim is:—

1. In a railway car, the combination with pedestals disposed longitudinally of the car, of journal boxes between the pedestals, a wheel and axle assembly movable transversely of the car with respect to said pedestals and supporting the journal boxes, hangers pivotally hung from said boxes for yieldably supporting said pedestals, and crossbars connecting said hangers.

2. In a railway car, the combination with pedestals spaced in pairs longitudinally of the car, of journal boxes between the pedestals of each pair, a wheel and axle assembly movable transversely of the car with respect to said pedestals and supporting the journal boxes, hangers pivotally hung from said boxes for yieldably supporting said pedestals, and crossbars interlockably connecting said hangers.

3. In a railway car, the combination including pairs of pedestals fixed longitudinally of the car, a wheel and axle assembly movable transversely of the car with respect to the pedestals, and journal boxes supported by said assembly, of hangers pivotally hung from said boxes, springs on said hangers beneath said pedestals, and means connecting said hangers for stabilizing said springs.

4. The combination with pedestals of a railway car, of a wheel and axle assembly including a journal box movable transversely of the car with respect to the pedestals, hangers pivotally hung from said boxes, springs rockably mounted upon said hangers beneath said pedestals, and means connecting said hangers for stabilizing said springs.

5. In a railway car having a plurality of



pedestals disposed longitudinally of the car, the combination with a wheel and axle assembly including a journal box movable transversely of the car with respect to the pedestals, of hangers pivotally hung from said boxes and having bearing portions extending beneath the pedestals, hanger connecting means rockably supported upon said hanger extensions, and springs mounted upon said connecting means for resiliently supporting said pedestals.

6. In a railway car having pedestals disposed longitudinally of the car, the combination with a wheel and axle assembly including a journal box movable transversely of the car with respect to the pedestals, of hangers pivotally hung from said boxes and having spring bearing portions extending beneath the pedestals, springs between said bearing portions and pedestals, and cross-bars extending beneath the respective boxes and connecting said spring bearing extensions.

7. The combination with pedestals of a railway car, of a wheel and axle assembly including a journal box movable transversely of the car with respect to the pedestals, hangers pivotally hung from said boxes, springs supported on said hangers beneath the pedestals, means connecting said springs rockably supported upon said hangers, and means on said pedestals for operatively engaging said spring connecting means.

8. The combination with pedestals of a railway car, of a wheel and axle assembly including a journal box movable transversely of the car with respect to the pedestals, hangers pivotally hung from said boxes, spring caps and seats on said pedestals and hangers respectively, springs held between said caps and seats, abutments on said caps and seats engageable to synchronize the movements thereof whereby to preserve the stability of the springs, and means connecting said hangers and seats.

9. In a railway car having pedestals disposed longitudinally of the car, the combination with a wheel and axle assembly including a journal box movable transversely of the car with respect to said pedestals, of hangers pivotally hung from said boxes and disposed with portions thereof between opposite sides of said boxes and respectively adjacent pedestals and, forming therewith a transmission column from pedestals to axle.

10. In a railway car having pedestals disposed longitudinally of the car, the combination with a wheel and axle assembly including a journal box movable transversely of the car with respect to the pedestals, of hangers pivotally hung from said boxes and disposed with portions thereof between opposite sides of said boxes and respectively adjacent pedestals, and brake hanger brackets

supported by said boxes and extending between said wheels and pedestals and hangers.

11. In a railway car having pedestals disposed longitudinally of the car, the combination with a wheel and axle assembly including a journal box movable transversely of the car with respect to the pedestals, of hangers pivotally hung from said boxes, a connecting frame rockably supported upon the hangers and comprising a pair of bars extending transversely of the car upon opposite sides of each pair of wheels, and other bars extending beneath the axle and secured at their respective ends to said first mentioned bars.

12. The combination with the pedestals on a railway car, of a wheel and axle assembly including a journal box movable transversely of the car with respect to the pedestals, brake hanger brackets extending from opposite sides of said box, brake beams hung from said brackets upon opposite sides of each pair of wheels, connecting bars extending transversely of the car beneath said brake beams, and hangers pivotally hung from said boxes and supporting said bars.

13. In a railway car having pedestals disposed longitudinally of the car, the combination with a wheel and axle assembly including journal boxes movable transversely of the car with respect to the pedestals, of hangers pivotally hung from said boxes and having bearing portions disposed between the boxes and respective pedestal portions, said boxes and pedestals having bearing faces respectively engaging adjacent faces of said hangers.

14. In a railway car having pedestals disposed longitudinally of the car, the combination with a wheel and axle assembly including journal boxes movable transversely of the car with respect to the pedestals, pillow blocks mounted upon said boxes and formed with oppositely extending brake hanger brackets, hangers pivotally hung from said blocks, brake beams upon opposite sides of each pair of wheels supported from said brackets, brake beam safety bars extending beneath the axle and said beams, and hanger connecting members supporting said bars.

15. In a railway car having a plurality of pedestals disposed longitudinally of the car, the combination with a wheel and axle assembly including journal boxes movable transversely of the car with respect to the pedestals, hangers pivotally hung from said boxes, transverse bars connecting said hangers upon opposite sides of each pair of wheels, and abutment means on said pedestals and boxes engageable to limit the movement of said hangers.

16. In a railway car having a plurality of pedestals disposed longitudinally of the car,

the combination with a wheel and axle assembly including journal boxes and movable transversely of the car with respect to the pedestals, of hangers pivotally hung from said boxes and normally inclined with respect to each other, and transverse bars connecting said hangers upon opposite sides of each pair of wheels.

In witness whereof we have hereunto set our hands this 29th day of December, 1930.  
 CHAMP CARRY.  
 WILLIAM H. MUSSEY.  
 MARTIN P. BLOMBERG.

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