United States Patent

Cunningham

[15] **3,636,885**

[45] **Jan. 25, 1972**

[54] ANCHOR LINK

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[73] Assignee: **General Steel Industries, Inc.,** Granite City, Ill.

[22] Filed: **July 30, 1970**

[21] Appl. No.: **64,899**

Related U.S. Application Data

[62] Division of Ser. No. 702,576, Feb. 2, 1968, Pat. No. 3,547,045.

[52] **U.S. Cl.**.....**105/157 A,** 85/1.5 R, 85/50 R, 105/197 R, 105/199 R, 105/200, 267/66

[51] **Int. Cl.**.....**B61f 5/08,** B61f 5/16, F16b 35/00

[58] **Field of Search** .....85/1.5 R, 50 R, 70; 105/193, 105/197 R, 199 R, 200, 218 R, 157 A; 267/66

[56] **References Cited**

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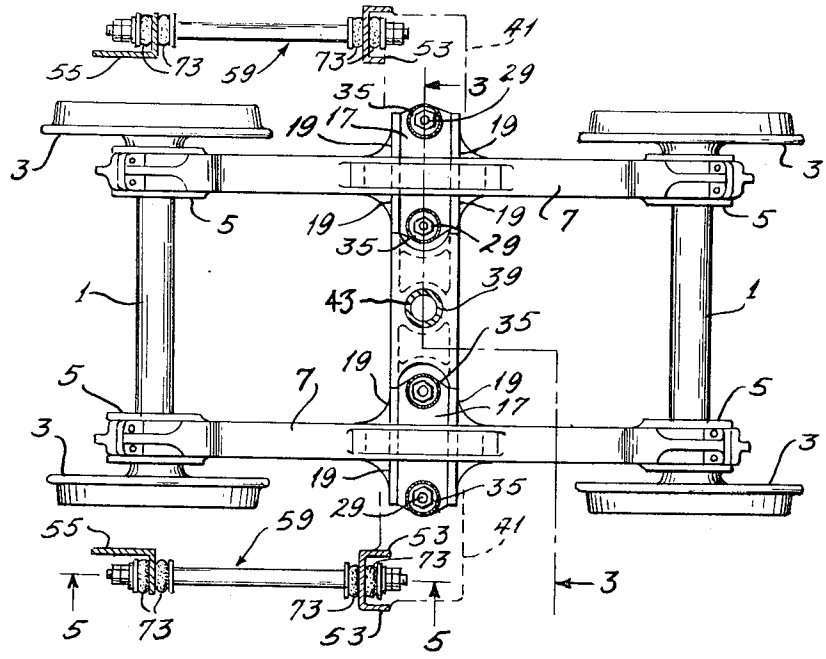
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Assistant Examiner—Howard Beltran
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[57] **ABSTRACT**

A railway vehicle two-axle truck in which separate longitudinally extending side frames are supported at their ends on the axles, each side frame being formed at its center with transversely extending horizontal web structure wider than the side frame, a transverse transom resiliently connected at its ends to each transverse web structure at points spaced apart transversely of the truck, a transverse bolster pivotally related to the transom at the center of the truck and supported on the side frames by resilient side bearings, upright springs at the ends of the bolster for supporting a vehicle body, and means for transmitting tractive and braking forces from the bolster to the vehicle body. The last named means preferably comprises longitudinally extending improved bolster anchor links each connected at one end to an end of the bolster and at the other end to the vehicle body.

3 Claims, 6 Drawing Figures



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SHEET 1 OF 2

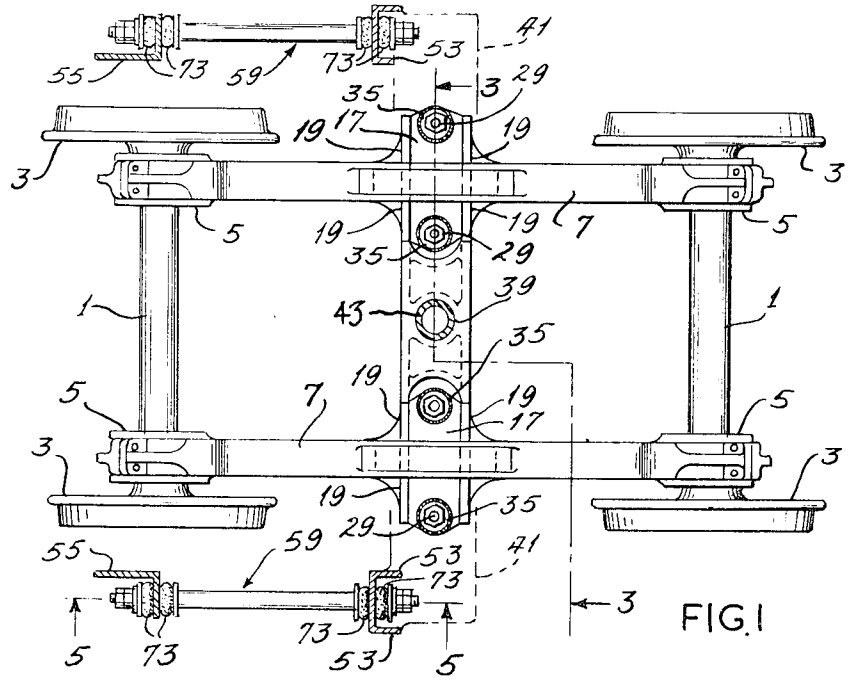


FIG. 1

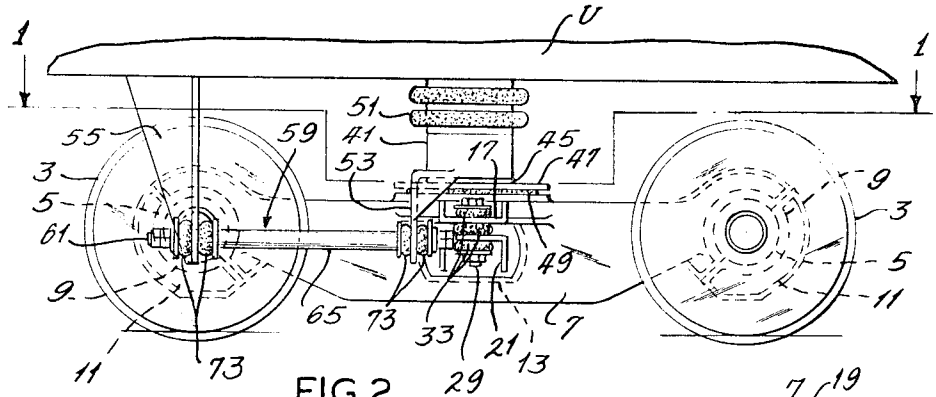


FIG. 2

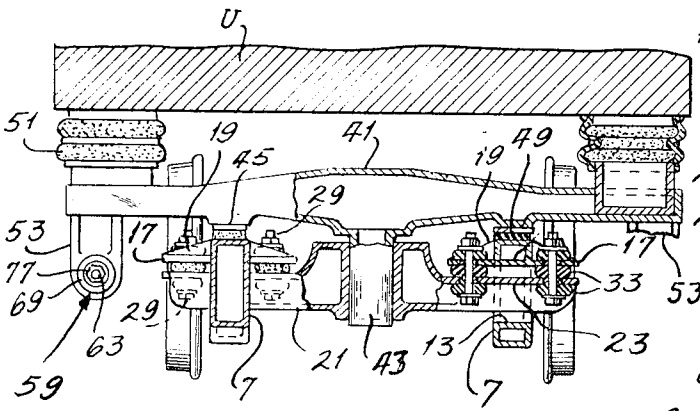


FIG. 3

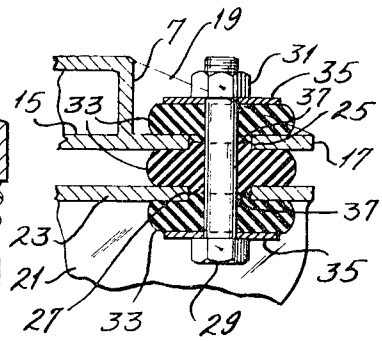


FIG 4

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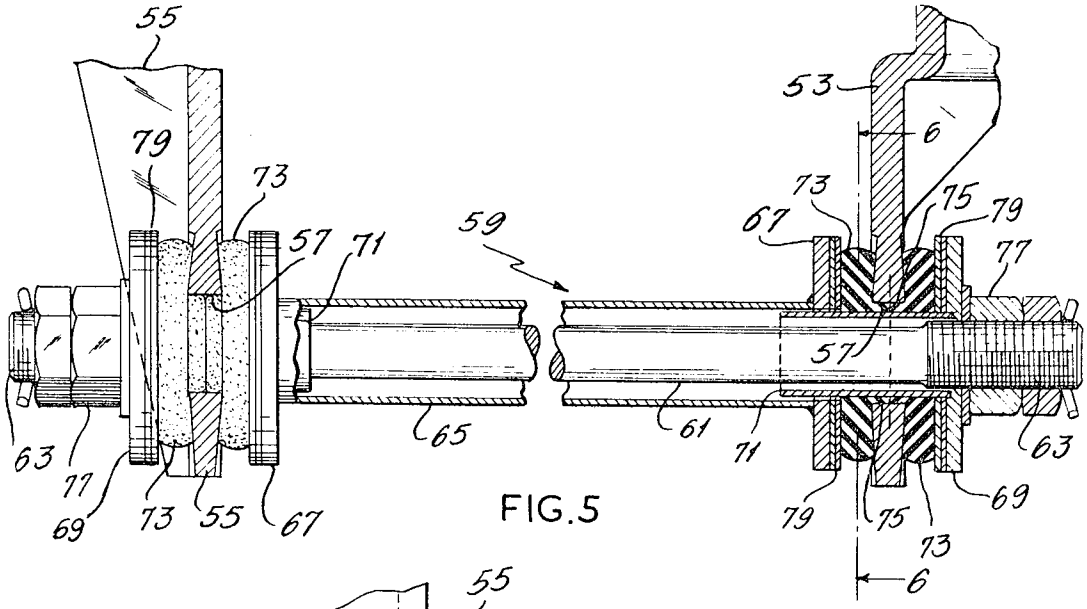


FIG.5

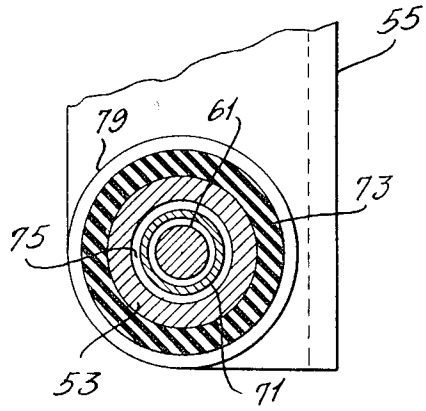


FIG.6

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This application is a division of my copending application Ser. No. 702,576,filed Feb. 2, 1968, now U.S. Pat. No. 3,547,045, issued Dec. 15, 1970

FIELD OF THE INVENTION

The invention relates to railway rolling stock and consists particularly in a two-axle railway vehicle truck of the type in which a bolster, mounting body support springs, is swivelly supported on truck framing carried by the axles.

DESCRIPTION OF THE PRIOR ART

In railway trucks of the type in which the bolster is swivelly supported on the truck frame and mounts body support springs, the bolster is usually supported at the center of the frame by a pivot bearing as, for example, in U.S. Pat. No. 2,877,719, and the frame has pedestal jaws at its corners to receive the axle boxes and is supported on springs carried by the axle boxes or by equalizing bars seated on the axle boxes. This construction requires a heavy transverse frame member because of the high bending moment caused by the central support thereon of the bolster, and the weight of the frame is also increased by the use of pedestal jaws to position the axle boxes.

SUMMARY OF THE INVENTION

The invention provides a very lightweight, yet positively trammed and fully equalized truck suitable for high-speed passenger service, by mounting separate side frames directly on the axle boxes, supporting a rigid transverse member at points spaced apart transversely thereof by means of bolts passing through opposing horizontal webs of the transverse member and each side frame, and annular rubber pads surrounding the bolts and insulating the side frames and transverse member webs from each other and from metal-to-metal contact with the bolt, pivoting a bolster to the center of the transverse member and supporting it on the side frames, mounting body support springs on the bolster ends, and providing improved longitudinally extending anchor links to connect the bolster ends to the supported body.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of a truck embodying the invention partially horizontally sectionalized along lines 1—1 of FIG. 2.

FIG. 2 is a side elevation view of the truck illustrated in FIG. 1.

FIG. 3 is a transverse vertical sectional view along line 3–3 of FIG. 1.

FIG. 4 is an enlarged vertical sectional view of the resilient connection between side frame and transverse member.

FIG. 5 is an enlarged longitudinal vertical sectional view of the anchor link taken along line 5—5 of FIG. 1.

FIG. 6 is a transverse vertical sectional view along line 6—6 of FIG. 5.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The numerals 1 refer to a pair of spaced-parallel axles, on the ends of each of which are mounted a pair of flanged railway wheels 3. Inwardly of wheels 3 the axles rotatably mount journal boxes 5 and the end portions of transversely spaced longitudinally extending side frames 7 are secured to journal boxes 5 by elastomeric grommets 9 and semicircular clamps 11. Side frames 7 are preferably of narrow but deep box section and intermediate their ends are formed with transverse apertures defined by vertically spaced horizontal webs 13 and 15. Top webs 15 are elongated transversely of the truck inwardly and outwardly from their respective side frames to form brackets thereon suitably braced by triangular gussets 19.

For connecting the side frames to each other and maintaining the axles and side frames in squared relation in plan and vertically while permitting differential tilting movements of the side frames in their longitudinal vertical planes, a transverse transom member 21 of inverted channel cross section has its end portions projecting through the windows defined by transverse webs 13 and 15 in the opposite side frames 7. The horizontal web 23 of transom member 21 underlies side frame brackets 17 which are each formed with centrally disposed circular holes 25, and web 23 is formed with similar holes 27. Transom member 21 is supported from each side frame by transversely spaced vertical bolts 29 passing through holes 25 and 27, and cooperating nuts 31. To eliminate metal-to-metal contact between side frames 7 and transom members 21 and to permit longitudinal tilting of the side frames with respect to the transom member and to each other, annular pads 33 are positioned around bolts 29, above brackets 17, between brackets 17 and transom member web 23 and below the latter and are held in position by metal washers 35 on the end portions of the bolts abutting the bolt heads and nuts respectively. Pads 33 are formed with annular ribs 37 extending into holes 25 and 27 around bolts 29, so as to insulate the bolts from contact with brackets 17 and transom member web 23.

At its center, transom member 21 is vertically cylindrically apertured at 39, and a transverse bolster 41 is formed with a vertical depending cylindrical boss 43 matingly received within aperture 39 to form a vertical axis pivot for bolster 41 with respect to the truck framing. Bolster 41 is supported directly on side frames 7 by downwardly facing side bearings 45 slidably resting on upwardly facing side bearing plates 47 mounted on resilient pads 49. The resilient pad support of the side bearing plates permits longitudinal tilting of the side frames relative to the bolster without causing partial disengagement of the bolster and side frame side bearings.

At its ends, bolster 41 mounts vertical flexible-wall pneumatic springs 51 on which are supported a vehicle body underframe U. Springs 51 are vertically and horizontally deformable to permit lateral as well as vertical cushioning movements of underframe U with respect to the supporting truck structure.

For transmitting longitudinal, i.e., draft and braking, forces between the bolster and car body, the bolster ends are formed with depending vertical transverse platelike brackets 53 and similar brackets 55 depend from underframe U, in transverse alignment with brackets 53 but spaced longitudinally therefrom. Brackets 53 and 55 are formed with longitudinally aligned holes 57 and improved longitudinally extending anchor links 59, as best seen in FIGS. 5 and 6, are connected at their opposite ends to the brackets 53 and 55 at both sides of the truck. Each of links 59 comprises a central rod 61, of substantially smaller diameter than bracket holes 57, which passes through both of the latter and has enlarged threaded end portions 63 disposed outwardly of the brackets. Between the brackets a spacer sleeve 65 surrounds rod 61 and is formed with washerlike flanges 67 on both of its ends, the latter being spaced inwardly of the rod from the adjacent brackets 53 and 55. Outwardly of the brackets, the enlarged end portions 67 of the rod slidably mount outer washer assemblies comprising washers 69 with tubular extensions 71, the latter being of sufficient inside diameter to fit slidably on the threaded end portions 63 of the rod and of less outside diameter than bracket holes 57 and the inside diameter of spacer sleeve 65, in the ends of which extensions 71 are slidably received. For preventing contact between brackets 53 and 55 on the one hand, and sleeve flanges 67 and outer washer assemblies 69, 71 on the other, annular rubber pads 73 are interposed between brackets 53, 55 and flanges 67 and washers 69, the inner circular surfaces of pads 73 abutting tubular extensions 71. Circular ribs 75 surrounding the holes in pads 73 extend into holes 57 in brackets 53 to center the anchor links therein. For securing the anchors to brackets 53 and 55, nuts 77 are threadably mounted on enlarged end portions 63 of rods 61 and are tightened to provide a predetermined compression of elastomeric pads 73 between washers 69, brackets

53, 55, and spacer flanges 67. Shims 79 may be applied between pads 73 and flanges 67 and washers 69 as needed. The compressibility of elastomeric pads 73 permits limited universal pivotal movement of anchor links 59 relative to brackets 53 and 55 as may be required to accommodate vertical and lateral movements of underframe U with respect to bolster 41. The reduced diameter of the intermediate section of rod 61 and the provision of tubular extensions 71 on outer washers 69, as compared with prior anchors in which the rods were of uniform diameter from end to end, with the elastomeric pads mounted directly on the rods, facilitates assembly by making it possible to insert the rod without forcing it through the pads.

Operation of the truck is as follows: As it moves along a track, side frames 7 tilt slightly with respect to each other about a common transverse axis defined by bolt holes 25 in side frame brackets 17, as required by vertical variations in the track rails, such tilting movements being freely accommodated by the compressibility of elastomeric pads 33. The lateral spacing of bolts 29 at each side maintains the side frames perpendicular to the transom member, in plan, without interfering with the equalizing or tilting movements of the side frames. Since body load is transmitted to the wheels at each side through springs 51, the end portions of bolster 41, side bearings 45, 47 and side frames 7, the middle portion of the bolster and transom member 21 can be of substantially light construction, the latter carrying no vertical load. The resilient pads 49 mounting side bearing plates 47 prevent interference by the bolster with side frame tilt and obviate partial disengagement of the side bearings when the side frames tilt. Draft and braking forces are transmitted between the bolster and underframe by anchors 59, the end connections of which pivot slightly to accommodate to vertical and lateral movements of the underframe on springs 51. Swivel of the truck is permitted by the pivotal engagement of bolster boss 43 and transom member aperture 33 and the slidable engagement of bolster side bearings 45 and side frame side bearing plates 47.

The invention may be modified in various respects as will occur to those skilled in the art and the exclusive use of all modifications coming within the scope of the appended claims is contemplated.

I claim:

1. An anchor link adapted to connect a pair of parallel platelike members formed with aligned holes comprising a rod passing through said holes and having enlarged threaded end portions of substantially less diameter than said holes projecting outwardly from said platelike members and a reduced diameter central portion, assemblies slidably mounted on the projecting end portions and comprising a washer with an inwardly directed tubular extension of sufficient diameter to receive said enlarged end portions of said rod, said tubular extensions projecting inwardly through said platelike members, elastomeric annular pads surrounding said tubular extensions on both sides of both said platelike members, a spacer sleeve surrounding said rod between said platelike members and having end portions slidably mounted on the inner ends of said tubular extensions, washerlike flanges on said spacer sleeve ends, and securing means on the enlarged ends of said rod and movable lengthwise thereof in engagement with said washers for compressing said elastomeric pads between said washers, said platelike members and said sleeve flanges.

2. An anchor link according to claim 1 wherein elastomeric annuli surround the portions of said tubular extensions within said platelike member holes.

3. An anchor link according to claim 2 wherein said elastomeric annuli comprise ribs around the openings in said annular pads.

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