Sept. 11, 1951 R. B. COTTRELL 2,567,551

SNUBBED TRUCK

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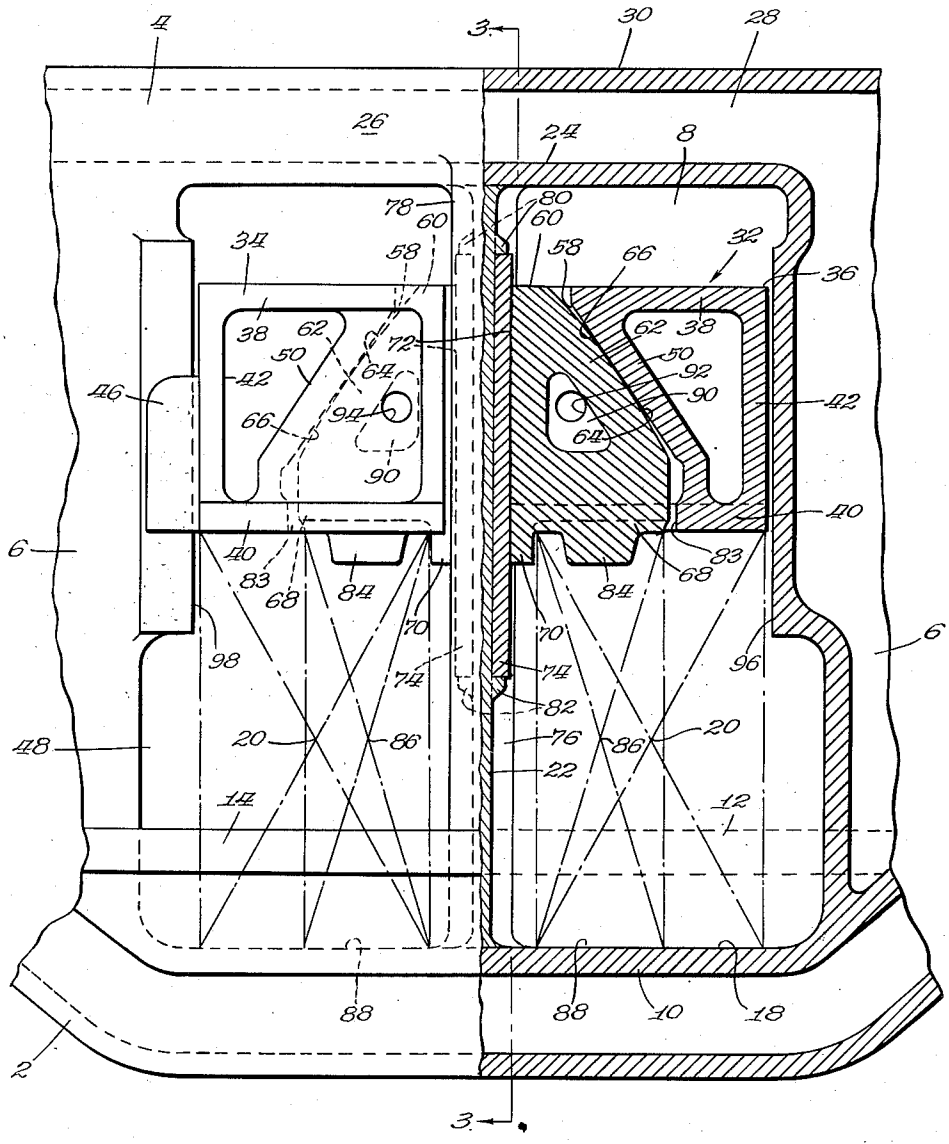


Fig. 1.

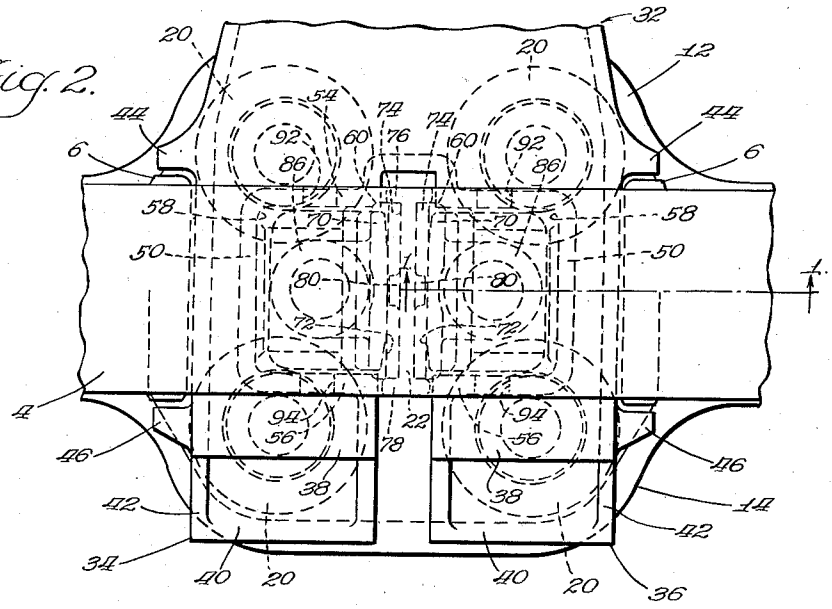
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Fig. 2.



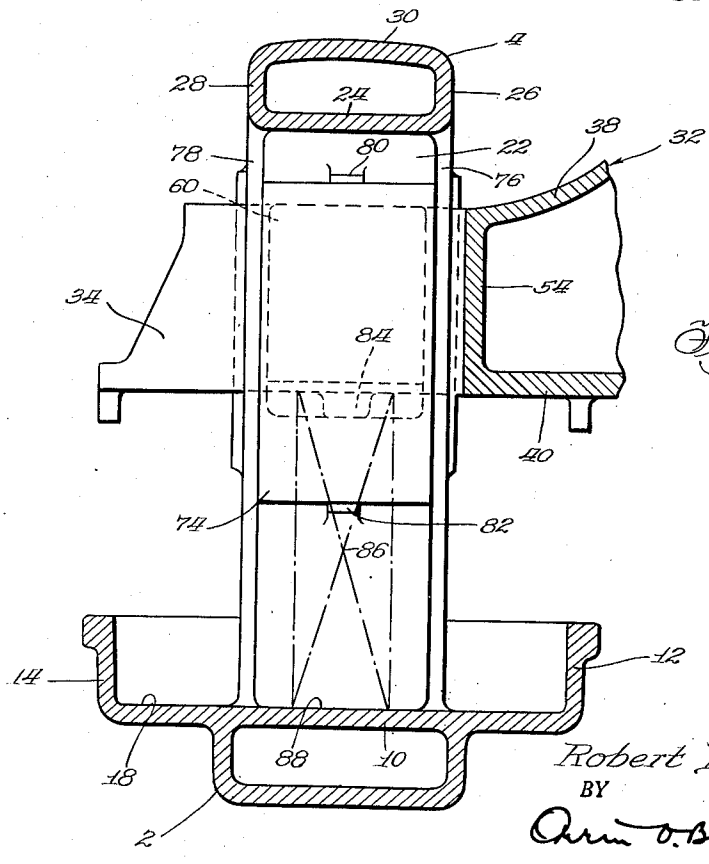


Fig. 3.

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SNUBBED TRUCK

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3 Claims. (Cl. 105—197)

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This invention relates to railway car trucks and more particularly to a truck incorporating friction means for snubbing the oscillations of the bolster-supporting springs and for controlling various movements of the bolster.

One object of the invention is to provide in a railway car truck simple and efficient means for snubbing the action of the truck springs, said means including friction shoes wedged between spaced legs of the bolster and a side frame friction panel interposed between the bolster legs, the shoes being actuated by spring means supported on the side frame spring seat.

A different object is to design a truck incorporating a snubbing device which operates to develop a greater amount of friction in one direction of vertical movement of the bolster than that which is developed in the opposite direction.

A further object is to devise snubbing means such as described which are compact and afford maximum space for the truck springs.

The invention contemplates arranging the parts of the friction device as close as possible to the transverse vertical center plane of the truck. Such location of parts is desirable inasmuch as any angling of the bolster and side frame is least likely to affect the cooperative relation between the parts.

These and other objects of the invention will be apparent from the specification and the drawings wherein:

Figure 1 is a fragmentary view of a railway car truck embodying the invention, the left half being a side elevational view and the right half being a sectional view taken substantially on the line 1—1 of Figure 2;

Figure 2 is a top plan view of Figure 1; and

Figure 3 is a view taken substantially on the line 3—3 of Figure 1.

Describing the invention in detail, the truck structure includes a side frame comprising tension and compression members 2 and 4, and spaced upright columns 6, 6 integral with said members and defining therewith a bolster opening 8.

The tension member, as best seen in Figure 3, is of box section and comprises a widened top chord 10 with integral inboard and outboard flanges 12 and 14 defining with said top chord a spring seat 18 affording a seat for a plurality of bolster-supporting or truck springs 20.

The truck springs 20 are arranged in two pairs at opposite sides of an I-shaped vertical friction element of panel comprising a wall 22 disposed at substantially the transverse center line of the

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truck and extending transversely of the side frame medially between the side frame columns 6, 6 within the bolster opening 8. The upper end of wall 22 merges with the bottom web 24 of the compression member and with the inboard and outboard webs 26 and 28, respectively, of the compression member at their juncture with the bottom web 24. The compression member also comprises a top wall 30 which merges with the upper ends of webs 26 and 28.

The lower end of the wall 22 merges with the top surface of chord 20 and, as best seen in Figure 3, is laterally spaced at its inboard and outboard edges from the respective tension member flanges.

The bolster, generally designated 32, is fitted into the bolster opening 8 and comprises spaced legs 34 and 36 disposed at opposite sides of wall 22. The bolster as well as the legs thereof are of box section, each leg comprising top and bottom walls 38 and 40 and a side wall 42 adjacent the related column 6. Each side wall is provided with spaced inboard and outboard guide means or interlocking lugs 44 and 46 arranged to interlock the bolster with the adjacent column 6. In this connection it will be noted that the outboard bolster guide lugs 46 are of a depth less than the depth of the widened lower portion 48 of the bolster opening to accommodate assembly and disassembly of the bolster with respect to the side frame in conventional manner. Each bolster leg also comprises a diagonal upwardly sloping wall 50 merging with the top and bottom walls 38 and 40 at its upper and lower ends and at its lateral edges merging with spaced inboard and outboard walls 54 and 56 extending transversely of the bolster and providing with said diagonal wall 50 a friction shoe pocket 58.

A friction shoe 60 is disposed within each pocket 58, said shoe being substantially triangular in side view and comprising a diagonal wall 62 having a crowned upper, upwardly sloping, diagonal surface as at 64 in wedge engagement with a crowned downwardly facing, upwardly sloping, diagonal surface 66 on the diagonal wall 50 in associated pocket 58. The friction shoe also comprises a bottom, substantially horizontal, wall 68 merging at one end with the lower end of the diagonal shoe wall 62 and at the other end merging with a substantially vertical front or friction wall 70, said friction wall extending at its lower end below the lower level of the bottom or horizontal wall 68 of the shoe and at its upper end merging with the upper end of the diagonal wall 62 of the shoe.

The front wall 70 of each shoe engages on a generally vertical surface as at 72 a substantially vertical friction plate 74 mounted on the adjacent side of wall 20, each friction plate being held on wall 22 between inboard and outboard substantially vertical webs 76 and 78 at the inboard and outboard edges of said wall 20, said webs 76 and 78 extending the full length of wall 22 and merging at their upper extremities with the compression member walls 24, 26 and 24, 28 respectively, and merging at their lower ends with the top surface of chord 10 of the tension member. Lugs 80 and 82 project from each side of the wall 20 and receive the associated plate 74 therebetween, lug 80 abutting the top edge of said plate and lug 82 abutting the bottom edge of said plate. Each plate 74 may be secured to element 22 as by welding.

The bottom wall of each shoe extends into a cored out opening 83 in the bottom wall 40 of the associated bolster leg, said bottom shoe wall 68 being provided with a spring-positioning lug 84. The upper end of a shoe-actuating spring 86 is seated against the bottom wall of each shoe and is positioned thereon by means of the boss 84. The lower end of each spring 86 seats as at 88 against the spring seat 18. As best seen in Figure 1, the upper extremity of each shoe extends through a cored out opening in the upper wall of the associated bolster leg.

The walls of each shoe form an opening 90 extending transversely through the shoe, said opening being alignable with openings 92 and 94 in the inboard and outboard walls of the associated pocket. A tool may be inserted through these inboard and outboard wall openings and the shoe opening to maintain the shoe within the bolster when the bolster is assembled and disassembled with respect to the side frame.

From the description, it will be observed that the thin section side frame panel is engaged on opposite sides thereof by means of the shoes which are wedged against the bolster legs and actuated by means of the shoe-actuating or supporting springs 86, 86. In this arrangement the friction increases as the bolster descends and decreases as the bolster ascends. Furthermore, it will be noted that the wall 20 and the arrangement of the friction shoes take the minimum amount of space, which affords enough space for the bolster-supporting springs so that it is not necessary to reduce these springs or their loading characteristics, as is necessary in certain arrangements where a bulky snubbing arrangement is provided. Furthermore, the legs 32 and 34 are of maximum area whereby the bolster is not unduly weakened by the necessity of providing space for accommodating the friction means. Lateral movement of the bolster is controlled not only by the shoes 60, 60 but also by abutment between legs 32 and 34 with the guide portions 96 and 98, respectively, on the adjacent columns 6, 6. Furthermore, by positioning the shoes as shown with their friction surfaces immediately adjacent the longitudinal center line of the bolster, any angling movement between the bolster and the side frame is accommodated without causing the shoes to tilt or cant with respect to the friction panels. This angling is accommodated without the necessity of providing large clearance between the interior of the pocket and the sides of the shoes inasmuch as the shoes are positioned as close as possible to the center of movement of the bolster.

I claim:

1. In a railway car truck, a side frame comprising tension and compression members and spaced columns defining a bolster opening, a friction panel comprising a flat web extending transversely of the frame interposed medially between said columns and formed at its upper and lower ends integral with the compression and tension members, respectively, friction plates mounted on opposite sides of said web presenting substantially vertical friction surfaces extending transversely of the frame, a bolster having spaced legs extending into said opening at opposite sides of said panel, each leg comprising top and bottom walls and a side wall interconnecting the top and bottom walls and disposed along the adjacent column for abutment therewith to limit lateral movement of the bolster, each leg comprising a diagonal web connected to the top and bottom walls of the leg and sloping upwardly toward the panel and presenting a wedge surface facing the adjacent friction surface, friction shoes at opposite sides of the panel in vertical face engagement with respective friction surfaces and in wedge engagement with the wedge surfaces on the diagonal webs of respective legs, a vertical shoe-actuating coil spring compressed between the bottom of each shoe and said tension member, a plurality of springs on said tension member supporting the bolster and comprising coils seated against respective legs outboardly of said shoe-actuating springs and coils seated against respective legs inboardly of said shoe-actuating springs, guide means on said columns adjacent the upper ends thereof, and inboard and outboard guide lugs on the side walls of respective legs embracing respective columns for engagement with the guide means thereon, said columns being offset away from each other at their lower ends to provide a widened portion at the lower end of the bolster opening, said bolster being movable to the top of said bolster opening to relieve the pressure on all of said springs whereupon the springs may be removed, said bolster being movable to the bottom of said opening after removal of said springs, and said outboard guide lugs being of lesser vertical extent than said widened portion of said bolster opening to accommodate said outboard guide lugs therethrough for assembly and disassembly of said bolster with respect to said frame.

2. In a railway car truck, a side frame comprising tension and compression members and spaced columns defining a bolster opening, a friction panel within said opening integrally united with said members medially between said columns and lying in a vertical plane bisecting said frame transversely, friction surfaces on opposite sides of said panel extending parallel to said plane immediately adjacent thereto, a friction shoe engaging each surface, a bolster spring-supported from the tension member and comprising spaced parallel legs extending into said opening at opposite sides of said panel and in wedge engagement with respective shoes, spring means compressed between each shoe and said tension member, and guide means on said columns adapted for abutment with said legs for limiting movement of said bolster longitudinally of the frame.

3. In a railway car truck, a side frame comprising tension and compression members and spaced columns defining a bolster opening, a friction element comprising a thin web within said opening lying in a vertical plane bisecting

the frame transversely and connected to said members medially between said columns and presenting friction surfaces at opposite sides thereof extending transversely of the frame, a bolster extending within said opening and comprising spaced generally parallel box-section legs at opposite sides of the element, said legs comprising spaced horizontal walls on the top and bottom sides thereof, diagonal, upwardly converging walls on adjacent sides of the legs and vertical side walls on remote sides of the legs, each column having a guide surface intermediate its ends adapted for abutment with the vertical side wall of the adjacent leg for limiting movement of the bolster transversely of said element, friction shoes at opposite sides of said element, each shoe frictionally engaging the adjacent friction surface and having wedge engagement with the adjacent diagonal wall, a coil spring compressed between each shoe and said tension member, resilient means compressed between each leg and said

tension member and disposed inboardly and outboardly of the coil springs, said friction surfaces being disposed as close as possible to said plane whereby the leverage effect of said legs against the shoes during angling movement between the bolster and frame and consequent stress loading of said element is reduced to the minimum.

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