Aug. 29, 1950 L. A. LEHRMAN ET AL 2,520,845

SNUBBED TRUCK

Filed Feb. 3, 1945 3 Sheets-Sheet 1

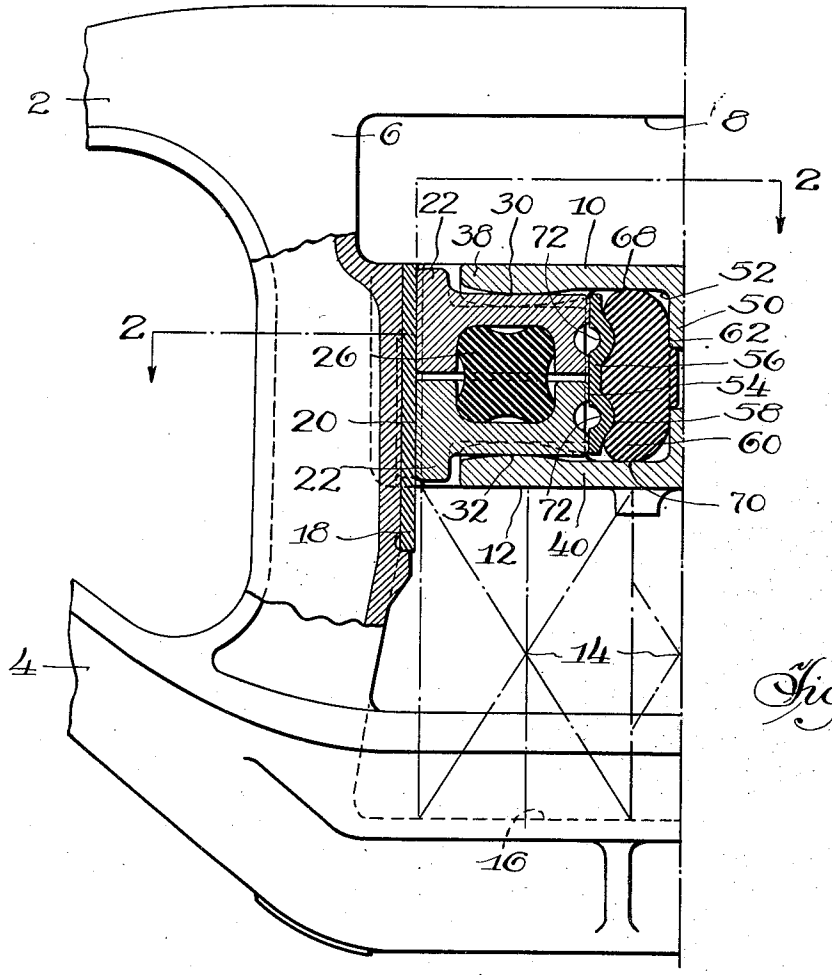


Fig. 1

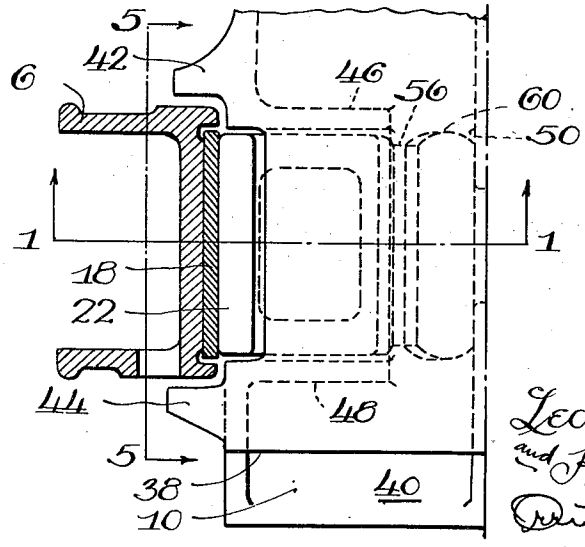


Fig. 2

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Fig. 3

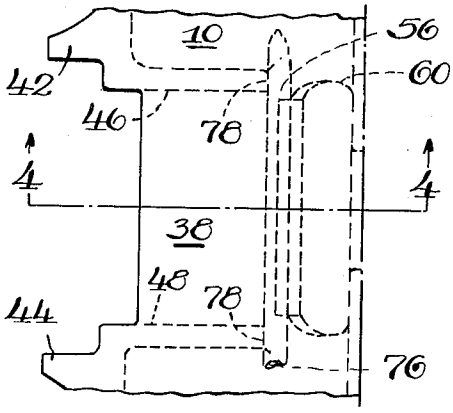


Fig. 10

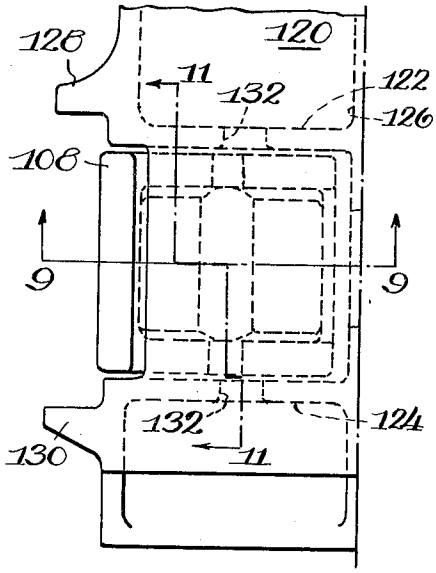
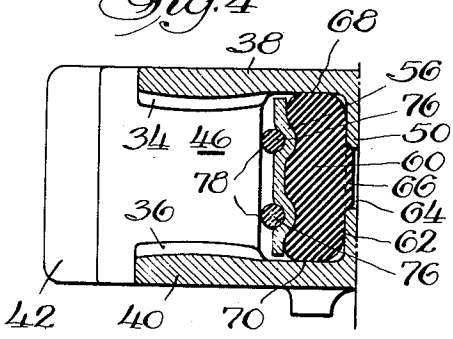


Fig. 4



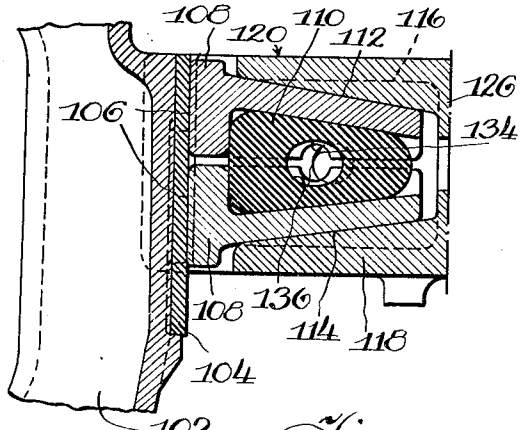


Fig. 5

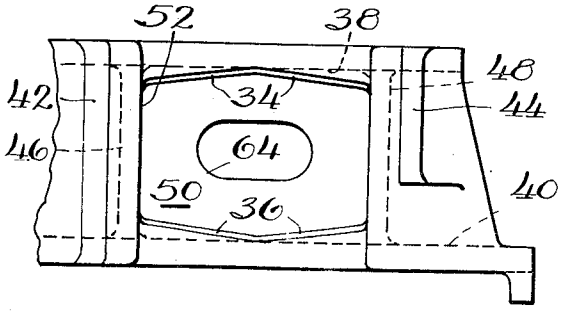


Fig. 9

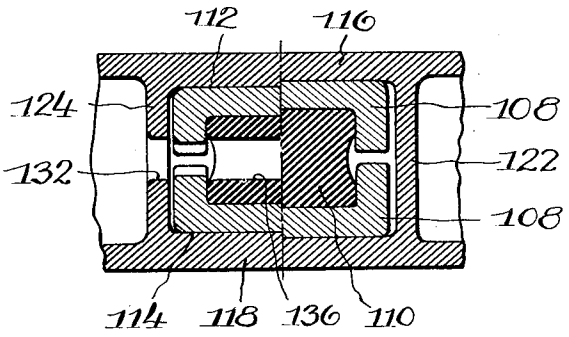
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Fig. 11



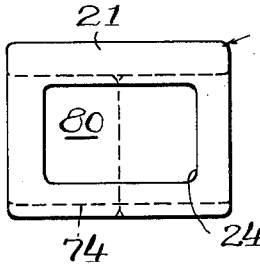


Fig. 6

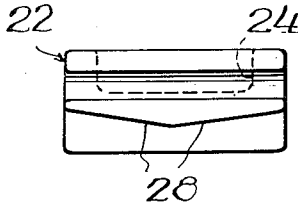


Fig. 7

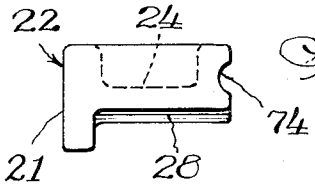


Fig. 8

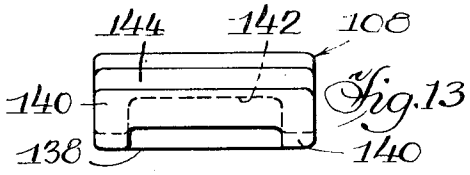


Fig. 13

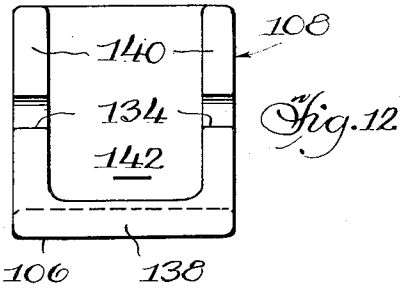


Fig. 12

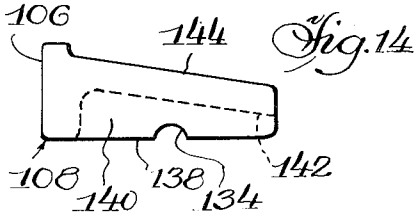


Fig. 14

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UNITED STATES PATENT OFFICE

2,520,845

SNUBBED TRUCK

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Application February 3, 1945, Serial No. 575,978

20 Claims. (Cl. 105—197)

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Our invention relates to railway car trucks and more particularly such a type of truck wherein snubbing means is mounted in each end of the bolster for cooperation with friction plates or panels on the adjacent side frame columns.

The general object of our invention is to devise such a truck wherein the friction means may be so mounted in the end of the bolster as to provide adequate snubbing effect of the coil springs on which the bolster may be supported from the side frame, said snubbing parts being so constructed and arranged as to facilitate their mounting in the bolster in engagement with the side frame columns and to afford satisfactory wear conditions.

A more specific object of our invention is to devise a snubbed truck in which a pair of spaced friction shoes may be mounted in each side of each bolster end and resilient means may be so associated with the shoes within the bolster as to cause the shoes to bear against spaced walls of the bolster and against the adjacent columns. Our novel arrangement contemplates a friction shoe assembly comprising top and bottom bisymmetrical shoes with adjacent cavities within which may be vulcanized a resilient member serving to retain the shoes in proper relation to each other and under certain operating conditions reacting against the shoes for purposes more clearly set forth hereinafter.

In both modifications we have illustrated, each side of the bolster end is constructed with spaced wedge surfaces along which the respective shoes of each pair may seat and have some sliding movement to permit satisfactory bearing against the adjacent side frame column.

In the drawings:

Figure 1 is a fragmentary side elevation of a railway car truck embodying our invention, partly in section, the section being taken approximately in the vertical plane bisecting the side frame longitudinally as indicated by the line 1—1 of Figure 2;

Figure 2 is a fragmentary top plan view of the structure shown in Figure 1, also partly in section, the section being taken approximately in the horizontal planes indicated by the line 2—2 of Figure 1;

Figure 3 is a fragmentary top plan view of a portion of the bolster structure illustrating the shoe pocket, and Figure 4 is a section through the shoe pocket portion of the bolster, taken approximately in the vertical plane indicated by the line 4—4 of Figure 3;

Figure 5 is a fragmentary side elevation view

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of the bolster structure, looking into the shoe pocket, the view being taken appoximately in the plane indicated by the line 5—5 of Figure 2;

Figures 6, 7, and 8 illustrate our novel form of friction shoe utilized in the structure shown in Figures 1 and 2, Figure 6 being a plan view taken from the inner face of the shoe, Figure 7 an end view looking upwardly at the bottom of Figure 6, and Figure 8 a side elevation viewed from the left of Figure 7;

Figure 9 is a fragmentary sectional view through a railway car truck illustrating a modified form of our invention, the view being in section and comparable to the sectional view of Figure 1 and being taken approximately in the longitudinal vertical plane bisecting the side frame as indicated by the line 9—9 of Figure 10;

Figure 10 is a fragmentary top plan view of the bolster and friction shoe assembly illustrated in Figure 9, the side frame being omitted;

Figure 11 is a sectional view through the structure shown in Figures 9 and 10, the section being taken approximately in the transverse vertical planes indicated by the line 11—11 of Figure 10; and

Figures 12, 13, and 14 show the detail of our novel form of friction shoe utilized in the truck structure illustrated in Figures 9–11, Figure 12 being a plan view taken from the inner face of the shoe, Figure 13 an end view looking down from the top of Figure 12, and Figure 14 a side elevation thereof taken from the left as seen in Figure 13.

Describing first the modification illustrated in Figures 1–8, the side frame structure is of somewhat conventional truss type having the compression member 2, the tension member 4, the column 6, the bolster opening 8 accommodating the bolster generally designated 10 which may be supported as at 12 on the coil springs diagrammatically indicated at 14, 14, said springs being positioned as at 16 on the spring seat portion of the side frame in the usual manner. On the central guide portion of the column 6 may be mounted a wear plate 18 affording a vertical friction surface which may be engaged as at 20 by the friction walls 21, 21 of the top and bottom identical friction shoes generally designated 22, 22.

Each friction shoe is a cuplike structure having a central cavity 24, and the opposed cavities of respective shoes may house the resilient member 26 which may be compressed and vulcanized between the respective shoes. By this means the two shoes may be assembled together and handled

as a unit. Each friction shoe may have a horizontally arranged wedge face 28 and the wedge face of respective shoes of each pair may have rocking bearing as at 30 and 32 against the arcuate wedge faces 34 and 36, formed respectively on the top wall 38 and the bottom wall 40 of the bolster.

The bolster may have the usual inboard and outboard guide lugs 42 and 44 and intermediate said lugs at each side of the bolster the shoe pocket may be defined by inboard and outboard walls 46 and 48, said walls together with the top and bottom walls 38 and 40 and the bolster center rib 50 defining the friction shoe pocket 52.

The character of the arcuate wedge surfaces 34 and 36 may well be seen by a comparison of the views of Figures 4 and 5. These wedge surfaces on the bolster are so arranged as to permit wedge faces of the top and bottom friction shoes 22, 22 to bear against the top and bottom walls of the bolster and have some rocking movement as well as sliding movement therealong, said rocking movement permitting each shoe to align itself properly against the adjacent side frame column as the side frame rocks with respect to the bolster and the slidable movement of the shoe along the wedge surface permitting normal movement of the bolster end longitudinally of the truck between the side frame columns.

The rear wall of each friction shoe may bear as at 54 against the spring plate 56, said plate being a rectangular plate, the opposite face of which may afford a seat as at 58 for the resilient pad 60. The opposite side of the pad 60 may bear as at 62 against the bolster center rib 50 and said center rib 50 may have an opening 64 centrally of the friction shoe pocket to accommodate a positioning lug 66 on the resilient pad 60. The top and bottom contours of the pad 60 may bear as at 68 and 70, respectively, against the top and bottom walls of the bolster but the inboard and outboard edges of said pads may be unconfined against expansion as may be seen in the plan view of Figure 2 where it may be noted that the lateral walls 46 and 48 of the bolster terminate short of the vertical center rib 50 of the bolster so that expansion of the pad 60 is freely permitted in two directions. When desirable, the pads 60, 60 at opposite sides of the bolster end may be placed under sufficient initial compresion to cause the lugs 66, 66 of respective pads to bear against each other in order to transmit forces therebetween.

Each spring plate 56 is formed with spaced horizontal channels 72, 72 and each friction shoe is formed with a channel 74 opposite the adjacent channel 72 so that between each pair of chanels 72 and 74 may be accommodated a pin 76, and the opposite ends of the pins 76, 76 may bear against the inner ends of the walls 46 and 48 as at 78, 78 (Figure 3) to hold the pad 60 under compression for purposes of assembling or dismantling the friction shoes.

The detail of the friction shoe is well illustrated in Figures 6, 7, and 8, said shoe being a cuplike structure of rectangular form having the bolster engaging wall 80 on the outer face of which may be formed the wedge face 28, already referred to.

In the modification illustrated in Figures 9–14, inclusive, the side frame structure may be generally similar to that of the previous modification, having the column 102 with the wear plate 104 on the bolster guide portion and against said wear plate may seat as at 106 the top and bottom identical friction shoes 108, 108, each of said shoes having the form illustrated in detail in Figures 12, 13, and 14, said shoes having on their adjacent faces opposed recesses forming a pocket within which may be confined and vulcanized a resilient pad 110 under compression between said shoes. As in the modification of Figure 1, the shoes and pad may thus form a unitary member. The respective shoes 108, 108 may have wedge faces in flat face engagement as at 112 and 114, respectively, against complementary wedge faces formed on the top wall 116 and the bottom wall 118 of the bolster, generally designated 120. In this modification the friction shoe pocket in the bolster may be defined by the inboard and outboard transverse bolster walls 122 and 124, by the boltser center rib 126, and by the top and bottom walls of the bolster. The transverse bolster walls 122 and 124 may be adjacent the respective inboard and outboard guide lugs 128 and 130, and centrally formed in the walls 122 and 124 may be the aligned openings 132, 132 for accommodation of a pin (not shown) which may be used to hold the friction shoes assembled within the pocket so that the bolster and the friction shoe assembly may be handled as a unit when the side frames are removed or applied. Each friction shoe may have aligned slots 134, 134 in the opposite walls thereof for accommodation of such a pin, and the resilient pad 110 may have an opening 136 therethrough for the same purpose.

The detail of the friction shoe used in this modification is shown in Figures 12, 13 and 14. Said shoe is generally rectangular in plan, as seen in Figure 12, with the friction wall 138 at the thick end of the shoe, side walls 140, 140, and a main wall 142 having on its outer surface the wedge face 144 for seating against a complementary face on the bolster, as already indicated.

It is to be understood that we 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.

We claim:

1. In a railway car truck, a side frame having columns, a bolster spring-supported from said frame with pockets adjacent said columns, a friction shoe assembly in each pocket engaging the adjacent column, said assembly comprising top and bottom shoes in engagement with spaced walls of said bolster, resilient means vulcanized to said shoes and compressed therebetween for urging them into engagement with adjacent walls, and other resilient means operative to urge the shoes of each assembly into engagement with the adjacent column, said last-mentioned resilient means at opposite sides of said bolster having interengageable means for transmission of forces therebetween.

2. In a railway car truck, a side frame having spaced columns, a bolster spring-supported between said columns with a pocket adjacent each column, vertically spaced friction shoes in each pocket bearing against the adjacent column and against top and bottom walls of the associated pocket, resilient means compressed between the shoes of each pair, a spring plate in each pocket bearing against both shoes thereof, and other resilient means compressed between respective

plates and a common wall of said bolster, said common wall having an opening accommodating abutting portions of said last-mentioned resilient means for transmittal of forces therebetween.

3. In a railway car truck, a side frame having columns, a bolster spring-supported from said frame with pockets adjacent said columns, pairs of friction shoes in said pockets engaging said columns respectively, the shoes of each pair having engagement with spaced walls of said bolster, resilient means compressed between the shoes of each pair for urging them into engagement with said walls, and other resilient means operative to urge the shoes of each pair into engagement with the adjacent column.

4. In a railway car truck, a supporting member having spaced columns, a member spring-supported between said columns with a friction shoe pocket adjacent each column, each of said pockets being defined by spaced walls on said supported member having friction shoe seats diverging toward the adjacent column, spaced friction shoes in each pocket engaging the adjacent column and respectively engaging said diverging seats, and resilient means compressed between said shoes, each of said shoes having flat face engagement with the adjacent seat.

5. In a railway car truck, a side frame having spaced columns, a bolster spring-supported between said columns with a pocket adjacent each, vertically spaced friction shoes in each pocket bearing against the adjacent column and against top and bottom walls of the associated pocket, resilient means compressed between the shoes of each pair, a spring seat in each pocket bearing against both shoes thereof, and other resilient means compressed between each seat and a spaced wall of said bolster.

6. In a railway car truck, a side frame having spaced columns, a bolster spring-supported between said columns with a pocket adjacent each column, vertically spaced friction shoes in each pocket bearing against the adjacent column and against top and bottom walls of the associated pocket, resilient means compressed between the shoes of each pair, a spring plate in each pocket bearing against both shoes thereof, and other resilient means compressed between respective plates and a common wall of said bolster.

7. In a bolster, a box section end portion having top and bottom walls, a vertical center rib, and vertical transverse walls at each side thereof terminating short of said rib and defining with said top and bottom walls friction shoe pockets, said top and bottom walls having opposed friction shoe seats arcuately arranged to accommodate rockable seating of associated friction shoes in a vertical plane transversely of said bolster.

8. In a bolster, a box section end portion defined by top and bottom walls, side walls, and a vertical center rib, friction shoe pockets in each side of said bolster end intermediate the column guides thereof, each of said pockets being defined by transverse walls merging with said top and bottom walls, said center rib, and the adjacent side wall, and opposed friction shoe seats on said top and bottom walls in each pocket, said seats converging toward said center rib.

9. In a bolster, a box section end portion having top and bottom walls, a vertical center rib, and vertical transverse walls at each side thereof terminating short of said rib and defining with said top and bottom walls friction shoe pockets, each of said top and bottom walls having a wedge shaped friction shoe seat with an arcuate contour to permit rocking of said shoe in a vertical plane transversely of said bolster.

10. In a railway car truck, a supporting member having spaced columns, a member spring-supported between said columns with a friction shoe pocket adjacent each column, each of said pockets being defined in part by spaced substantially horizontal top and bottom walls and spaced vertical walls extending therebetween, said top and bottom walls presenting opposed flaring friction shoe seats extending between said vertical walls, a friction shoe assembly mounted in each pocket between said seats and comprising top and bottom shoes, and resilient means intermediate said seats and operatively associated with said shoes and operable to urge the latter into engagement with respective seats and into engagement with the adjacent column.

11. In a railway car truck, a supporting member having spaced columns, a member spring-supported between said columns with a friction shoe pocket adjacent each column, each of said pockets being defined in part by top and bottom walls having flaring friction shoe seats of a width substantially equal to that of the pocket, a friction shoe assembly mounted in each pocket between said seats and comprising identical top and bottom shoes, and resilient means associated with said shoes and operable to urge said shoes into engagement with respective seats and into engagement with the adjacent column, the shoes of each pair having coplanar friction surfaces abutting the adjacent column.

12. In a railway car truck, a supporting member having spaced columns, a member spring-supported between said columns with a friction shoe pocket adjacent each column, each of said pockets being defined in part by top and bottom walls presenting diverging friction shoe seats extending the width of the pocket, top and bottom friction shoes abutting respective seats and having coplanar friction faces for engagement with the adjacent column, and resilient means associated with and operative to urge said shoes into engagement with said seats and column.

13. In a bolster, a box-section end portion having top and bottom walls, a vertical center rib and vertical transverse walls at each side thereof terminating short of said rib and defining with said top and bottom walls friction shoe pockets, said top and bottom walls presenting opposed wedge-shaped convex friction shoe seats to accommodate rockable seating of associated friction shoes in a vertical plane transversely of said bolster.

14. In a bolster, a box-section end portion having top and bottom walls, a vertical center rib and vertical transverse walls at each side thereof terminating short of said rib and defining with said top and bottom walls friction shoe pockets, said top and bottom walls presenting opposed reversely curved friction shoe seats arranged to accommodate rockable seating of associated friction shoes in a plane transversely of said bolster.

15. In a railway car truck, a side frame having columns, a bolster spring-supported from said frame with pockets adjacent said columns, each of said pockets being partly defined by top and bottom walls having arcuately arranged friction shoe seats, a friction shoe assembly mounted in each pocket between said seats and including a unitary shoe assembly comprising top and bottom portions, each of said portions having a plurality of angularly arranged relatively flat faces seated against respective seats, and resilient

means associated with said shoes and operable to urge said faces into engagement with respective seats and other surfaces of said portions into engagement with the adjacent column.

16. In a railway car truck, a side frame having columns, a bolster spring-supported from said frame with pockets adjacent said columns, each of said pockets being partly defined by top and bottom walls having arcuately arranged friction shoe seats, a unitary friction shoe assembly in each pocket, each assembly comprising spaced top and bottom friction shoes defining a cavity therebetween, resilient means compressed between said shoes and housed in said cavity for urging respective shoes into engagement with adjacent seats and joined to respective shoes for retaining said shoes and resilient means in normal assembled relationship, a member in each pocket bearing against both shoes thereof, and other resilient means compressed between respective members and a common wall of said bolster for urging the associated shoes into frictional engagement with the adjacent column.

17. In a vehicle, relatively movable sprung and unsprung members, said unsprung member having portions embracing portions of said sprung member positioned therebetween, pockets in said portions of the sprung member with spaced internal arcuately arranged friction shoe seating surfaces, a friction shoe assembly in each pocket and comprising spaced friction shoes seated against said surfaces, resilient means compressed by and between said shoes for urging the latter against said surfaces, a member in each pocket abutting both shoes thereof, and other resilient means in each pocket and compressed between the rear thereof and the associated member for simultaneously urging the abutting shoes against the adjacent portion of said unsprung member, said surfaces permitting said shoes to adjustably position themselves in substantially full face engagement with said adjacent portions of the unsprung member.

18. In a railway car truck, a side frame having spaced column members, a bolster member interposed between said column members and spring-supported from said frame, pockets in one of said members adjacent the other of said members, each of said pockets having spaced curved friction shoe seating surfaces, a plurality of friction shoes in each pocket, each of said

shoes engaging a different surface, resilient means wholly housed and compressed between all of the shoes in each pocket and urging the same into said engagement, other resilient means seated against the rear of each pocket, and an element between said other resilient means and the shoes for transmitting forces from said other resilient means to the associated shoes for urging the latter into frictional engagement with the other of said members.

19. In a railway car truck, a side frame with spaced columns, a bolster spring-supported from said frame with pockets adjacent said columns, a pair of vertically spaced friction shoes in each pocket, a resilient member compressed between each pair of shoes and urging them apart against adjacent walls of said pockets, and actuating means in each pocket simultaneously urging respective shoes into frictional engagement with the adjacent column.

20. In a truck, a side frame member, a bolster member supported therefrom, a friction surface on one member, the other member having a pocket open to said surface, friction shoe seating faces at the top and bottom of said pocket extending the full width of said pocket and diverging toward said surface, a friction shoe assembly within said pocket comprising top and bottom shoes, respectively, slidably engaging said faces at the top and bottom of said pocket, and resilient means for urging said shoes against said faces and outwardly of said pocket against said surface, said resilient means including a block of distortable material confined between said shoes and bonded thereto.

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HERBERT J. SCHMID.

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