July 6, 1965 V. S. DANIELSON 3,193,111

DRAFT GEAR RIGGING FOR RAILROAD CARS

Filed July 9, 1962 2 Sheets-Sheet 1

Fig. 1.

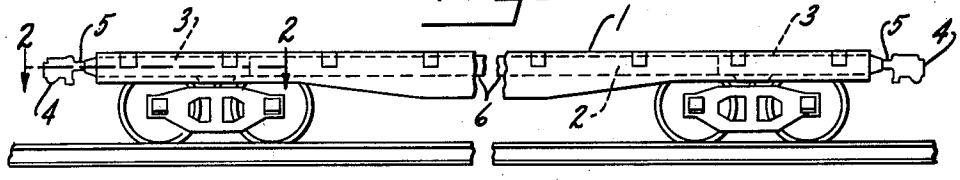


Fig. 4.

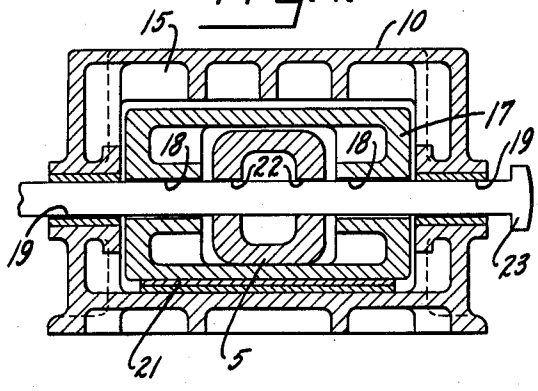
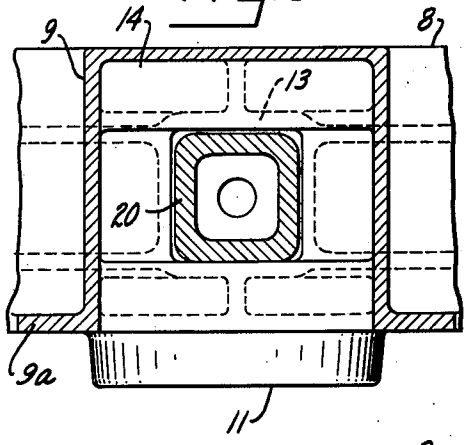


Fig. 6.



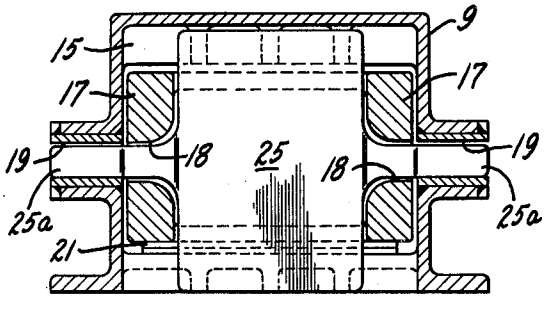


Fig. 5.

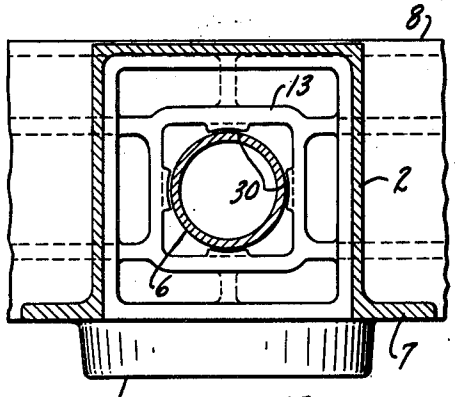


Fig. 7.

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DRAFT GEAR RIGGING FOR RAILROAD CARS

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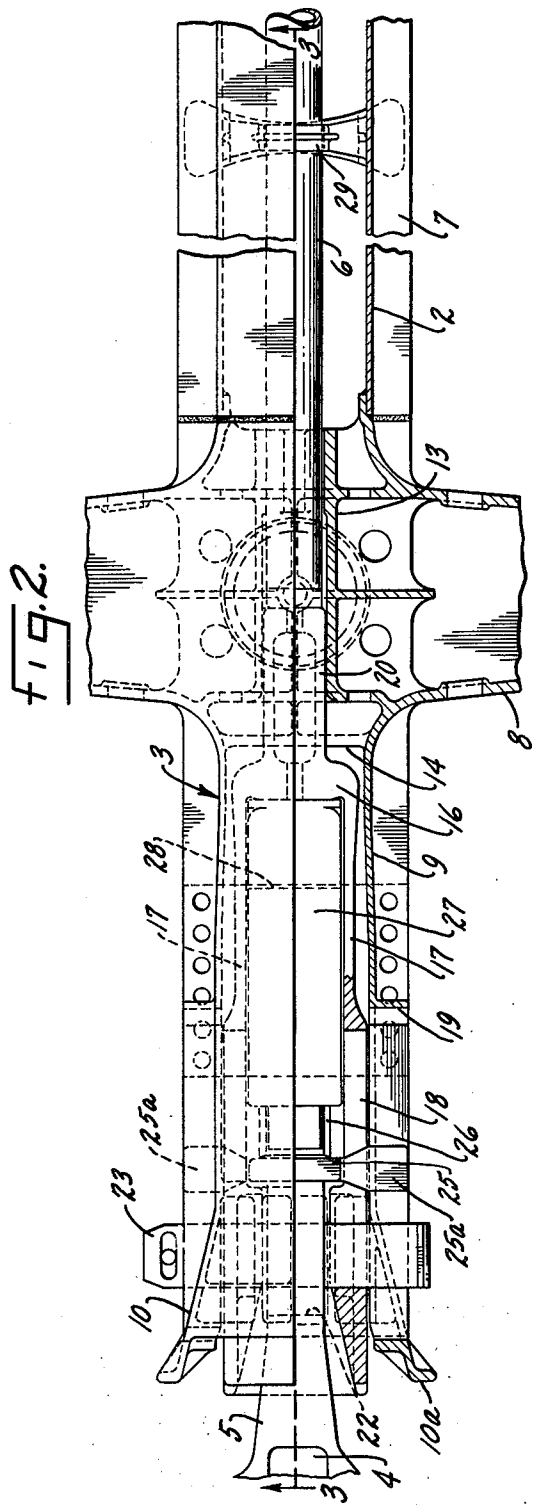


FIG. 2.

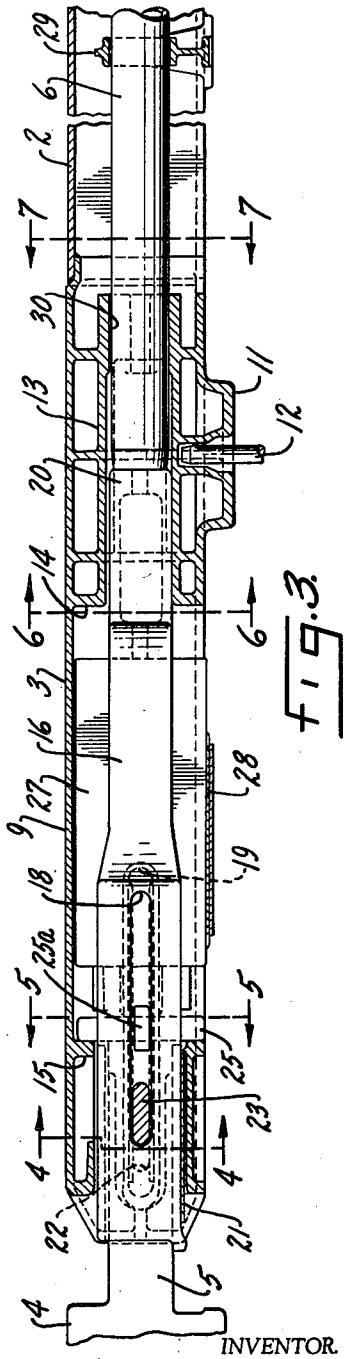


FIG. 3.

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DRAFT GEAR RIGGING FOR RAILROAD CARS

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6 Claims. (Cl. 213—8)

This invention relates to draft gear rigging for railroad cars of the type disclosed in Guins Patent No. 2,965,246 wherein by the use of an intermediate compression member extending longitudinally of the car, two draft gears, each associated with a coupler yoke at opposite ends of the car, together absorb buffing shock, while each draft gear alone absorbs draft force at its end of the car.

In an arrangement such as this, it is highly important that the coupler yokes and the compression member between them be maintained in proper alignment. It is also highly important that the coupler yoke be constrained so far as possible to travel along a path parallel with its axis. This promotes smoothness of operation and materially decreases wear and tear.

One object of the invention therefore is to provide means for maintaining the compression member and the yoke in alignment.

Another object is to provide means for limiting angular displacement of the coupler yoke and for constraining it so far as possible to longitudinal movement parallel with the central axis of the car.

Another object is to permit so far as possible angular displacement of the coupler shank with respect to the yoke, while minimizing angular displacement of the yoke with respect to the yoke supporting means in the car.

Another object is to provide an assembly where wear of the coupler yoke and the guides and supporting elements is minimized.

Another object is to keep the draft gear yokes and the compression member in accurate and proper alignment throughout their entire operation.

Another object is to prevent wear of the parts which might result in misalignment.

Another object is to provide a structure low in first cost and maintenance which permits the use of standard parts in so far as possible, which structure is readily adaptable to standard railway car design and production, and can be applied to cars presently in existence.

Other objects will appear from time to time throughout the specification and claims.

The invention is illustrated more or less diagrammatically in the accompanying drawings, wherein—

FIGURE 1 is a side elevation of a railroad car illustrating the application of the invention;

FIGURE 2 is a detail horizontal half section on an enlarged scale alonge the line 2—2 of FIGURE 1 with parts in full;

FIGURE 3 is a vertical section along the line 3—3 of FIGURE 2;

FIGURE 4 is a section along the line 4—4 of FIGURE 3;

FIGURE 5 is a section along the line 5—5 of FIGURE 3;

FIGURE 6 is a section along the line 6—6 of FIGURE 3;

FIGURE 7 is a section along the line 7—7 of FIGURE 3;

Like parts are indicated by like characters throughout the specification and drawings.

This invention is shown as applied to a railroad flat car though it might equally well be applied to any railroad car. The car 1, has extending longitudinally thereof, a center sill 2. At each end of the car is a draft

rigging 3 associated with the center sill. Couplers 4 with coupler shanks 5 are associated with the draft rigging. The compression member 6 extends longitudinally of the center sills and is interposed between the two draft riggings 3.

Referring to FIGURES 2 to 7, the U-shaped center sill is made up in the usual manner of two standard Z sections welded longitudinally together and having outstanding lower flanges 7. A unit end casting 9 includes a striker 10 cast integral therewith and may or may not include a car bolster 8. This unit casting is in continuation of the center sill and encloses the draft rigging.

Cast integral with the bolster 8 is the center plate 11 which may receive the center pin 12 extending upwardly from the car truck. Cast integral with the bolster is a guide sleeve 13. In front of the guide sleeve and integral with the casting are buffing lugs 14. Just behind the striker and integral therewith are draft lugs 15.

The compression member 6 is supported in suitable supports 29 spaced along the length of the car and at each end is supported in a guide sleeve 13. Thus there is a guide sleeve 13 at each end of the car and the opposite ends of the compression member are socketed in the two sleeves for contact with the coupler yoke, there being one at each end of the car.

The coupler yoke 16 includes two horizontally separated vertical straps 17 having key slots 18 in register with slots 19 in the unit casting. At the inboard end, the coupler yoke straps are joined together and terminate in a yoke lug 20 which is received in the guide sleeve 13, in opposition to the end of the compression member 6, the sleeve holding the lug and compression member in general alignment. The outboard end of the yoke is supported on the yoke wear plate 21 contained within the striker 10. Thus the yoke is guided adjacent its opposite ends by the striker at the outboard end and by the guide sleeve at its inboard end. The intermediate portion of the yoke is altogether out of contact with the unit casting 9 between the key slots 18 and the guide sleeve 13.

The yoke straps toward their outboard ends decrease in thickness as they extend beyond the striker to receive the coupler shank 5. The coupler shank 5 is slotted at 22 to receive a draft key 23 which passes through the slots 18 in the draft yoke straps 17 through the slot 22 in the coupler shank 5 and through the slot 19 in the striker 10. Further enlargements or flared out portions 10*a* may be formed on each side of the striker, as shown in FIGURE 2. This has the advantage in the event of a yoke failure, the draft key 23 will be forced outboard against the ends of the slot 19 in the striker. The dimensioning is such, due to the travel of the gear, that the slots 19 in the striker extend slightly beyond the end face of the striker. The strengthened portions 10*a* enable the end of the casting 9 to take the load that will be imposed upon it as a result of such breakage. Further, the portions 10*a* are flared out somewhat, as shown in FIGURE 2, to provide adequate clearance for the coupler in going around a curve.

Extending across the yoke outwardly through the yoke slots and the casting slots is the draft gear follower plate 25 having supporting lugs 25*a* which extend outwardly through the slots 19. The follower plate abuts at one face on the inboard end of the coupler shank and at the other face on the plunger 26 of the draft gear itself. The details of the draft gear form no part of the present invention and are not illustrated but is includes a plunger 26, the draft gear housing 27 and the usual friction spring or rubber shock absorbing features characteristic of draft gears. The draft gear is thus socketed within the yoke between the draft gear follower adjacent the draft lug at one end and the base or inboard end of the yoke adja-

cent the buffing lug at the other end. The draft gear is supported by a carrier plate **28** attached to the flanges **9***a* on the end casting **9**. The inboard end of the draft gear housing **27** serves to engage the buffing lug **14**.

When a draft force is applied to the coupler, its outward movement in the yoke is limited by the draft key which has limited movement through the slots through which it extends and as the coupler and yoke move outwardly, the draft gear follower engages the draft lug, thus transmitting the draft force from the coupler to the car. The butt of the yoke is free to move outwardly in the guide sleeve and no effect is felt at the other end of the car.

The two separate draft gears at each end of the car act independent of one another in draft, there being no cooperation between them under those circumstances, but in buffing they work together in unison.

When buffing force is applied, pressure on the coupler shank moves the draft key inwardly along the slots in the straps, applying pressure through the coupler shank and the follower to the plunger in the draft gear, forcing the draft gear against the butt of the yoke and causing the yoke and draft gear to move inwardly and forcing the butt of the yoke inwardly within the guide sleeve against the compression member, thus moving the compression member inwardly to apply pressure on the other draft yoke, forcing the other or opposite draft yoke outwardly to cause its draft gear follower to contact the draft lug so that both draft gears assist in absorbing buffing pressure.

These two draft gear assemblies are far apart. They are connected in buffing by the compression member. The compression member is long and while it is guided, it is important that its relationship to the butt of the yoke be uniform. Therefore, the butt of the yoke and the end of the compression member are constrained to generally parallel co-axial and movement by the guide sleeve.

Buffing or draft loads applied through the coupler shank to the yoke are frequently sharply inclined to the axis of the car and to the axis of the center sill. The result of this is a tendency to cock the draft yoke to one side or the other and cause wear of the draft gear and center sill. Such cocking is reduced to a minimum by virtue of the fact that the coupler yoke is supported by adequate bearing sleeves at each end. The clearance between the coupler yoke and the center sill at each end are such that while movement can occur, angular displacement of the draft gear is reduced to a minimum by virtue of the effect of the guide sleeves at each end of the assembly.

Tapering of the draft yoke straps at their outboard ends provides a substantial space in which the coupler shank may be moved angularly without applying undue pressure to the yoke itself so that most if not all of the angular displacement occurs between the draft yoke and the coupler shank, thus leaving the draft yoke free to move generally longitudinally toward and from its contact with the compression member.

The slots in yoke, coupler, shank and casting are longer than the maximum excursion of the parts in either direction because of the different action and different movements in buffing on the one hand and draft on the other of each part relative to the other .

The compression member may be solid or tubular. It may be cylindrical or any other desired shape. Preferably, it is a cylindrical tube which fits into the bolster guide sleeve in opposition to the yoke lug being centered by integral pads **30** in proper alignment with the compression member.

I claim:

1. In a railroad car, a pair of spaced parallel center sills extending longitudinally thereof and terminating at each end in a unit casing including a striker sleeve, a guide sleeve rigidly connected to the center sills in alignment with and spaced inwardly from the striker sleeve, a coupler yoke, a key slot therein, a draft gear surrounded thereby, the outboard end of the yoke extending into and guided by the striker sleeve, a yoke extension on the inboard end of the yoke penetrating the guide sleeve, the yoke being out of contact with the center sills between the guide sleeve and the key slot,

a coupler shank socketed in, keyed to and extending from the coupler yoke beyond the striker sleeve, the coupler shank being free to move angularly within the coupler yoke through a greater angle than the angular movement permitted to the yoke by the two sleeves.

2. A railroad car draft system comprising a coupler yoke having spaced, parallel, vertical, longitudinal slotted straps, a draft gear between the straps, a draft gear follower plate between the straps abutting on the draft gear, support lugs therefor perpendicular to the axis of the yoke, extending horizontally from the follower plate, and penetrating said slots.

a slotted coupler shank between the straps abutting on the follower plate, a draft key extending through the slot in the coupler shank and through the slots in the yoke straps.

3. A railroad car draft system comprising a coupler yoke having spaced, parallel, vertical, longitudinally slotted straps, a draft gear between the straps, a draft gear follower plate between the straps abutting on the draft gear, support lugs therefor perpendicular to the axis of the yoke, extending horizontally from the follower plate, and penetrating said slots,

a slotted coupler shank between the straps abutting on the follower plate, a draft key extending through the slot in the coupler shank and through the slots in the yoke straps.

a unit casting enclosing the draft gear, the walls of the casting being slotted in register with the slots in the straps, the draft key and follower plate, support lugs extending through said slots.

4. A railroad car draft system comprising a coupler yoke having spaced, parallel, vertical, longitudinally slotted straps, a draft gear between the straps, a draft gear follower plate between the straps abutting on the draft gear, support lugs therefore perpendicular to the axis of the yoke, extending horizontally from the follower plate, and penetrating said slots,

a slotted coupler shank between the straps abutting on the follower plate, a draft key extending through the slot in the coupler shank and through the slots in the yoke straps,

a unit casting enclosing the draft gear, the walls of the casting being slotted in register with the slots in the straps, the draft key and follower plate, support lugs extending through said slots,

flanges extending outwardly from the casting bounding the slots therein.

5. A railroad car draft system comprising a coupler yoke having spaced parallel, vertical, longitudinally slotted straps, a draft gear between the straps, a draft gear follower plate between the straps abutting on the draft gear, support lugs therefor perpendicular to the axis of the yoke, extending horizontally from the follower plate, and penetrating said slots.

a slotted coupler shank between the straps abutting on the follower plate, a draft key extending through the slot in the coupler shank and through the slots in the yoke straps,

a unit casting enclosing the draft gear, the walls of the casting being slotted in register with the slots in the straps, the draft key and follower plate, support lugs extending through said slots,

a draft lug in the path of the draft gear follower, a buffing lug in the path of the draft gear, the slots being longer than the movement permitted by the gear and follower between the lugs.

6. A draft yoke for a railroad car draft rigging including a pair of parallel, vertical longitudinally extended

straps spaced apart to enclose a draft gear housing and integrally joined together at their inboard ends only to provide a seat for the draft gear housing, a horizontal yoke lug integral with, extending beyond the joined inboard ends of the straps concentric with the lug and of generally the same vertical and horizontal width and height, the straps being longitudinally key slotted near their outboard independent ends.

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