Sept. 15, 1953 C. J. W. CLASEN 2,652,002

SNUBBED TRUCK

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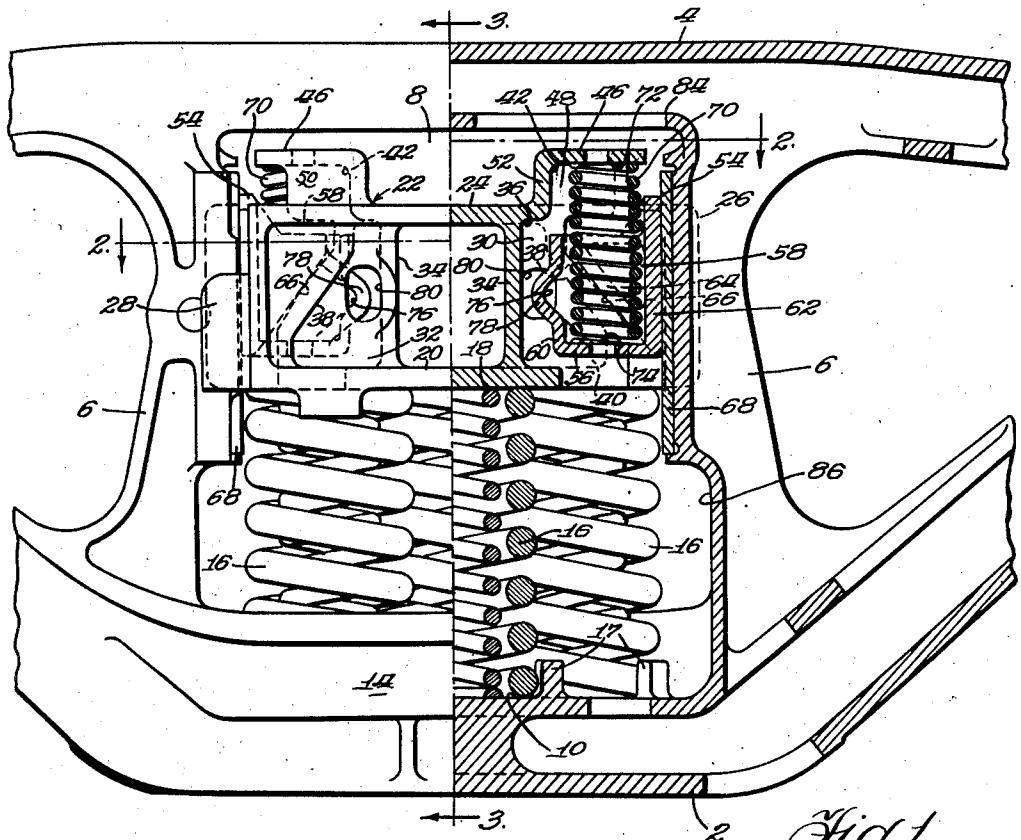

Fig. 1.

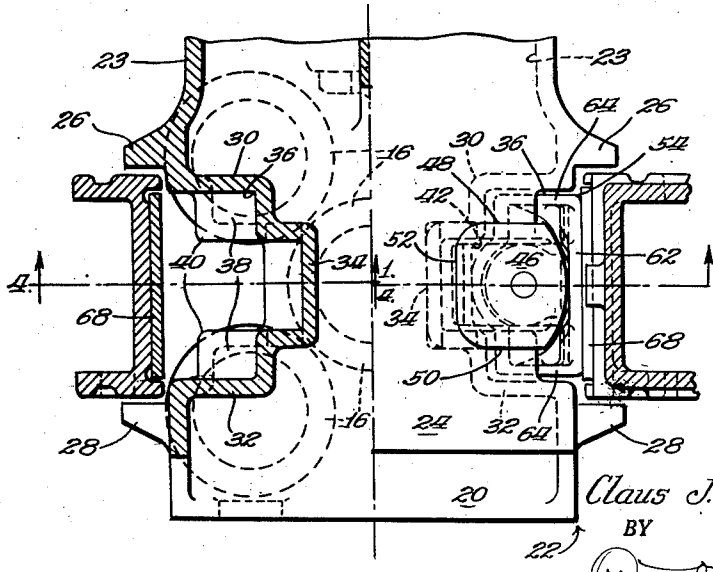

Fig. 2.

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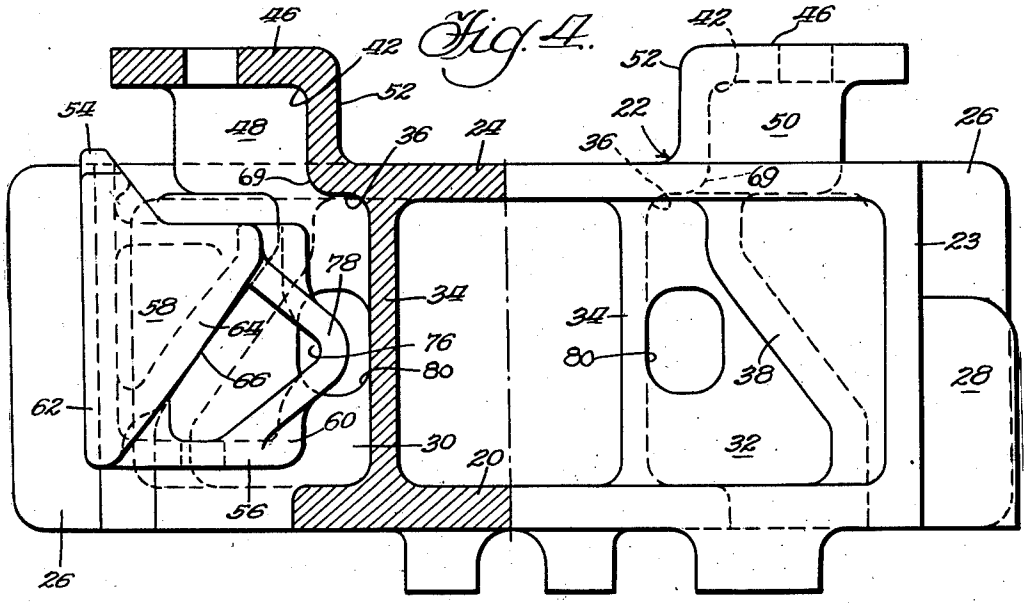
Fig. 4.



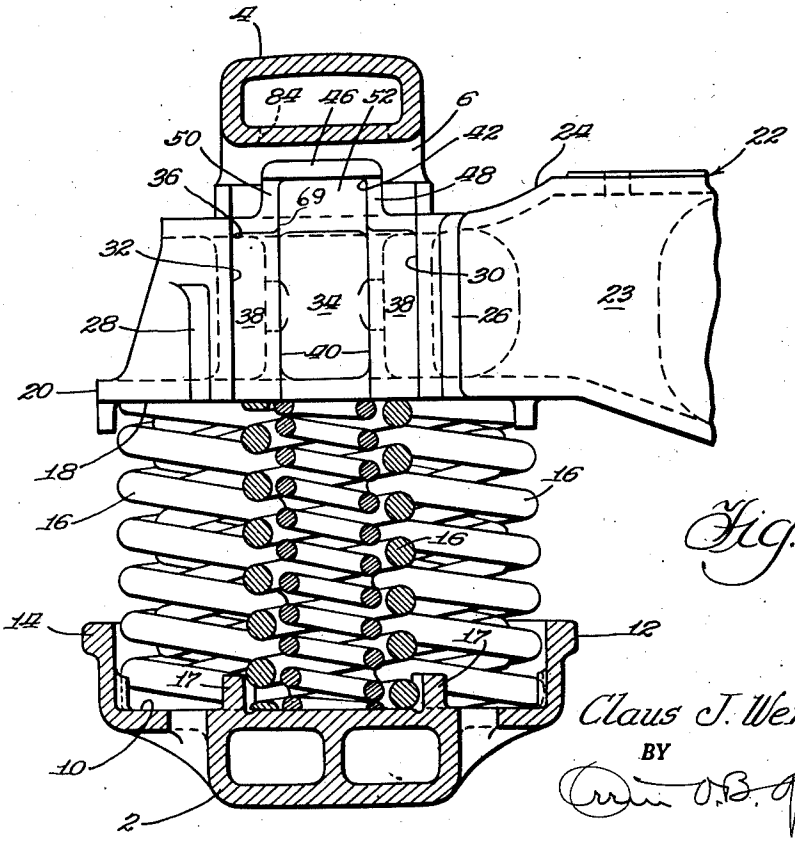


Fig. 3.

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SNUBBED TRUCK

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11 Claims. (Cl. 105—197)

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This invention relates to railway car trucks incorporating snubbing means for controlling movements between the bolster and the side frame, and more particularly to an improvement of an arrangement shown in David M. Light United States Patent No. 2,378,414, issued January 19, 1945, for Car Truck.

A general object of the invention is to provide snubbing means carried by the bolster for engagement with the side frame columns, wherein the parts are arranged to operate efficiently during their entire life in service.

A more specific object of the invention is to provide friction shoes at opposite sides of the bolster engageable with columns on the side frame wherein the bolster is constructed to provide an exceptionally strong structure and to conveniently house long, low-loss springs for actuating the shoes, whereby bending of the spring during relative canting movements between the shoes and bolster is readily accommodated without serious deleterious effects and whereby effective control pressures are obtained upon the friction faces throughout the wear life of the friction shoes.

A further object of the invention is to provide a bolster having wedge surfaces at each side thereof sloping downwardly outwardly of the bolster and engaged by friction shoes actuated by springs reacting between the shoes and seats which are offset upwardly with respect to the top wall of the bolster.

Another object is to provide friction means between the bolster and frame which will operate with a minimum loss of effectiveness as the parts wear and yet afford improved control over the various movements between the bolster and the frame.

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

Figure 1 is a fragmentary side elevational view, partly in section, of a railway car truck incorporating the invention, the section being taken in the vertical longitudinal plane substantially as indicated by the line 1—1 of Figure 2;

Figure 2 is a sectional view taken in the horizontal planes substantially as indicated by the line 2—2 of Figure 1, the friction shoe at the left being removed;

Figure 3 is a sectional view taken in the vertical transverse plane substantially as indicated by the line 3—3 of Figure 1, the bolster being shown in side elevation with the friction shoe removed; and

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Figure 4 is an end view of the bolster, the left half being shown in section taken substantially on the line 4—4 of Figure 2 and showing the shoe in side elevation in applied position.

Describing the invention in detail, the truck comprises a side frame including tension and compression members 2 and 4 and spaced upright columns 6 defining a bolster opening 8.

The tension member at the bottom of the bolster opening affords a widened spring seat 10 formed with inboard and outboard flanges 12 and 14 confining a group of coil springs 16, 16 seated at their lower ends on the seat 10 and positioned thereon by lugs 17, 17 on the seat, and the upper ends of the springs are seated as at 18 against the underside of a bottom wall 20 of a bolster generally designated 22 which extends into the bolster opening 8.

The bolster, in addition to its bottom wall 20, comprises a side wall 23 at each side thereof and a top wall 24, forming a box section. The bolster is provided at each side thereof with inboard and outboard guide lugs 26 and 28 embracing the associated column 6 therebetween for interlocking the bolster with the frame. The bolster is provided at each side thereof with a pair of spaced substantially vertical inboard and outboard walls 30 and 32 offset toward each other at their inner ends. A rear wall 34 is connected to the inner end of walls 30 and 32 of each pair and extends therewith between the top and bottom walls 24 and 20 of the bolster. Each set of walls 30, 32, 34 is connected to the top and bottom walls of the bolster and defines a pocket 36 therewith open through the adjacent side wall 23 to the related column 6. The inner sides of each pair of walls 30 and 32 are provided with integral inboard and outboard ledges 38, 38 connected at their upper and lower ends with the top and bottom walls of the bolster and affording wedge surfaces on the top sides thereof sloping downwardly outward of the bolster. The ledges are also connected along their inner edges to the bottom wall and offset portions of the respective walls 30 and 32 by webs 40, 40.

At the upper end of each pocket is formed a spring housing 42 defined by a generally horizontal top web 46 spaced above the top wall 24 of the bolster. The web 46 is connected to the top wall of the bolster by spaced inboard and outboard webs 48 and 50 and a rear web 52.

Each pocket 36 receives a friction shoe 54 therein, the shoe being somewhat cup-shaped in form and comprising a bottom wall 56, spaced side walls 58, 58, a rear wall 60, and a front wall

62. The side walls 58, 58 are provided with wings 64, 64 which are formed on their undersides with curved wedge surfaces 66, 66 sloping downwardly toward the front wall 62 of the shoe and engaging the respective wedge surfaces on the ledges 38, 38 in the associated pocket. Each shoe is urged into the wedged position thereof with the bolster and to engage the front wall of the shoe with a friction plate 68 on the adjacent column 6 by means of a substantially vertical, long, low-loss coil spring 70 which at its upper end extends into the associated housing 42 through an opening 69 in the top wall of the bolster and seats as at 72 against the underside of web 46 thereof. The spring extends at its lower end into the shoe and seats as at 74 against the top side of the bottom wall 56 of the shoe. It will be noted that each opening 69 extends to the adjacent side of the bolster whereby the spring 70 and associated shoe may be inserted or removed simultaneously with respect to the associated housing and pocket without first substantially compressing the spring.

To disassemble the truck shown in Figure 1, the shoes 54 are retracted into the respective pockets to align an opening 76 defined by a loop 78 on the rear wall of each shoe with openings 89 in the walls 30 and 32 of the associated pocket to accommodate a bar (not shown) therethrough to maintain the shoe in retracted position. The bolster is raised to the upper end of the bolster opening 8 and it will be noted that each housing 42 at each side of the bolster is accommodated within an opening 84 in the bottom of the compression member 4. The bolster-supporting springs 16 are removed from the bolster opening and the bolster is then lowered to the lower end of the bolster opening which is widened at 86 to accommodate the outboard guide lugs 28 therethrough in conventional manner. In assembling the bolster with the side frame the procedure is reversed.

I claim:

1. In a railway car truck, a side frame comprising spaced columns, a bolster spring-supported from the frame between said columns and comprising spaced top and bottom walls and spaced side walls, spaced inboard and outboard wall and an interconnecting intervening rear wall at each side of the bolster extending substantially vertically and formed integral with said top and bottom walls and defining friction shoe pockets therewith open to respective columns, diagonal ledges in each pocket formed integral with the inboard and outboard walls thereof and with said top and bottom walls, the ledges in each pocket presenting coplanar wedge surfaces sloping downwardly toward the adjacent column, the top wall of said bolster having openings therethrough at the upper end of each pocket, a spring housing at each side of the bolster formed integral with the top wall thereof, each housing comprising inboard and outboard webs and an intervening rear web arranged respectively along the inboard and outboard and rear margins of the adjacent opening in said top bolster wall, a spring seat wall connected to the upper edges of said webs, a friction shoe in each pocket in wedge engagement with the surfaces therewith and in frictional engagement with the adjacent column, and a coil spring within each shoe extending between the wedge surfaces engaged by the shoe and seated at its lower end against a bottom wall of the shoe and at its upper end having several convolutions projecting out of the shoe into the associated housing and seated against the bottom side of the spring seat wall thereof.

2. In a railway car truck, a side frame comprising spaced columns, a bolster spring-supported from the frame between said columns, said bolster comprising spaced substantially horizontal top and bottom walls, spaced inboard and outboard walls and an intervening rear wall at each side of the bolster extending substantially vertically between and integrally united with said top and bottom walls and defining friction shoe pockets therewith, each pocket comprising inboard and outboard ledges formed integral with said inboard and outboard walls, respectively, and with said top and bottom walls, the ledges in each pocket presenting spaced substantially coplanar wedge surfaces sloping downwardly toward the adjacent column, a shoe within each pocket extending between the ledges therein and in wedge engagement with the wedge surfaces thereon, each shoe frictionally engaging the adjacent column, a spring seat within each shoe at the bottom thereof, a spring housing at each side of the bolster formed integral with the top bolster wall and communicating through an opening in the top bolster wall with the adjacent pocket, each housing comprising spaced inboard, outboard and rear webs extending upwardly from said top bolster wall, a top web connected to said webs, and a spring within each shoe seated against the spring seat therein at its lower end and at its upper end extending into the associated spring housing and seated at its upper end against the top web thereof, each housing being open to the adjacent column and each opening in the top wall of the bolster extending through the adjacent side of the bolster.

3. In a railway car truck, a side frame comprising tension and compression members and spaced columns defining a bolster opening, a bolster extending into said opening and spring-supported from said tension member, said bolster comprising spaced top and bottom walls and spaced side walls, spaced inboard and outboard walls and a rear wall at each side of the bolster connected to said top and bottom walls and defining a friction shoe pocket therewith open to the adjacent column, inboard and outboard ledges within each pocket formed integral with the inboard and outboard walls thereof and with said top and bottom walls and presenting wedge surfaces on the top sides thereof sloping downwardly toward the adjacent column, a friction shoe in each pocket extending between the ledges therein and comprising spaced wings in slidable engagement with the wedge surfaces on the associated ledges, each shoe comprising a front wall engaging the adjacent column and a bottom spring seat wall, a spring housing at each side of the bolster communicating through an opening in the top wall with the adjacent pocket and comprising a spring seat wall disposed upwardly with respect to the top wall of the bolster, and a shoe-actuating spring in each shoe extending into the associated housing at its upper end and seated against the related spring seat walls of the shoe and housing.

4. In a railway car truck, a side frame comprising spaced columns, a bolster spring-supported from the frame and comprising spaced top and bottom walls, spaced inboard and outboard walls at each side of the bolster integral with said top and bottom walls and defining pockets therewith adjacent respective columns, spaced inboard and outboard wedge surfaces within each

pocket formed integral with respective webs, spring housings at opposite sides of the bolster communicating with respective pockets through openings in said top wall, each housing comprising a spring-seating web spaced vertically above said top wall, inboard, outboard and rear webs integral with said top wall and spring seat web, a shoe within each pocket in wedge engagement with the surfaces therein and in frictional engagement with the adjacent column, and a long, low-loss coil spring in each shoe seated at its bottom end against the shoe and at its upper end having a plurality of convolutions extending above the shoe into the related housing and bearing against the seating web thereof.

5. In a railway car truck, a side frame comprising spaced columns, a bolster spring-supported from said frame between said columns and having a top wall, friction shoe pockets in opposite sides of said bolster, a shoe in each pocket, engaging wedge means in each pocket and associated shoe sloping downwardly toward the adjacent column, a spring housing at each side of the bolster projecting upwardly with respect to the top wall of the bolster and communicating with the adjacent pocket through an opening in the top wall of the bolster, a coil spring housed within each shoe and having a plurality of convolutions extending above its shoe and into the adjacent housing, each housing presenting a spring seat at the upper end thereof and each shoe presenting a spring seat at the lower end thereof between which the associated spring is compressed.

6. A bolster comprising a box section end portion including spaced top and bottom walls and spaced side walls, spaced inboard and outboard walls and an interconnecting rear wall at each side of the bolster integrally united with said top and bottom walls and defining a friction shoe pocket therewith, a spring housing on the top of said bolster at each side thereof communicating with the adjacent friction shoe pocket and including a spring seat offset upwardly with respect to the top wall of the bolster, and ledges in each pocket formed integral with the inboard and outboard walls and with said top and bottom walls and presenting wedge surfaces sloping downwardly outwardly of the pocket.

7. A bolster comprising a box section end portion including spaced top and bottom walls and spaced side walls, spaced inboard and outboard walls and an interconnecting rear wall at each side of the bolster formed integral with said top and bottom walls and defining a friction shoe pocket therewith, a spring housing on the top of said end portion at each side thereof communicating with the adjacent friction shoe pocket through an opening in said top wall, each housing comprising spaced inboard and outboard webs and a rear web extending upwardly from said top wall, a spring seat wall connected to the upper edges of said webs, and downwardly sloping wedge surfaces at opposite sides of each pocket.

8. In a railway car truck, a side frame comprising tension and compression members and spaced columns defining a bolster window, a bolster in said window spring-supported from said tension member, said bolster comprising a pocket at each side thereof aligned longitudinally of the frame with the adjacent column, a spring housing above each pocket integral with the top wall of the bolster and extending upwardly therefrom, wedge surfaces on the bolster at opposite sides of each pocket sloping downwardly toward the adjacent column, a hollow shoe in each pocket extending between the wedge surfaces therein and in frictional engagement with the adjacent column and in wedge engagement at opposite sides thereof with the associated wedge surfaces, each shoe having a bottom wall adjacent the bottom of the bolster, each housing having a wall at the top extremity thereof extending generally parallel with the bottom wall of the adjacent shoe, and a long, low-loss coil spring within each shoe compressed between the bottom wall of the shoe and the top wall of the associated housing, each spring having a plurality of convolutions projecting above its related shoe into said spring housing.

9. A bolster comprising a box-section end portion with a pocket in each side thereof, a spring housing above each pocket formed integral with a top wall of said portion and projecting thereabove, each housing communicating with the related pocket through an opening in said top wall, each housing and pocket being open for the full vertical extent thereof to the related side of the bolster, and downwardly sloping wedge surfaces on said portion at opposite sides of each pocket.

10. In a bolster assembly, a bolster comprising pockets at opposite sides thereof and a spring housing above each pocket projecting upwardly from a top wall of the bolster, said housing comprising a spring seat wall, each housing and related pocket communicating with each other through an opening in said top wall and being open along the full vertical extent thereof through the adjacent side of the bolster, downwardly sloping wedge surfaces on the bolster at opposite sides of each pocket, a hollow shoe in each pocket in wedge engagement with the surfaces therein, each shoe comprising a bottom wall extending between said surfaces, and a coil spring compressed between said bottom wall and said spring seat wall of the adjacent housing.

11. In a bolster assembly, a bolster comprising a pocket, a spring housing above the pocket projecting upwardly from a top wall of said bolster, said pocket and housing communicating with each other through an opening in said top wall, wedge surfaces at opposite sides of the pocket, a shoe in the pocket in wedge engagement with said surfaces and having a spring seat wall between said surfaces, a spring seat at the upper end of said housing, and a coil spring extending into the shoe at its lower end and into the housing at its upper end and compressed between said seat wall and seat, said housing and pocket being open at one side whereby said spring when in the shoe may be inserted or removed with respect to the housing coincidentally with the insertion or removal of the shoe with respect to the pocket during assembly and disassembly.

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