Nov. 21, 1944. K. F. NYSTROM ET AL 2,363,197

RAILROAD CAR DRAFT GEAR AND BUFFER STEM MOUNTING

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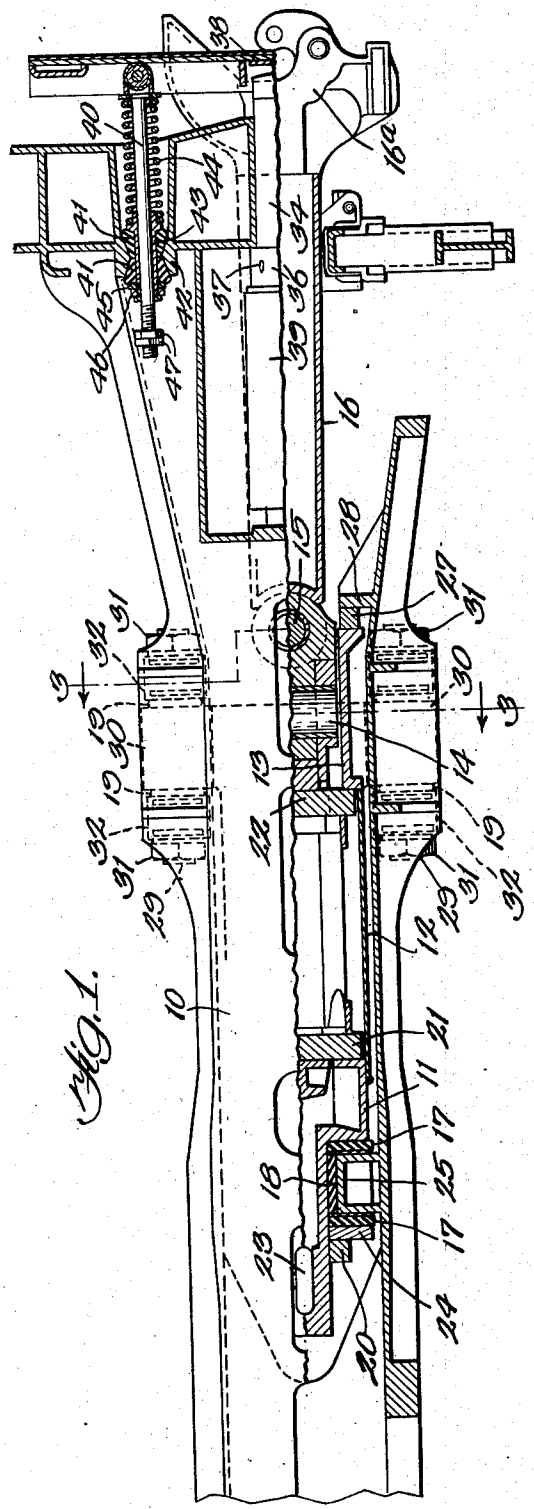


Fig. 1.

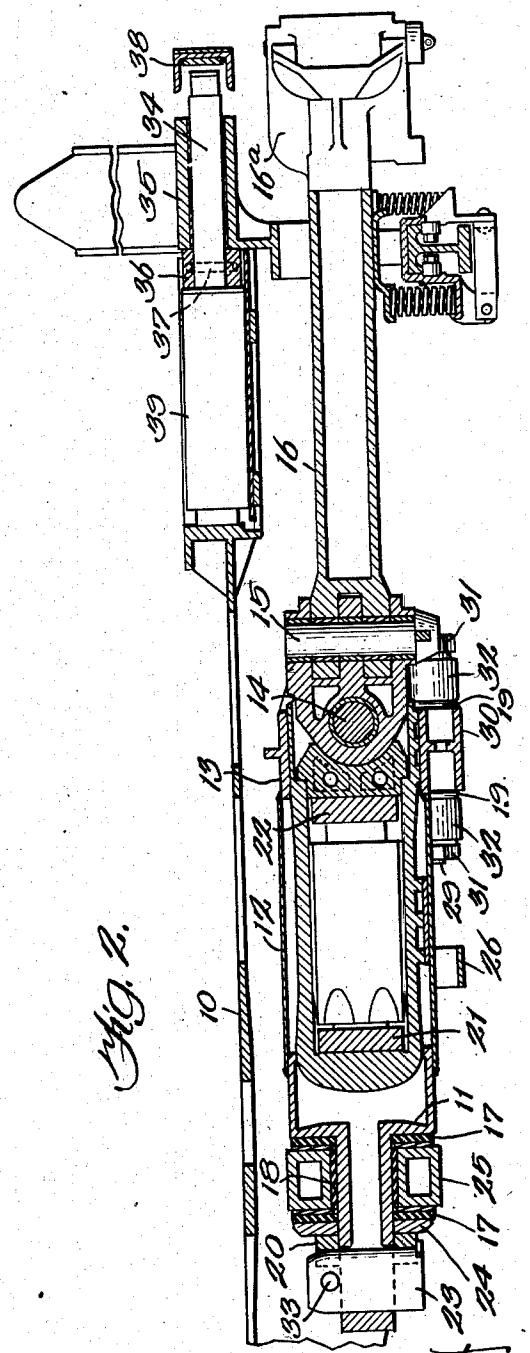


Fig. 2.

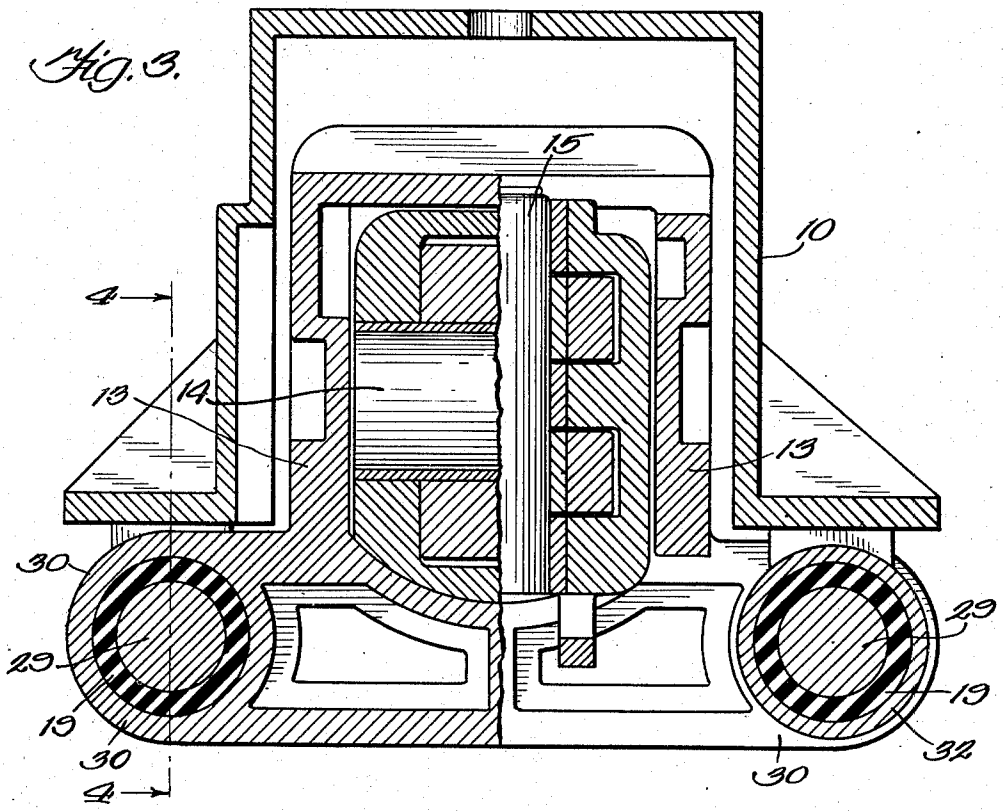
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Fig. 3.



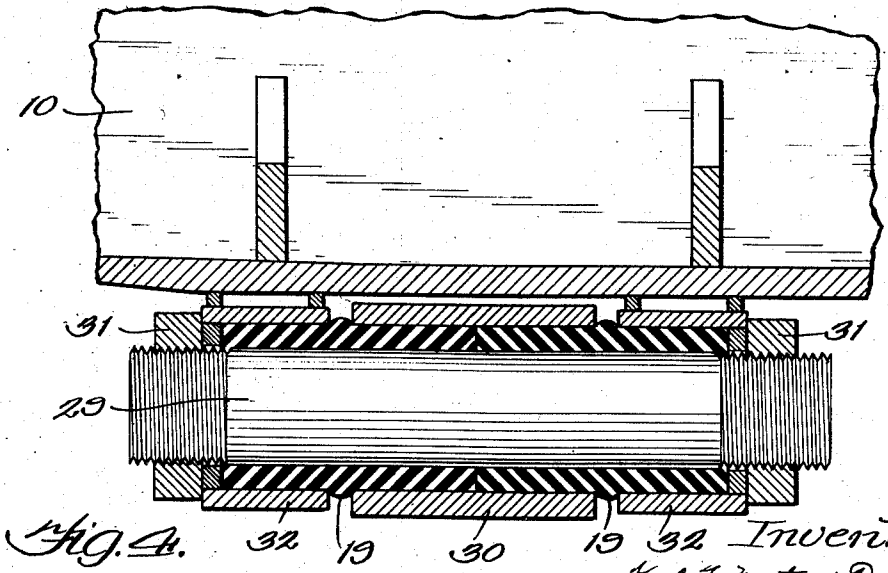


Fig. 4.

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RAILROAD CAR DRAFT GEAR AND BUFFER STEM MOUNTING

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Application May 15, 1943, Serial No. 487,414

13 Claims. (Cl. 213—50)

Our invention relates to improvements in the draft gear and buffer center stem mechanism more especially intended for railroad passenger cars and has for its object the provision of a construction wherein the draft gear is insulated from the car and normal contact between the buffer stem and the usual buffer channel is prevented, thereby eliminating the usual noise encountered with constructions as heretofore employed.

The foregoing objects and advantages, as well as other advantages inherent in the construction, will all be readily comprehended from the detailed description of the accompanying drawings wherein—

Figure 1 is a plan view of our improved draft gear and buffer center stem with portions broken away and shown in section.

Figure 2 is a sectional view taken substantially along the longitudinal center line of the device.

Figure 3 is a transverse sectional view taken substantially on the offset line 3—3 of Figure 1, as viewed by the arrows on an enlarged scale.

Figure 4 is a vertical sectional view taken on the line 4—4 of Figure 3.

The invention, which is more especially intended for use on railroad passenger cars, for purposes of exemplification has been applied to a well known type of draft gear, so that specific description of all of the elements, except in so far as those affected by our invention, need not be entered into; the draft gear and its associated elements being generally secured to the car underframe or center sill which is indicated at 10 and is formed at its ends to receive and have the draft gear secured thereto.

In the particular exemplification the draft gear is housed within an enclosure forward of the tail piece 11, which is provided with an enclosing shell or envelope 12, preferably immovably secured thereto in a suitable manner as by welding, while the other end of the shell or envelope 12 is intimately secured to the support casting 13 which contains the usual swivel connection involving the transverse pin 14 and the vertical pin 15 for the coupler shank 16.

The draft gear, yoke and follower plate assembly functions in a normal manner within the housing.

In order to reduce the usual noise, we insulate the draft gear housing assembly from the car and its platform casting by means of resilient elements or rubber buff plates 17, 17, a tail piece bushing 18, and support pin bushings 19. Following the line of draft from the coupler shank 16 the yoke 20, the rear follower plate 21, the draft gear proper, and the front follower plate 22, it is transmitted through the support casting 13, through shell or envelope 12, through tail piece 11, through key 23, to the follower plate 24, through the insulating buff pad or plate 17 and thence to the platform casting bulkhead 25 and to the car body.

The buff or thrust encountered by the coupler is transmitted from the coupler butt to the forward follower plate 22, through the draft gear proper, the rear follower plate 21, the tail piece 11, the forward insulator buff pad 17, thence through the bulkhead 25 of the platform casting to the car body.

The weight of the entire assembly is carried at the rear by the tail piece bushing 18, and at the front by the support pin bushings 19. Vertical insulation for the assembly is also provided by these same bushings.

As is apparent from the construction all movements of the draft gear are isolated or insulated from the car by the buff pads 17, 17, the tail piece bushing 18, and the support pin bushing elements 19.

In the event of fracture of the tail piece 11, the housing will drop on the safety carrier iron 26 (see Figure 2) and the support casting will move forward until it contacts the emergency filler 27, which is supported by the lug 28 of the emergency (see Figure 1). This provides a temporary arrangement to take the draft forces in the event of failure.

The side thrusts of the coupler 16a and its swivel butt are taken care of by the wide stagger or spacing of the mounting or support pins 29 which extend through openings in the bottom extensions 30 at opposite sides of the casting 13; the ends of the pins 29 extending beyond the ends of the extensions 30 and are threaded to receive the gland-nuts 31 (see Figure 4) which engage the collars 32, 32, preferably welded to the center sill. The center of application of the coupler side thrust and the center of the mounting pins 29, 29 form a broad based triangle for transmitting this force or side thrust to the platform casting; this force being transmitted to the platform casting as a side thrust and a couple. The construction described prevents the swivel butt being forced against the platform casting in the event of a thrust or buff, or of a draft or pull being encountered from an angle relative to the longitudinal axis of the coupler shank; a condition which would result in consid-

erable noise with draft gears as heretofore constructed.

The support pins 29, 29 also function as means which will prevent the swivel butt of the coupler shank jumping upwardly or downwardly in the event of a butt or thrust, or of a pull or draft when the coupler head is in other than a central position.

The draft key 23, normally speaking, will shear at approximately 350,000 pounds of pull or draft; and any draft in excess will be taken by the assembly, causing it to move forward until the support case or casting 13 strikes the emergency filler 27, supported by the emergency through the medium of lug 28. In the event of a maximum thrust or buff of say 800,000 pounds, the forward buff pad 17 will be compressed out at approximately 400,000 pounds, then the tail piece casting 11 will back up against the bulkhead 25, which is capable of absorbing the 800,000 pounds load.

In order to remove or lower the housing assembly, the emergency lug 27 must be removed to provide clearance; and after the lug 27 has been removed the housing assembly can then be lowered upon removing the support pins 29, 29 (one on each side of the housing, see Figure 3), the pin 33 in the draft key 23, the follower plate 24, the tail piece bushing 18, the safety carrier iron 26, and the coupler pin 15.

The buffer center stem 34, which is slidably mounted in and extends through the cylindrical portion 35 of the casting, has its inner end provided with a block or collar 36, secured to the center stem in any suitable manner as by a pin 37; the collar or block 36 being of a predetermined width sufficient to maintain the forward outer end of the center stem 34 normally spaced from and out of contact with the buffer plate or channel 38; the width or thickness of the block 36, approximating the reactive travel of the buffer. Adjacent the inner end of the center stem 34, shown in Figure 2, is the usual friction and spring mechanism (not shown) mounted in the buffer barrel 39. The friction shoe travel, namely of 1¾ inches, is still available for safety in collision.

The buffer constructed as described will be brought into operation very infrequently and consequently it need not be insulated; while on the other hand, the buffer element supporting or side stems, one of which is shown at 40 in Figure 1, and which comes into frequent operation, is insulated from the casting by vibration absorbing elements or rubber bushings 41, 41 which are preferably made tapering toward each other, and the openings through the thick wall portion 42 of the casting are also tapered from opposite ends to conform to the tapered bushing elements 41, 41. The bushing elements 41 are mounted on an elongated sleeve member 43, whose forward end is formed to provide a seat for the spring 44, whereby the buffer channel is yieldingly held in normal position. The rear end of the sleeve member 43 is threaded and provided with a washer 45 and nut 46; the tapered bushing members and the tapered walls of the opening cause the elongated sleeve 43 to be held in place and vibrations and noise to be absorbed by the bushings and not transmitted to the casting. The inner ends of the side stems preferably extend beyond the bushing elements and the ends provided with safety nuts, as shown at 47.

The exemplification is believed to be the best embodiment of the invention, but certain detail modifications may be possible without, however, departing from the spirit of our invention as defined in the appended claims.

What we claim is:

1. In the draft gear structure of a railroad car having a center sill with spaced apart apertured portions, a support casting, mounted in the center sill, provided with a base disposed laterally toward opposite sides below said center sill intermediate the apertured portions thereof and provided with openings extending therethrough; vibration absorbing bushings arranged in said openings; support pins disposed through the bushings; and means adjustably mounted on the ends of the pins and coacting with the center sill spaced portions whereby the pins are secured in place and the bushings placed under compression.

2. In a draft gear structure, the combination of a center sill with spaced apart apertured portions; a support casting, adapted to be mounted in the center sill of a railroad car, provided with an enlarged base below the center sill and disposed toward opposite sides beyond the sides of the center sill and arranged between the apertured portions thereof, the base adjacent opposite sides being provided with openings extending lengthwisely therethrough and registering with the center sill apertured portions; support pins arranged in said openings and apertures and provided with resilient vibration absorbing bushings; and adjustable means at the ends of the pins whereby the bushings are placed under compression and the pins held against longitudinal movement.

3. In the draft gear structure of a railway car, a support casting whereby the draft gear is mounted in the center sill of a railroad car, the base of the casting being disposed below the center sill and extended laterally toward opposite sides of the center sill and said extended portions cored lengthwisely; collars intimately secured to the center sill and arranged in spaced relation and in alignment with the opposite ends of said extensions; support pins disposed through said extensions and said collars; shock absorbing bushings arranged on said pins; and regulable means secured to the ends of said pins whereby the bushings are placed under compression and the pins held against longitudinal movement.

4. In a draft gear structure for railroad passenger cars, the combination of a support casting mounted in the car center sill with portions disposed beneath the center sill and resiliently secured to the bottom of the center sill, and a platform casting rearward of said support casting and provided with a bulkhead, a draft gear assembly intermediate the support casting and the bulkhead; a tail piece at the inner end of said assembly provided with a stem portion disposed through the bulkhead; a draft gear enclosing member secured to the support casting and to the tail piece; a rear follower plate arranged on the tail piece stem rearward of the bulkhead; insulating shock absorbing pads intermediate the tail piece and the forward side of the bulkhead and intermediate the rear side of the bulkhead and said rear follower plate; and a shock absorbing bushing arranged on the stem portion of said tail piece.

5. In the draft gear structure of a railroad passenger car, the combination of the car center sill and the platform casting provided with an apertured bulkhead, a draft gear assembly arranged within the car center sill and provided with a tail piece; a support casting for the forward end of the draft gear, adapted to be mounted in the cen-

ter sill and provided with a base portion disposed beneath the center sill; means whereby said base portion is removably secured to the center sill; the draft gear tail piece having a stem portion disposed through an aperture in said bulkhead whereby the rear end of the draft gear assembly is supported in place; a follower plate arranged on said tail piece stem portion rearward of said bulkhead; shock absorbing elements intermediate the tail piece, said bulkhead and said follower plate and intermediate said support casting base and said means; whereby the draft gear assembly is cushioningly secured to the car center sill.

6. In the draft gear structure of a railroad passenger car provided with a center sill and a platform casting provided with a depending bulkhead, the combination of a draft gear assembly arranged in the center sill forward of said bulkhead; a support casting for supporting the forepart of the draft gear; a tail piece, at the rear end of the assembly, supported by the bulkhead; an enclosure shell for housing the draft gear intimately secured at one end to said support casting and at the other end to said tail piece; a follower plate arranged on the rear end of the tail piece rearward of the bulkhead; vibration absorbing means whereby said tail piece and follower plate are insulated from the bulkhead of the platform casting; means cooperating with opposite sides of said support casting and the center sill whereby the forepart of the draft gear and swiveled end of the coupler shank are supported within the center sill; and vibration absorbing means whereby said last mentioned means is insulated from the center sill.

7. In the draft gear structure of a railroad passenger car having a center sill and a platform casting with an apertured bulkhead, the combination of a draft gear assembly, an enclosure shell for the assembly; a support casting, at the forward end of the assembly, to which the forward end of said shell is intimately connected; the base of said support casting being disposed beneath the center sill and having extensions extending toward opposite sides of the center sill and cored from front to rear; apertured members secured to the center sill and their apertures aligned with opposite ends of the cored openings in the support casting extensions; support pins disposed through the cored openings and the apertured members whereby the support casting is supported from the car underframe; a tail piece, at the rear end of the draft gear assembly, to which the rear end of said shell is intimately secured, the tail piece having a spindle portion disposed through the bulkhead aperture whereby the rear end of the draft gear assembly is supported in place; resilient bushings for said support pins and the spindle portion of said tail piece whereby the draft gear assembly is insulated from the car.

8. In the draft gear and buffer stem structure of a railroad passenger car provided with a platform casting and a buffer member forward of and in spaced relation with the platform casting, the combination of a pair of spring controlled side stems pivotally secured to the buffer member for supporting the latter in place; elongated spring holding sleeves on said stems and disposed through apertures in said casting; vibration absorbing elements arranged about the sleeves in the casting apertures whereby the springs of said stems are held under compression and the sleeves insulated from the platform casting; adjustable means on said sleeves whereby said elements are placed under compression; a center stem slidably mounted in the casting intermediate the pair of side stems; and means whereby the forward end of said center stem is normally held in predetermined spaced relation with the buffer member.

9. In the draft gear and buffer stem construction of a railroad passenger car provided with a platform casting, the combination of a buffer member disposed forward of and in spaced relation with the casting; spring controlled slidably mounted stems pivotally connected at their forward ends to the buffer member; sleeve members for slidably supporting the inner ends of the stems in the platform casting and for placing the stem springs under compression; vibration absorbing elements arranged on the sleeve members and in apertures in the platform casting whereby the latter and the stems are insulated from the casting; and regulable means on the ends of the sleeve members whereby the elements may be compressed.

10. In the draft gear and buffer stem construction of a railroad passenger car with a buffer channel and a platform casting whose lower side has a rib provided with an opening tapering from opposite ends toward the center of the opening; spring controlled stems whose forward ends are pivotally secured to the buffer channel; sleeve members arranged on the stems and formed at their forward ends to provide seats for the rear ends of the springs whose forward ends are in pressure exerting relation with the buffer-channel; tapered vibration absorbing non-metallic elements arranged in the tapered openings of the platform casting and disposed about said sleeves; and regulable means cooperating with the sleeve members whereby the elements are placed under compression.

11. In the draft gear and buffer stem structure of a railroad passenger car with a platform casting having a cored bulkhead, the combination of a draft gear assembly arranged in the car center sill and having a tail piece provided with a rearwardly disposed stem portion disposed through the cored opening in the bulkhead for supporting the rear end of the assembly in place; a support casting for the forepart of the assembly; an enclosure shell for the draft gear intimately secured at its ends to said tail piece and to said support casting; cushion means intermediate the tail piece and the platform bulkhead; supporting pins whereby said support casting is removably secured to the center sill; and cushion means whereby the pins are insulatedly secured in place.

12. In the draft gear and buffer stem construction of a railroad passenger car provided with a platform casting having a cored bulkhead, the combination of a draft gear assembly arranged in the car center sill, the center sill being provided with apertured depending portions; a support casting for the forepart of the assembly adapted to fit into the center sill of the car with the base portion extending beneath the center sill and disposed laterally between the apertured depending portions of the center sill and apertured to register with the apertures of said depending portions; removable support pins arranged in the registered apertures whereby the support casting is removably secured to the center sill and the forepart of the assembly supported in place; a tail piece at the rear end of the gear assembly provided with a spindle portion disposed through the cored bulkhead and its rear end provided with a draft key; an enclosure shell for the draft gear intimately secured at its forward end to the support casting

and at its rear end to the tail piece; and vibration absorbing bushings arranged on said support pins and said tail piece whereby the draft gear assembly is insulated from the car.

13. In the draft gear and buffer stem construction of a railroad passenger car provided with a center sill and a platform casting having a cored depending bulkhead, the combination of a draft gear assembly; a support casting for the forepart of the assembly adapted to fit into the center sill of the car, the bottom of the casting having extensions at opposite sides, arranged beneath the center sill, adapted to extend toward opposite sides of the center sill and said extensions provided with openings extending therethrough; spaced collars secured to the center sill and arranged at opposite ends of said casting extensions; removable pins disposed through said collars and said casting extensions for removably securing the support casting in place; a tail piece at the rear end of the draft gear assembly provided with a rearwardly disposed spindle disposed through the cored opening in the bulkhead, the rear end of said spindle being provided with a follower plate and a draft key disposed through the spindle; an enclosing shell for the draft gear secured to said support casting and to said tail piece; and means disposed about said support pins and between the tail piece, its spindle and the bulkhead and between said rear follower plate and the bulkhead, whereby the draft gear assembly is insulated from the car.

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