Sept. 5, 1944. C. E. TACK 2,357,619

PEDESTAL SNUBBER

Filed Dec. 18, 1942 4 Sheets-Sheet 1

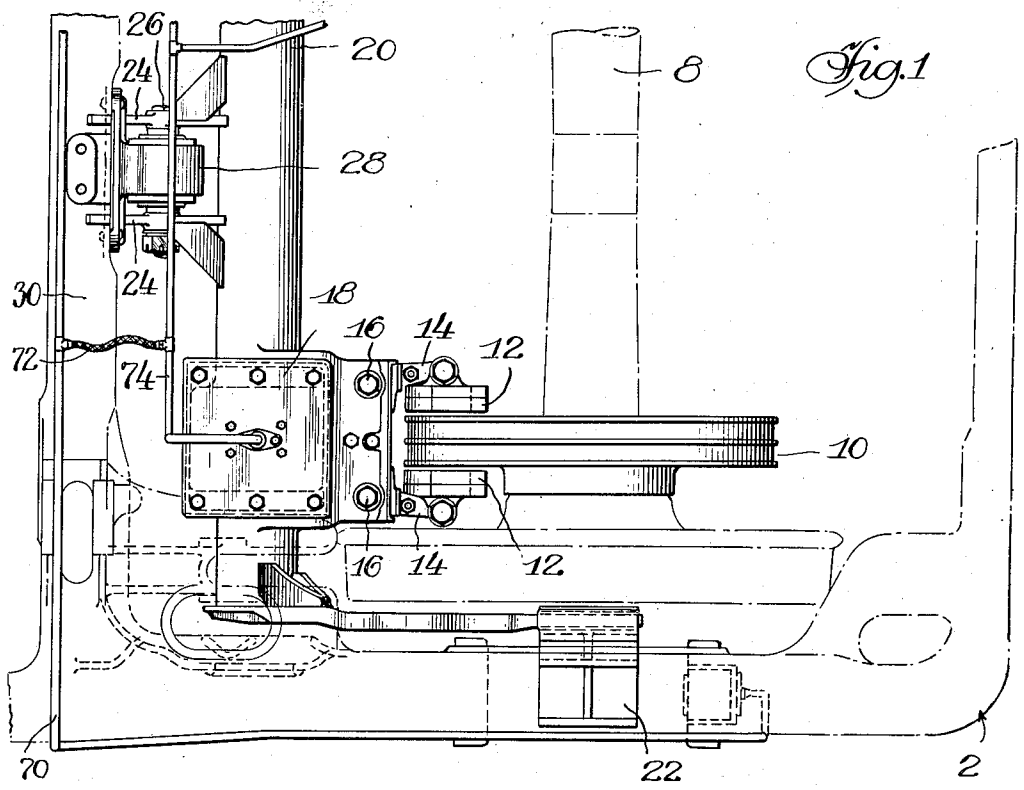


Fig. 1

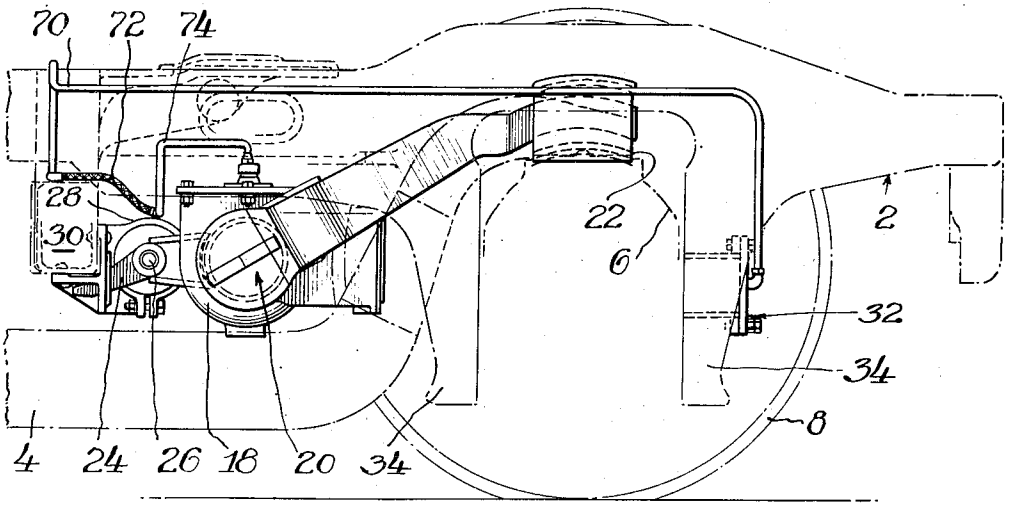


Fig. 2

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PEDESTAL SNUBBER

Filed Dec. 18, 1942 4 Sheets-Sheet 2

Fig. 4

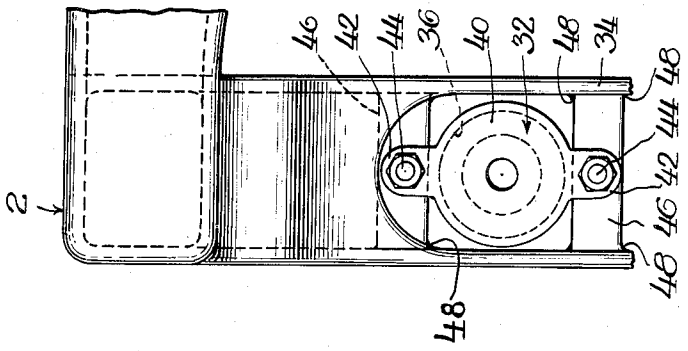


Fig. 3

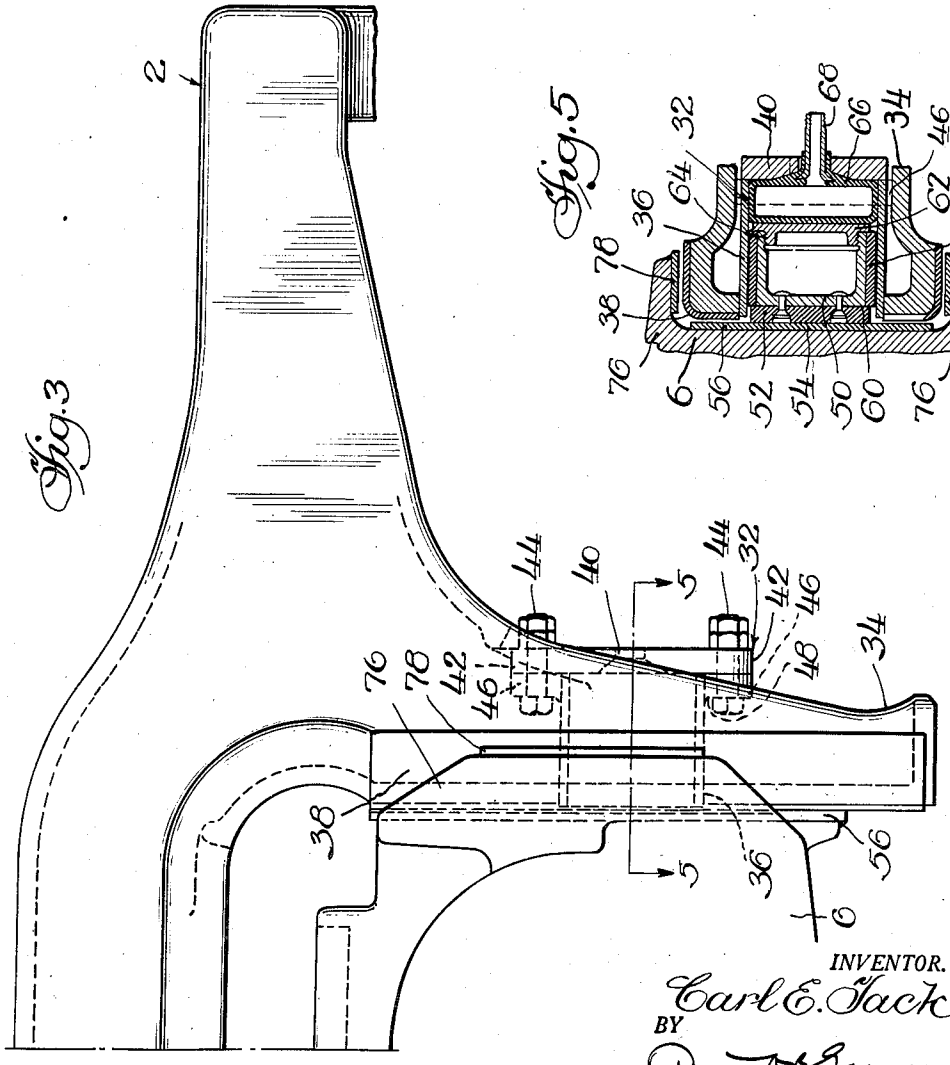


Fig. 5

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Filed Dec. 18, 1942 4 Sheets-Sheet 3

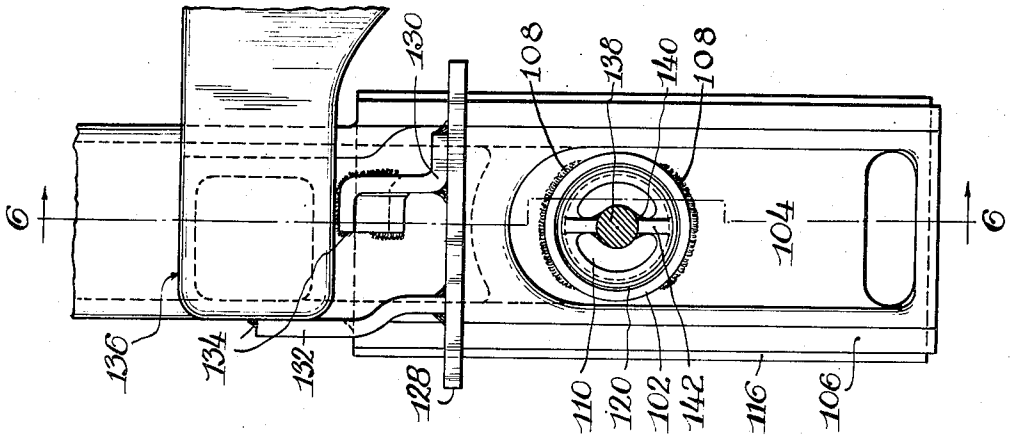


Fig. 7

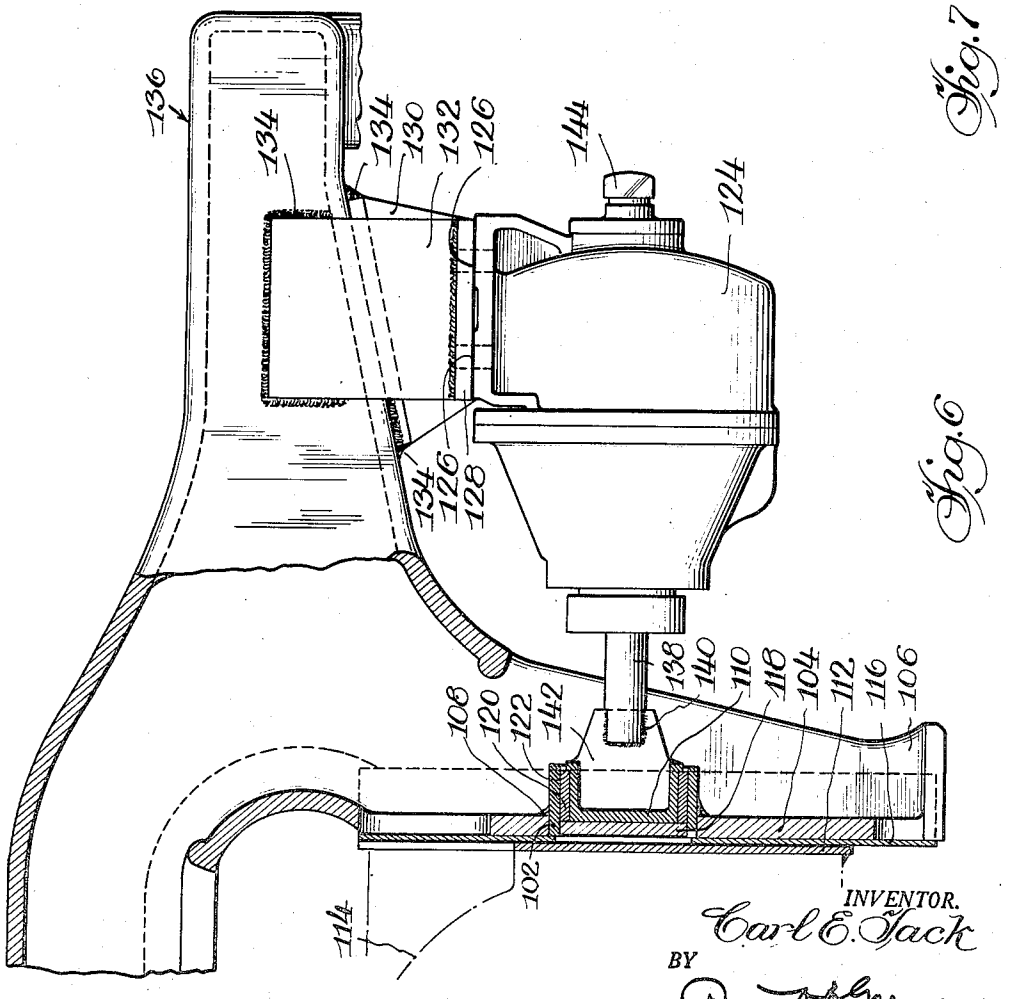


Fig. 6

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PEDESTAL SNUBBER

Filed Dec. 18, 1942 4 Sheets-Sheet 4

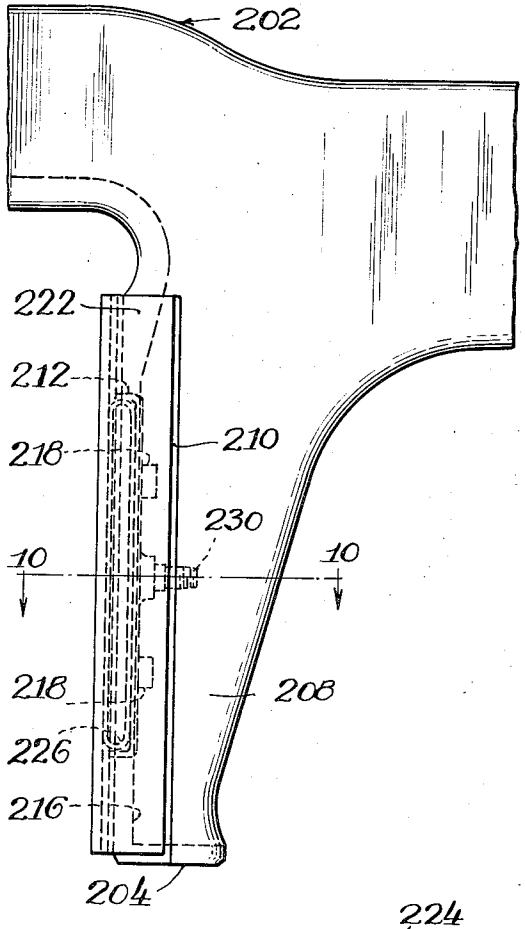
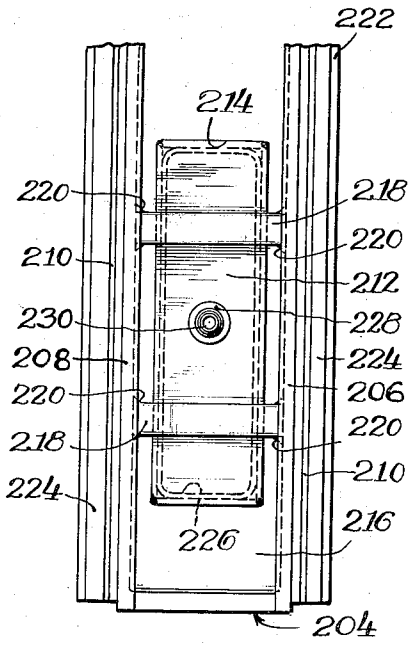


Fig. 8

Fig. 9



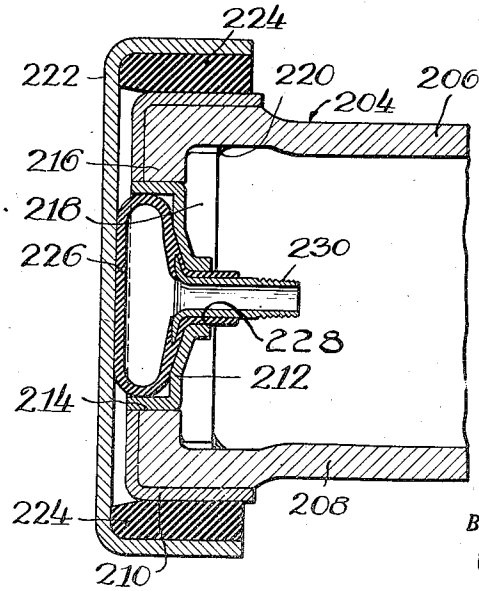


Fig. 10

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UNITED STATES PATENT OFFICE

2,357,619

PEDESTAL SNUBBER

Carl E. Tack, Chicago, Ill., assignor to American Steel Foundries, Chicago, Ill., a corporation of New Jersey

Application December 18, 1942, Serial No. 469,412

26 Claims. (Cl. 188—59)

My invention relates to vehicles such as railway car trucks and more particularly to a means for snubbing relative vertical movement between portions thereof.

As herein illustrated my invention comprehends a device for snubbing relative movements between a pedestal jaw and a journal box supported adjacent thereto, but it will be readily apparent to those skilled in the art that my novel snubbing device may be utilized in any arrangement wherein it is desired to snub relative movement between adjacent members such as, for example, between the column of a truck side frame and the adjacent bolster.

A recent trend in the designing of railway brake equipment has been to provide an off wheel or disc brake mechanism in which one or more discs are driven by each wheel and axle assembly, each of said discs being braked by shoes disposed at opposite sides thereof and supported by a brake frame mounted on the wheel and axle assembly and afforded a torque connection to the truck. It is believed that an off wheel brake arrangement such as above described will be improved by means of a device for snubbing relative vertical movement between the truck frame and the wheel and axle assemblies at the time that braking takes place, said device preventing momentary unloading of the wheels. It will be apparent that oscillation of the springs affording the support for the truck frame from the wheel and axle assemblies may result in momentary unloading the wheels of the weight of the truck frame at the time of braking, thus increasing the possibility of wheel skidding, and my invention comprises a device to prevent this condition.

It is therefore an object of this invention to design a brake arrangement in which snubbing means such as above described will be effective at the time of actuation of the brake mechanism, said snubbing means being ineffective at other times.

My invention comprehends a novel snubbing device mounted on one of the pedestal jaws of a truck frame, said device frictionally engaging the associated journal box.

In the drawings,

Figure 1 is a fragmentary top plan view of a railway car truck embodying my invention, only one quarter of the truck being shown inasmuch as the brake and snubbing arrangement associated with each wheel is identical.

Figure 2 is a side elevation of the structure shown in Figure 1.

Figures 3, 4 and 5 show in detail a preferred embodiment of my novel form of snubbing device, Figure 3 being an enlarged fragmentary side elevation of one end of the truck shown in Figures 1 and 2, Figure 4 being a fragmentary end elevation taken from the left as seen in Figure 3, and Figure 5 being a fragmentary sectional view taken in the horizontal plane indicated by the line 5—5 of Figure 3.

Figures 6 and 7 show a modification of my novel snubbing device, Figure 6 being a view comparable to Figure 3 but partly in section, the section being taken substantially in the vertical longitudinal plane indicated by the line 6—6 of Figure 7, and Figure 7 is a fragmentary end elevation taken from the left as seen in Figure 6 with the power cylinder being removed and the piston rod associated therewith being broken off.

Figures 8 to 10 inclusive show another modification of my novel snubbing device, Figure 8 being a fragmentary side elevation comparable to that of Figure 3, Figure 9 being a fragmentary end elevation taken from the left as seen in Figure 8, and Figure 10 being a sectional view taken in the horizontal plane indicated by the line 10—10 of Figure 8.

In each of said figures certain details may be omitted where more clearly seen in other views.

Describing my invention in detail and referring first to Figures 1 and 2, the truck frame 2 is resiliently supported at each side thereof from the equalizer 4 by means of a customary spring group (not shown), said equalizer being mounted at each end thereof on an associated journal box indicated at 6 (Figures 2 and 3), said journal box receiving the end of the wheel and axle assembly 8 in the usual manner. A brake disc 10 (Figure 1) is driven by the wheel and axle assembly 8 adjacent the end thereof and a pair of friction shoes 12, 12 are disposed at opposite sides of the disc 10, the shoes being supported by brake levers 14, 14 fulcrumed at 16, 16 within the cylinder housing 18 integrally formed with the brake frame generally designated 20. An actuating cylinder for the levers 14, 14 is received within the housing 18 and is operatively associated with said levers in the usual manner.

The brake frame 20 which may be mounted in any convenient manner on the assembly 8 and the frame 2, is here shown as supported at each end thereof from an equalizer seat 22 mounted on the associated journal box 6 and affording a seat for the adjacent end of the associated equalizer 4, and intermediate its ends the brake frame 20 is afforded a torque connection by means of spaced

arms 24, 24 pivotally connected at 26 to the bracket 28 supported in any convenient manner from the adjacent transom 30 of the truck frame 2.

The truck and brake arrangement is fully described in detail in my co-pending application, Serial No. 421,418, filed December 3, 1941 in the United States Patent Office, and it is therefore deemed unnecessary to describe said arrangement herein in further detail.

My novel snubbing device is indicated at 32 (Figure 2) and is shown in detail in Figures 3 to 5 inclusive. It may be noted that the device 32 is herein illustrated as associated with the outer pedestal column, jaw, or leg 34 of the truck frame 2, a pair of said columns being disposed at opposite sides of the journal box 6 for guiding cooperation therewith in the usual manner, and it will be understood that, if desired, the device 32 may be associated with the inner pedestal column 34 or both pedestal columns 34, 34 without departing from the spirit of this invention.

My novel snubbing device 32, as shown in detail in Figures 3 to 5, comprises a cylinder 36 projecting through aligned openings in the rear webs of the channel-section pedestal column 34 and the channel-section liner 38 secured thereto in the customary manner. A backing plate 40 is secured in any convenient manner, as by welding, to the cylinder 36, or said plate may, if desired, be integral therewith, and the plate 40 comprises top and bottom lugs 42, 42 for securement at 44, 44 by any convenient means, such as bolt and nut assemblies (Figures 3 and 4) to spaced bars or rods 46, 46 extending between the inboard and outboard legs of the channel-section pedestal column 34 and secured thereto in any convenient manner as by welding indicated at 48, 48 (Figures 3 and 4).

It will be understood that the above described support for the cylinder 32 from the pedestal column 34 is but one of many possible means of mounting said cylinder on said leg, and it will be further understood that if desired the cylinder 32 may even be formed as an integral part of the truck frame casting 2.

A piston-like shoe 50 (Figure 5) is slidably received within the cylinder 36 and is preferably provided with a liner 52 for engagement at 54 with a wear plate 56 conveniently mounted in any desired manner on the adjacent side of the journal box 6. The shoe is also preferably provided with a bushing 58 held in position by abutment at 60 with the liner 52 and by means of a cap 62 threaded at 64 into the shoe 50. Actuating means is provided for the shoe in the form of a pneumatic tube 66 positioned between the plate 40 and the cap 62 of the shoe, said tube being provided with an inlet nozzle 68 for engagement in the usual manner with an air supply line indicated at 70 in Figures 1 and 2, said line being afforded a flexible connection at 72 with the supply line 74 associated with the cylinder within the housing 18, whereby actuation of the shoe 50 will be simultaneous with the actuation of the brake shoes 12, 12. In this manner relative vertical movement between the wheel and axle assembly 8 and the truck frame 2 will be snubbed during braking of the assembly 8 in order to prevent unloading of the weight of the frame 2 from the assembly 8 and thus to reduce any tendency of the wheels to skid upon the associated rails. It will be understood that if desired, the tube 66 may be connected to an independent supply line, whereby the brake mechanism and the device 32 may be independently actuated.

It will be noted from a consideration of Figure 5 that the journal box 6 is provided with spaced inboard and outboard legs 76, 76 embracing the pedestal column 34 in the usual manner and provided with liners 78, 78 for cooperation with the channel-section liner 38 on the column 34 in the usual manner.

A preferred embodiment of my novel snubbing device is shown in Figures 6 and 7 wherein a sleeve 102 projects through an opening in the rear web 104 of the channel-section pedestal column 106 and is secured thereto as by welding at 108, 108. Slidably received within the sleeve 102 is a shoe 110 adapted to be urged into engagement with a wear plate 112 mounted in any convenient manner on the journal box fragmentarily indicated at 114, said shoe being adapted to extend through an opening in the channel-section wear plate 116 secured to the column 106 in the usual manner. The shoe 110 is preferably provided with a liner 118 secured thereto in any convenient manner and adapted to frictionally engage the wear plate 112, and said shoe is also provided with a bushing 120 maintained in assembly by abutment with the liner 118 and a shoulder 122 on the shoe. Actuating means for the shoe 110 is provided in the form of a cylinder 124 secured at 126, 126 (Figure 6) by any convenient means such as bolt and nut assemblies (not shown) to a substantially horizontal plate 128 secured as by welding to the inboard and outboard plates 130 and 132, the plates 130 and 132 being secured in any convenient manner as by welding at 134, 134 to the truck frame generally designated 136.

The piston rod 138 of a piston (not shown) associated with the cylinder 124 in the customary manner, is secured at 140 as by welding to the web 142 of the shoe 110. It may be noted, as seen in Figure 6, that the cylinder 124 is provided with a nozzle 144 for connection to a fluid supply line whereby fluid may be conveyed to the cylinder 124 in order to actuate the piston therein so that the rod 138 moves the shoe 110 through the sleeve 102 into engagement with the wear plate 112 mounted on the journal box 114, thus snubbing relative vertical movement between the box 114 and the truck frame 136. It will be understood that if desired, any convenient release means may be associated with the piston within the cylinder 124 in a manner well known to those skilled in the art, in order to withdraw the shoe 110 from engagement with the box 114 after actuation of the cylinder 124. It will also be understood that the nozzle 144 may be connected to the air supply line associated with the brake mechanism for the truck, or said nozzle 144 may be connected to an independent supply line, as explained in the discussion of the previous embodiment of my invention, and it will be further understood that the support described for the cylinder 124 is but one of many possible means of mounting said cylinder on the frame 136. It will also be apparent that if desired the sleeve 102 or an equivalent member may be integrally formed with the truck frame casting 136.

Still another modification of my invention is shown in Figures 8 to 10 inclusive wherein the truck frame generally indicated at 202 comprises the channel-section pedestal column 204 having the spaced inboard and outboard webs 206 and 208. Secured to the column 204 in the usual manner is a channel-section liner 210, and a backing plate 212 is secured as by welding to an opening

in the liner 210 and an opening 214 (Figures 9 and 10) in the rear web 216 of the pedestal column 204, the plate 212 being reinforced by a plurality of spaced bars or rods 218, 218 extending between the legs 206 and 208 of the column 204 and secured thereto in any convenient manner as by welding at 220, 220. A channel-section wear plate or liner 222 embraces the column 204 and is secured thereto by means of spaced inboard and outboard resilient pads 224 vulcanized or otherwise fixed to the liner 222 and the liner 210.

Actuating means for the movable liner 222 is provided in the form of a pneumatic tube 226 interposed between the backing plate 212 and the liner 222, the plate 212 having a flanged opening 228, (Figures 9 and 10) for the reception of a nozzle 230 associated with the pneumatic tube 226 in the usual manner and adapted for connection to a fluid supply line, said supply line being connected, as in the previous modifications, with the brake mechanism supply line or being independent with respect thereto as desired. It will be understood that actuating fluid, such as air, will be forced into the tube 226 through the nozzle 230 whereby said tube will be expanded and will urge the resiliently mounted liner 222 into engagement with the adjacent journal box, the tube 226 reacting against the backing plate 212. Upon release of the actuating fluid from the tube 226, the resilient pads 224, 224 will return the liner 222 to its normal position, as shown in Figures 8 and 10.

It is to be understood that I do not wish to be limited by the exact embodiments of the device shown which are merely by way of illustration and not limitation as various and other forms of the device will, of course, be apparent to those skilled in the art without departing from the spirit of the invention or the scope of the claims.

I claim:

1. In a brake arrangement, a vehicle frame having spaced pedestal columns, a supporting wheel and axle assembly having a journal box received between said columns, a disc mounted to rotate with said assembly, friction means at opposite sides of said disc for engagement therewith, power means associated with said friction means for actuation thereof, and friction means for engagement with said box, during actuation of said power means only, said friction means comprising a member slidably mounted in one of said columns and a fluid pressure device associated with said member.

2. In a brake arrangement, a vehicle frame, a supporting wheel and axle assembly, having a journal box, a disc mounted to rotate with said assembly, brake means associated with said disc and supported from said frame and said assembly, means for snubbing relative vertical movement between said frame and said assembly, and means for substantially simultaneous actuation of said brake and snubbing means, said snubbing means comprising a friction member movably mounted on a portion of said frame for frictional engagement with said journal box.

3. In a brake arrangement, a frame member, a supporting wheel and axle assembly having a journal box, a disc driven by said assembly, means for braking said disc, friction means engageable with said box for snubbing relative vertical movement between the frame and the assembly, and power means for actuating said friction means, said power means being operative only when said braking means is operative, and said power means comprising a fluid pressure mechanism operatively associated with said friction means.

4. In a brake arrangement, a vehicle frame having a pedestal column, a supporting wheel and axle assembly comprising a journal box supported adjacent said column, a disc mounted to rotate with said assembly, a brake frame supported from said box and said vehicle frame, brake means supported by said brake frame for engagement with said disc, friction means mounted on said column for engagement with said box, and means for substantially simultaneously actuating said brake and friction means.

5. In a brake arrangement, a vehicle frame having spaced pedestal columns, a supporting wheel and axle assembly having a journal box received between said columns, a disc mounted to rotate with said assembly, a brake frame supported from said box and said vehicle frame, brake means supported by said brake frame for engagement with said disc, friction means mounted on one of said columns for engagement with said box, and fluid pressure means for substantially simultaneously actuating said brake and friction means.

6. In a railway car truck, a frame having pedestal columns, a supporting wheel and axle assembly comprising a journal box embraced by said columns, friction means mounted on one of said columns for engagement with the box, actuating means associated with said friction means, and brake means associated with said assembly, said actuating means being effective only when said brake means is effective to decelerate rotation of said assembly

7. In a brake arrangement, a vehicle frame having spaced pedestal columns, a supporting wheel and axle assembly having a journal box received between said columns, a disc mounted to rotate with said assembly, friction means at opposite sides of said disc for engagement therewith, power means associated with said friction means for actuation thereof, and friction means for engagement with said box.

8. In a brake arrangement, a vehicle frame having spaced pedestal columns, a supporting wheel and axle assembly having a journal box received between said columns, a disc mounted to rotate with said assembly, friction means at opposite sides of said disc for engagement therewith, power means associated with said friction means for actuation thereof, and friction means for engagement with said box, during actuation of said power means only.

9. In a brake arrangement, a frame member, a supporting wheel and axle assembly having a journal box comprising a friction surface, a disc driven by said assembly, means for braking said disc, friction means engageable with said surface for snubbing relative vertical movement between the frame and the assembly, and power means for actuating said friction means, said power means being operative only when said braking means is operative.

10. In a railway car truck, a frame having pedestal columns, a supporting wheel and axle assembly comprising a journal box embraced by said columns, friction means mounted on one of said columns for engagement with the box, and actuating means associated with said friction means, said actuating means comprising a fluid pressure mechanism operatively associated with said friction means.

11. In a brake arrangement, a vehicle frame, a supporting wheel and axle assembly having a journal box, a disc mounted to rotate with said

assembly, brake means associated with said disc and supported from said frame and said assembly, means for developing friction against a surface on said box for snubbing relative vertical movement between said frame and said assembly, and means for substantially simultaneous actuation of said brake and second-mentioned means.

12. In a snubbing device, a pedestal column, a journal box supported adjacent thereto, an opening through said column, a sleeve mounted in said opening, a shoe slidably received within said sleeve, a cylinder device supported adjacent said column and comprising a piston rod operatively connected to said shoe for moving the same into engagement with said box.

13. In a snubbing device for a vehicle, a column member, a relatively movable journal box member supported adjacent thereto, an axle supported in said box member, friction means movably mounted in one of said members for frictional engagement with the other, and a fluid pressure device for actuation of said friction means.

14. In a snubbing device, a column member, a relative movable journal box member supported adjacent thereto, an axle supported within said box member, friction means movably mounted on one of said members for frictional engagement with the other, fluid pressure means for actuation of said friction means, and resilient release means associated with said friction means.

15. In a snubbing device, a pedestal column, a journal box supported adjacent thereto, an opening through said column, a sleeve mounted in said opening, a piston-like friction shoe within said sleeve, and fluid pressure means for urging said shoe into engagement with said box.

16. In a brake arrangement, a wheel and axle assembly comprising a journal box, a vehicle frame spring supported from said assembly, brake means for decelerating rotation of said assembly, friction means for engagement with a surface on said box, and means for simultaneously actuating said brake and friction means.

17. In a railway car truck, a frame having pedestal columns, a supporting wheel and axle assembly comprising a journal box embraced by said columns, friction means mounted on one of said columns for engagement with the box, and actuating means associated with said friction means.

18. In a snubbing device, a pedestal column, a journal box supported adjacent thereto, a liner resiliently mounted on said column, and fluid pressure means for moving said liner into frictional engagement with the box.

19. In a snubbing device, a pedestal column, a journal box supported adjacent thereto, a channel-section liner resiliently mounted on said column from opposite sides thereof, and fluid pressure means for moving said liner into frictional engagement with the box.

20. In a snubbing device, a pedestal column, a wheel and axle assembly, including a journal box supported adjacent said column, said box and column being relatively movable, friction means on said column for engagement with said box, and actuating means for said friction means, said actuating means comprising a fluid pressure device.

21. In a snubbing device for a railway car truck, a truck frame element comprising spaced column members, a relatively movable member supported therebetween in guiding engagement therewith, snubbing means for frictionally resisting relative movement between said column members and said second-mentioned member, and actuating means for said snubbing means comprising a fluid pressure device operatively associated therewith.

22. In a snubbing device for a railway car truck, a truck frame element comprising spaced column members, a relatively movable member supported therebetween in guiding engagement therewith, friction means on one of said members for frictional engagement with an adjacent relatively movable member, actuating means for said friction means comprising a fluid pressure device operatively associated therewith, and resilient release means for said friction means.

23. In a snubbing device for a railway car truck, a truck frame member comprising spaced columns, a relatively movable member supported between said columns in guiding engagement therewith, friction means mounted on at least one of said columns for engagement with said second-mentioned member, and actuating means for said friction means comprising a fluid pressure device operatively associated therewith.

24. In a snubbing device for a railway car truck, a pedestal column, a journal box supported adjacent thereto, a liner resiliently mounted on said column, and actuating means for moving said liner into frictional engagement with the box, said resilient mounting comprising resilient release means adapted to resist in shear movement of said liner toward said box.

25. In a snubbing device for a railway car truck, a truck frame element comprising a pedestal column, a journal box supported adjacent thereto, a power cylinder device mounted on said element outwardly of said column, and friction means actuated by said device for engagement with said box to snub relative movement thereof, with respect to said column.

26. In a snubbing device for a railway car truck, a pedestal column, a journal box supported adjacent thereto, a power cylinder device housed in said column, and friction means operable by said device for resisting movement of said box, with respect to said column.

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