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TRUCK PEDESTAL

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6 Claims. (Cl. 105—225)

This invention relates to railway car trucks generally and has particular reference to the mounting of the journal box within the truck frame pedestals.

The principal object of the invention is to prevent pounding between the journal boxes and truck frame pedestals and contemplates the provision of cushioning means between the journal boxes and pedestals.

An important object of the invention is the utilization of rubber in shear between the journal boxes and pedestals for compensating for relative longitudinal movement between these parts.

A particular object of the invention specifically contemplates the use of rubber disposed only at opposite sides of the respective pedestals to function in shear in cushioning relative longitudinal displacement between the pedestals and journal box and serving, also, to cushion relative lateral movement between these parts.

The foregoing and other objects are attained by the construction illustrated in the accompanying drawing, in which—

Fig. 1 is an elevational view of a portion of a car truck incorporating the pedestal liner arrangement of this invention;

Fig. 2 is a detail, perspective view of the pedestal liner; and

Fig. 3 is a sectional plan view taken on the line 3—3 of Fig. 1 showing the relation between a journal box with its fitted pedestal opening with the pedestal liner cushion of the invention disposed therebetween.

It has been determined by actual tests that railway car trucks, in operation, are subject to a constant teetering action of the truck frame—i. e., the opposite ends of the truck frame rise and fall alternatively as though the frame were pivoted on a horizontal axis occurring approximately at the center plate position. As an incident to this teetering action, each of the truck frame pedestals moves in a vertical plane on the segmental arc of a circle having a radius equal to the distance between the respective pedestals and the teetering axis. Since the journal boxes ordinarily are not fitted tightly between the pedestal jaws, this movement causes the respective pedestal jaws to strike opposite sides of each journal box alternately and results in pounding and vibration which is transmitted in the form of sound to the interior of the car. As the pedestal jaws move relatively to the journal boxes during this teetering action, there is as much as three eighths of an inch ($\frac{3}{8}$ ") difference in angularity from a perpendicular line between the

top and bottom of a journal box and its associated pedestal jaws due to the clearance provided between the respective boxes and pedestals. As a consequence of the clearance between the journal boxes and the pedestal jaws, pounding may also occur by reason of the boxes striking the pedestal jaws as a result of the horizontal movement of the boxes with the wheels and axles due to changes in train speed resulting from starting and braking forces and from rocking of the boxes, themselves, due to track conditions.

Heretofore, it has been proposed to enter rubber pads between the respectively opposing faces of the pedestal jaws and journal box sides and between the sides of the pedestals and the pedestal ways and functioning in compression. However, it has been found, in practice, that this arrangement is not suited to the absorption or proper cushioning of relative movement between the pedestals and journal boxes under the conditions above described, since rubber under compression has no resiliency unless provisions are made to permit the rubber "flow" and to accommodate its displacement during compression. Due to limitations with respect to the size of units adaptable to the restricted space available for application, this construction has been determined to be inadequate for the purpose. Because of the lack of facilities for the "flow" of rubber under compression in its application to the journal boxes and pedestals, the rubber is rendered relatively indisplaceable and, under the pounding described, acts substantially as though solid and thus ineffective to cushion the relative movement between these parts.

In order fully to remedy the pounding at the pedestals and journal boxes, the present invention contemplates the utilization of rubber in shear between the pedestals and journal boxes so placed as to be readily flexed in the absorption of relative, angular movements between the parts due to teetering of the truck frame or rocking of the journal boxes and to cushion all relative movement therebetween, and adapted to permit fitting of the journal boxes in the pedestals without clearance between the adjoining faces of the boxes and pedestal liners.

In the drawing, 10 represents a railway car truck frame having depending pedestals 11 defining a downwardly opening pedestal jaw 12. Journal box 13, here depicted as of the roller bearing type, is disposed within the pedestal jaw 12 and is supported on axle 14 carried by wheels 15—all in accordance with the usual practice. A bottom tie strap 19 closes the lower end of

the pedestal opening and is secured to the respective pedestal lower ends by means of bolts 9. A rubber pad 16 is disposed on the top of the journal box to provide a cushioned support for equalizer 17 which resiliently supports the truck frame 10 from the journal box by means of coil equalizer springs 18.

Ordinarily, a journal box as above described is fitted loosely between the pedestal jaws—thus permitting canting of the box which, in operation and in combination with the teetering action above referred to, creates a galloping action of the truck frame caused by track conditions which, with the canting of the box and consequent rocking back and forth, causes a raising and lowering of the truck frame thereby to aggravate the teetering action. In order to overcome this difficulty, pedestal liners 20 are disposed upon opposite sides of the journal box and secured to the respective pedestals 11. So that the journal boxes may be fitted tightly within the pedestal jaws 12—i. e., in actual contact, rubber in shear is utilized to provide for relative movement between the journal box and pedestals, as will more fully hereinafter appear.

The pedestal liners 20 each comprise a channel-shaped, pedestal-engaging mounting plate 21 and a channel-shaped journal-box-engaging bearing plate 22 in spaced, substantially concentric relation and having spaced flanges 23 and 24, respectively. Between the respectively opposing flanges 23 and 24 at opposite sides of each pedestal liner, cushioning pads 25, of live rubber, are bonded to the opposing surfaces of the respective flanges by vulcanization—leaving the space 26 between the opposing webs 27 and 28 of the respective channel plates 21 and 22 to provide for relative movement therebetween, at which time the rubber pads 25 function in shear to cushion relative longitudinal movement therebetween normal to the webs 27 and 28. The space 26 between the webs is less than that between the opposing flanges 23 and 24 and, in practice, comprises approximately three sixteenths of an inch ($\frac{3}{16}$ "') in order to provide for the three eighths of an inch ($\frac{3}{8}$ "') total movement normally necessary in service.

The channel plate 21 is disposed with the side flanges 23 straddling the respective pedestals 11 and secured thereto by welding, as at 29; and in order to prevent the heat generated by the welding process from affecting the rubber 25, these flanges are of relatively greater width than the outer flanges 24 of the plate 22, as at 30. With the channel plates 21 secured to the pedestals, as best shown in Fig. 3, it will be noted that the channel plates 22 are disposed in actual engagement with wear plates 31 disposed in the respective pedestal ways 32 at opposite sides of the journal box and leaving the spaces 26 to compensate for relative longitudinal or angular displacement.

The wearing plates 31 are welded to the respective faces of the pedestal ways, as at 33, and similar wear plates 34 are secured within opposite sides of each pedestal way, also by welding, as at 35, and which provide abutting surfaces for the outside flanges 24 on the cushioned pedestal liners during relative lateral movement, at which time the cushioning units 25 necessarily function in compression; and it will be noted that the pedestal ways are constructed with sufficient clearance 36 to permit of some slight lateral movement between the pedestals and journal box before the wear plates 34 are en-

gaged and which has been found necessary because of thrust movements of the axle bearings within the journal box.

By the disposition of the rubber only between the side flanges of the spaced pedestal liner plates and the provision of the open space between the adjacent webs of the plates, a flexible pedestal liner is afforded in which the rubber thus placed in shear and not under compression may readily flex in response to relative longitudinal movement between the journal box and pedestals; and upon one side of the box, at the bottom, one liner may be deflected three sixteenths of an inch ($\frac{3}{16}$ "') against the resistance of the rubber in shear while, at the opposite side, the other liner may be deflected a like amount against the resistance of the rubber—thereby to provide a total flexible deflection of three eighths of an inch ($\frac{3}{8}$ "') to compensate for variations in the angularity of the pedestals with respect to the journal boxes due to teetering. This ready flexing of the pedestal liners due to the use of rubber in shear will eliminate pounding between the journal boxes and pedestals caused by movement of the boxes or by teetering of the truck frame. Because of the fact that the rubber is disposed in shear, the journal boxes may be set up tight between the pedestal jaws—i. e., the cushioned pedestal liners may be arranged in actual contact with opposite sides of the boxes thereby to eliminate all initial slack therebetween and insure cushioning of all relative longitudinal movement, however slight.

From the foregoing, it will be seen that there has been provided a pedestal liner cushion arrangement utilizing rubber in shear in which the rubber is disposed only between the side faces of the pedestals and the respectively opposing side walls of the pedestal guide on the journal box in a manner to absorb relative longitudinal deflections between the pedestals and journal box and to cushion all relative movement between these parts and thereby prevent transmission of noise originating at this source to the car interior.

What is claimed is:

1. A truck frame having spaced pedestals, a journal box therebetween having vertically disposed pedestal ways adapted to receive the respective pedestals, said respective pedestal ways and pedestals having areas therebetween channel-shaped in plan section, and cushioned pedestal liners fitting in said areas comprising plates each having webs and flanges disposed in respectively spaced relation with rubber pads secured between the opposing flanges at opposite sides of the respective pedestals, certain of said plates being secured to the respective pedestals whereby the other of said plates have vertically sliding engagement with said pedestal ways and whereby relative deflections between the pedestals and journal box in a direction parallel to the general plane of the rubber are absorbed in shear by said pads, said webs being spaced a lesser distance apart than said flanges thereby to limit the amount of shear imposed on the rubber pads.

2. A truck frame having spaced pedestals, a journal box therebetween having pedestal ways adapted to receive the respective pedestals, said respective pedestal ways and pedestals having areas therebetween channel-shaped in section, and cushioned pedestal liners fitting in said areas comprising plates each having webs and flanges disposed in respectively spaced relation with rubber pads secured between the opposing flanges at

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opposite sides of the respective pedestals, whereby relative deflections between the pedestals and journal box in a direction parallel to the general plane of the rubber are absorbed in shear by said pads, said webs being spaced a lesser distance apart than said flanges thereby to limit the amount of shear imposed on the rubber pads.

3. A truck frame having spaced pedestals, a journal box therebetween having pedestal ways adapted to receive the respective pedestals, said respective pedestal ways and pedestals having areas therebetween channel-shaped in section, and cushioned pedestal liners fitting in said areas comprising plates each having webs and flanges disposed in respectively spaced relation with rubber pads secured between the opposing flanges at opposite sides of the respective pedestals, whereby relative deflections between the pedestals and journal box in a direction parallel to the general plane of the rubber pads are absorbed in shear by said pads, said webs being spaced apart to provide for relative movement therebetween.

4. In a truck frame having a pedestal, a liner for the pedestal comprising a mounting plate of channel-section having a web and flanges and fixedly secured to the pedestal, a bearing plate of channel-section having a web and flanges and disposed in substantially concentric relation to said mounting plate with the webs and flanges of the respective plates in spaced relation, said webs being spaced apart a lesser distance than said flanges, a journal box having a channel-shaped pedestal way in engagement with the web of said bearing plate and providing clearance with respect to said flanges, and rubber between the respectively opposing flanges of the plates and bonded to the surfaces thereof, said rubber resisting movement of the journal box normal to

said webs in shear and resisting lateral movement of the box in excess of that provided for by said clearance in compression, said spaced webs being adapted to limit the amount of shear to be imposed on said rubber.

5. A pedestal liner for a car truck comprising a mounting plate of channel-section, a bearing plate of channel-section in outer concentric relation to said mounting plate, the concentric relation of the mounting plate and bearing plate being so proportioned as to provide less space between the webs of such channel-section plates than between the flanges thereof, and rubber pads between the respectively opposing flanges of the channel plates and bonded to the surfaces thereof adapted to be stressed in shear by forces acting upon said outer bearing plate.

6. In a truck frame having a pedestal, a liner for the pedestal comprising a mounting plate of channel section having a web and flanges and fixedly secured to the pedestal, a bearing plate of channel section having a web and flanges and disposed in substantial concentric relation to said mounting plate with the webs and flanges of the respective plates in spaced relation, a journal box having a channel-shaped pedestal way in engagement with the web of said bearing plate and providing clearance with respect to said flanges, and rubber between the respectively opposing flanges of the plates and bonded to the surface thereof, said rubber resisting movement of the journal box normal to said webs in shear and resisting lateral movement of the box in excess of that provided for by said clearance in compression.

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CERTIFICATE OF CORRECTION.

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It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, first column, line 38, for "alternatively" read --alternately--; page 2, second column, line 63, claim 1, and page 3, first column, line 4, claim 2, after "rubber" insert --pads--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 1st day of December, A. D. 1942.

105-225

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.