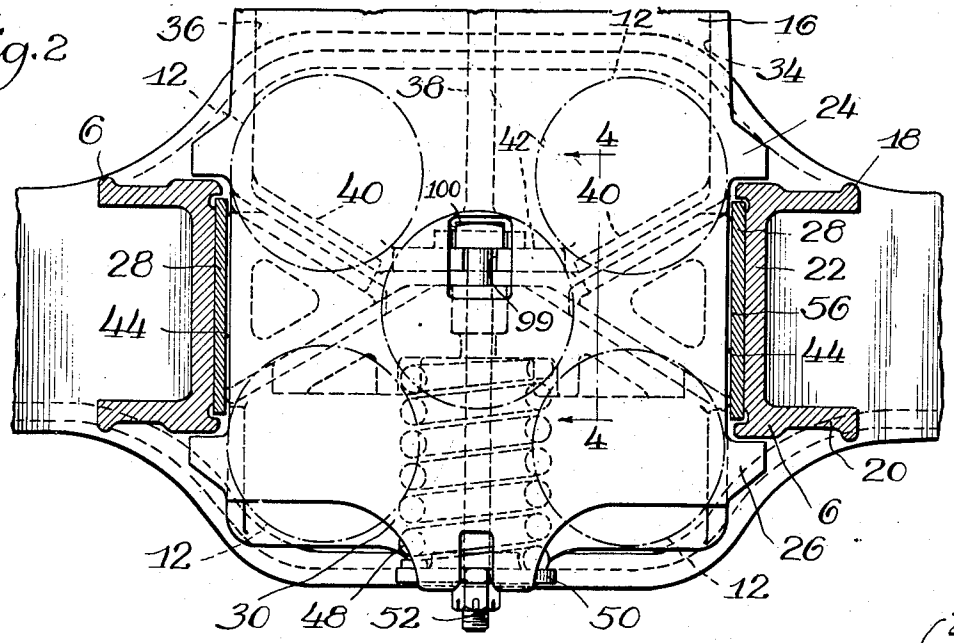
Dec. 19, 1944. L. A. LEHRMAN 2,365,198

TRUCK

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Fig. 2



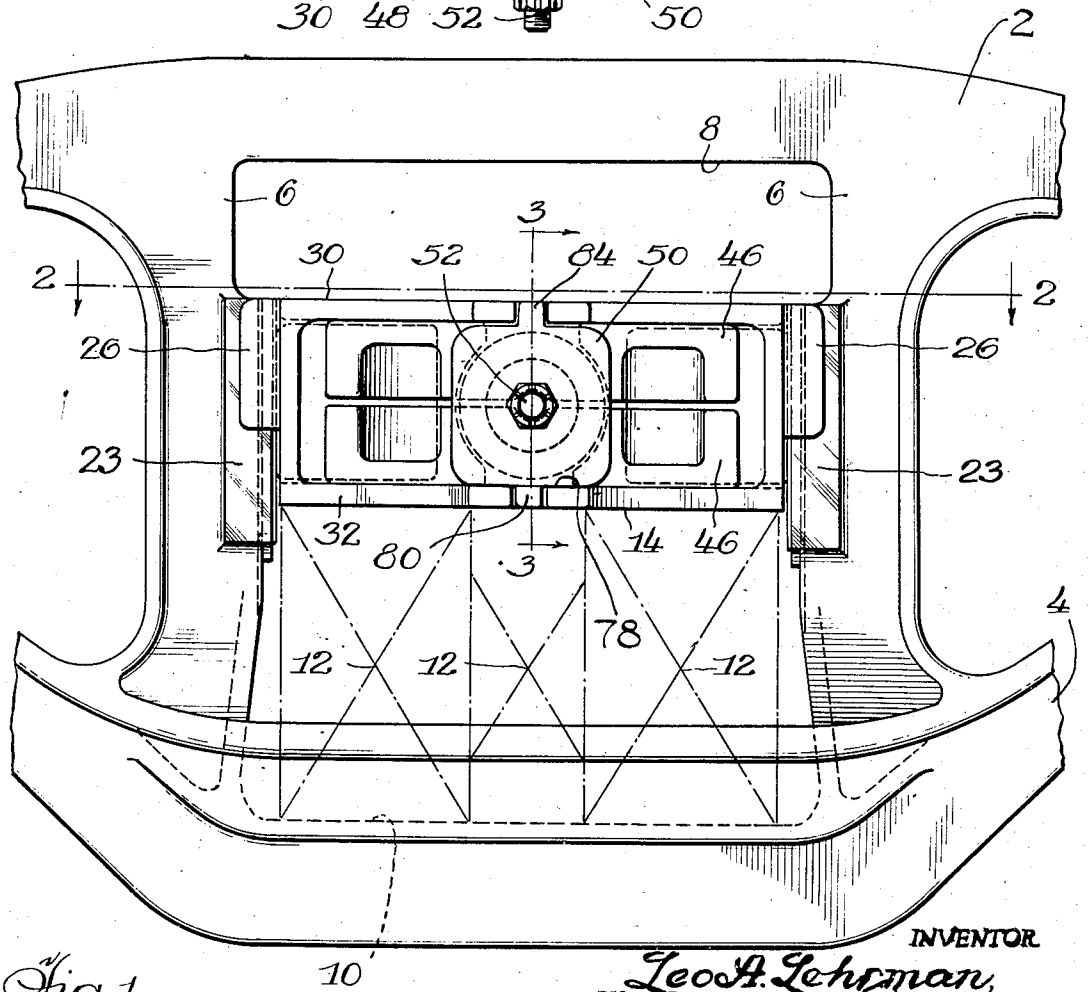


Fig. 1

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Dec. 19, 1944. L. A. LEHRMAN 2,365,198

TRUCK

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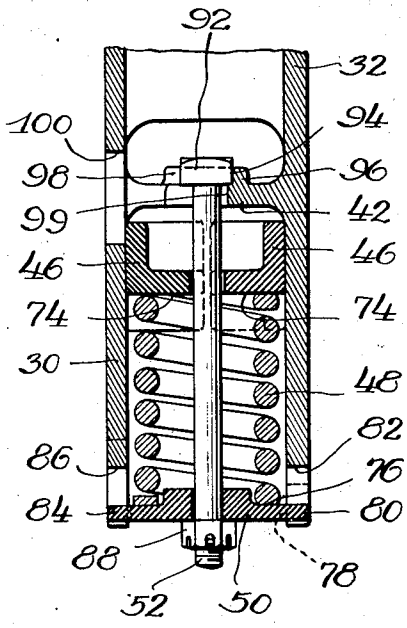


Fig. 3

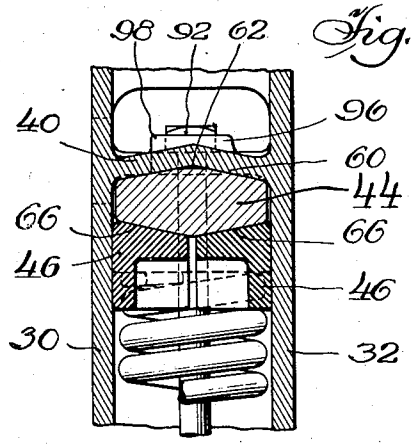


Fig. 4

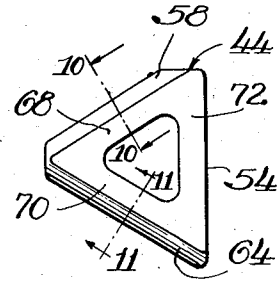


Fig. 8

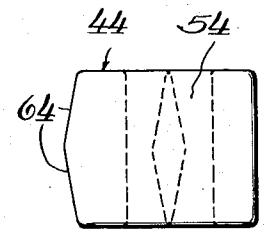


Fig. 9

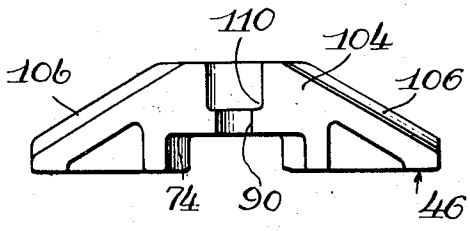


Fig. 5

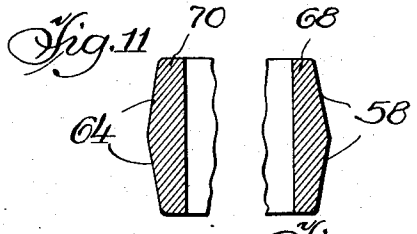


Fig. 11

Fig. 10

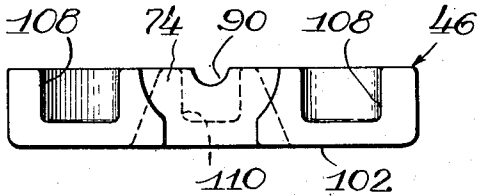


Fig. 6

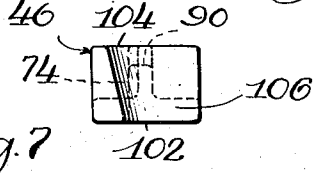


Fig. 7

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Patented Dec. 19, 1944 2,365,198

UNITED STATES PATENT OFFICE

2,365,198

TRUCK

Leo A. Lehrman, Chicago, Ill., assignor to American Steel Foundries, Chicago, Ill., a corporation of New Jersey

Application May 1, 1943, Serial No. 485,265

35 Claims. (Cl. 105—197)

My invention relates to railway car trucks and particularly to a type of such truck generally known as quick wheel change wherein the bolster end may be removed from either side frame to permit wheel removal.

The general object of my invention is to devise such a truck with ride control means incorporated, that is to say, friction absorbing means for snubbing relative movement between the bolster and side frame.

A more specific object of my invention is to devise a novel form of such a car truck wherein the bolster end may be of novel design to incorporate friction shoes which may cooperate with a wall of the adjacent side frame column and with a wedge member supported within the bolster end.

Still another object of my invention is to devise a novel form of car truck wherein each end of the bolster may be formed with reversely tapering V-section vertical walls at opposite sides thereof against which may seat the respective shoes of a pair, each shoe having a friction surface for frictional engagement with an adjacent column wall, and wherein the friction shoes may be maintained in stabilized relation with respect to other parts of the assembly by dual wedge means resiliently maintained in the bolster end.

In the drawings,

Figure 1 is a side elevation of a railway car truck embodying my invention, the side frame being shown with the end portions cut away as not pertinent to my invention.

Figure 2 is a fragmentary top plan view of the truck structure shown in Figure 1, partly in section, the section being taken in a transverse horizontal plane adjacent the top of the bolster approximately in the plane indicated by the line 2—2 of Figure 1.

Figure 3 is a fragmentary sectional view taken through the bolster end and the friction means approximately in the vertical transverse plane bisecting the truck as indicated by the line 3—3 of Figure 1.

Figure 4 is a further sectional view taken in a vertical transverse plane through the friction means approximately in the plane indicated by the line 4—4 of Figure 2.

Figures 5, 6 and 7 illustrate my novel form of wedge member, Figure 5 being a plan view thereof, Figure 6 a side elevation, and Figure 7 an end view taken from the right as seen in Figures 5 and 6.

Figures 8 to 11 illustrate my novel form of friction shoe, Figure 8 being a top plan view thereof, Figure 9 a view of the friction end taken from the right as seen in Figure 8, Figure 10 a sectional view taken through the wedge face engaging the bolster approximately in the plane indicated by the line 10—10 of Figure 8, and Figure 11 is a further sectional view taken through the wedge face cooperating with the dual wedge means approximately in the plane indicated by the line 11—11 of Figure 8.

Describing in detail the embodiment of my invention as illustrated in the accompanying drawings, it will be noted that the side frame is of well known form including the compression member 2, the tension member 4 with spaced columns 6, 6 merging therewith to form the central window opening 8. The tension member 4 below the window 8 may be formed with a widened top chord having upstanding inboard and outboard flanges defining the spring seat 10 upon which may be positioned a plurality of coil springs 12, 12 affording support as at 14 for the adjacent end of the bolster generally designated 16. Each column may be of U-section having an inboard web 18, an outboard web 20, and a transverse web or wall 22, the central portion of which may be formed with bolster guide means as at 23 affording abutment for the inboard and outboard guide lugs 24 and 26 along the adjacent wall of the bolster. The bolster guide portion of each column may be relieved to receive a wear plate as illustrated at 28 (Figure 2), fixed to the column in any convenient manner.

The bolster 16 may be of box-section having the top wall 30, the bottom wall 32, side walls 34 and 36 (Figure 2), and the longitudinal central web or rib 38. Within the bolster end may be formed the V-section transverse wall 40, the opposite ends of which are diagonally arranged and the intermediate portion thereof approximately at right angles to the bolster side walls as seen at 42 (Figure 2). The character of this wall 40, 42 is better understood by reference to the views of Figures 3 and 4.

The friction means comprises a pair of friction shoes 44, 44 (Figures 8 and 9), a dual wedge member formed in two identical parts 46, 46, an auxiliary spring 48, a spring plate 50, and a retaining bolt 52. Each friction shoe 44 is a generally rectangular structure having a flat friction face 54 (Figure 9) which may bear as at 56 (Figure 2) against the wear plate 28 on the adjacent column wall. The friction shoe may have a wedge face 58 for cooperation as at 60 (Figure 4) with a complementary surface formed on the wall 40, some clearance being afforded as at 62

to permit proper seating. Also, each shoe 44 may have a wedge face 64, the top and bottom surface of which may engage as at 66, 66 with the top and bottom wedge members 46, 46.

Each shoe 44 is a three-walled structure having the bolster engaging wall 68, the wedge engaging wall 70, and the column engaging wall 72, and because of this triangular form is wedged outwardly against the adjacent column as at 56 as the dual wedge members 46, 46 are urged against the shoes by means of the auxiliary spring 48. The said auxiliary spring may seat as at 74 against each of the dual wedge members, and at its opposite end the spring 48 may bear as at 76 against the spring cap 50. The spring cap 50 may be a generally rectangular plate received between the top and bottom walls of the bolster and seated as at 78 on said bottom wall, said plate 50 having a lug 80 centrally formed on its bottom edge for cooperative engagement with the slot 82 in the bottom wall of the bolster, and similarly having on its top edge the lug 84 for cooperative engagement with the slot 86 in the top wall of the bolster. The retaining bolt 52 may extend through the spring plate 50 and have the nut 88 threaded on its outer end, said bolt passing between the wedge members 46, 46 and being accommodated by the slots 90, 90 therein. The inner end of the bolt 52 may be formed with a square head 92 which may rest as at 94 on the ledge 96 integrally formed on the wall 42 between the vertical shoulders 98, 98 at opposite sides of said ledge so that the inner end of said bolt may be thus supported on the wall 42 within the slot 99. For purposes of assembly, the top wall 30 of the bolster may be cored away as at 100 (Figure 3) to accommodate the head of the bolt 52 and permit it to be seated within the slot 99.

The detail of each of the dual wedge members is shown in Figures 5, 6 and 7. Each of these members is afforded a wall having a plane face as at 102 (Figure 6) which may seat against the adjacent bolster wall. The opposite face 104 (Figure 5) may also be plane. Each wedge member 46 is also formed with a plurality of wedge faces 106, 106 for engagement with corresponding wedge faces of the respective friction shoes at opposite sides of the bolster. Thus the wedge faces 106, 106 on the dual wedge members engage the upper and lower surfaces respectively of the adjacent friction shoe face 64 at one side of the bolster. Each wedge member 46, therefore, bears against both friction shoes and tends to urge each shoe into engagement with the opposite wedge 46 and also into engagement with the adjacent diagonal wall 40 of the bolster end. Each wedge member 46 may be cored away at its opposite ends as at 108, 108 and centrally thereof as at 110 to reduce the weight thereof.

It will readily be understood by those skilled in the art that by adjusting the portion of the threaded nut 88 on the retaining bolt 52, I may control the tension of the auxiliary spring 48 and thus the pressure with which the wedge members urge the friction shoes 44, 44 against the diagonal bolster walls 40, 40 as a resultant of which the friction shoes are urged into engagement with the wear plates 28, 28 on the opposite side frame columns. As the wedge members 46, 46 bear against the shoes they are urged apart because of the tapering surfaces along which they bear against said shoes so that the top and bottom wedge members 46, 46 are urged into tight engagement with the adjacent walls of the bolster affording vertical stability for the parts of the friction mechanism which are thus tightly confined between the top and bottom walls of the bolster and the transverse walls of the column against which the friction shoes seat. In my novel structure, therefore, I have provided an easily accessible adjusting means by which I may modify as desired the amount of friction developed and accordingly, the character of the ride control effect secured.

It is to be understood that I do not wish to be limited by the exact embodiment of the device shown which is 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 railway car truck, a truss side frame having tension and compression members and spaced columns defining a bolster opening, springs on said tension member in said opening, a bolster supported on said springs with guide lugs in cooperative engagement with said columns, said bolster having a box-section end portion with top and bottom walls and a transverse wall having diagonal friction webs, and friction means resiliently mounted in said bolster end, said friction means comprising friction shoes engaging said diagonal webs respectively, a plurality of wedge means each engaging both of said shoes, a spring seat mounted between said top and bottom walls, and resilient means compressed between said spring seat and said wedge means and operative to urge each of said wedge means against both of said shoes and said shoes into engagement with respective columns and said wedge means against said top and bottom walls respectively.

2. In a railway car truck, a truss side frame having tension and compression members and spaced columns defining a bolster opening, springs upon said tension member, a bolster end supported on said springs in cooperative engagement with said columns, said bolster end comprising top and bottom walls and a transverse wall with reversely arranged diagonal friction faces, and friction means mounted in said bolster end comprising a pair of friction shoes engaging said faces respectively, a pair of wedge members each in frictional engagement with both of said shoes, and resilient means operative to urge said wedge members against said shoes and said shoes into frictional engagement with said columns, each of said friction shoes having wedge engagement with the adjacent face and engaging said wedge members along reversely arranged wedge faces and engaging the adjacent column along a plane friction surface.

3. In a railway car truck, a truss side frame having tension and compression members and spaced columns defining a bolster opening, springs on said tension member in said opening, a bolster supported on said springs with guide lugs in cooperative engagement with said columns, said bolster having a box-section end portion with top and bottom walls and a transverse wall having diagonal friction webs, and friction means resiliently mounted in said bolster end portion, said friction means comprising a pair of triangular friction shoes having flat face engagement with said columns respectively and wedge face engagement with said diagonal webs, wedge means engaging both of said shoes, resilient means housed in said bolster operative to urge said wedge means against said shoes and against said top and bot-

tom walls, and retaining means for said resilient means anchored to said transverse wall.

4. In a railway car truck, a truss side frame having tension and compression members and spaced columns defining a bolster opening, springs on said tension member in said opening, a bolster supported on said springs with guide lugs in cooperative engagement with said columns, said bolster having a box-section end portion with top and bottom walls and diagonal friction webs, and friction means resiliently mounted in said bolster end portion, said friction means comprising friction shoes engaging said diagonal webs respectively, a plurality of wedge means each engaging both of said shoes, a spring seat mounted between said top and bottom walls, and resilient means compressed between said spring seat and said wedge means and operative to urge each of said wedge means against both of said shoes and said shoes into engagement with respective columns.

5. In a railway car truck, a truss side frame having tension and compression members and spaced columns defining a bolster opening, springs upon said tension member, a bolster end supported on said springs in cooperative engagement with said columns, said bolster end comprising top and bottom walls and a transverse wall with reversely arranged diagonal friction faces, and friction means mounted in said bolster end comprising a pair of friction shoes engaging said faces respectively, a pair of wedge members each in frictional engagement with both of said shoes, and resilient means operative to urge said wedge members against said shoes and said shoes into frictional engagement with said columns, each of said friction faces having a plurality of angularly arranged surfaces engaging the adjacent shoe and having clearance from said shoe intermediate said surfaces.

6. In a railway car truck, a truss side frame having tension and compression members and spaced columns defining a bolster opening, springs on said tension member in said opening, a bolster supported on said springs with guide lugs in cooperative engagement with said columns, said bolster having a box-section end portion with top and bottom walls and diagonal friction webs, and friction means resiliently mounted in said bolster end portion, said friction means comprising a pair of triangular friction shoes having flat face engagement with said columns respectively and wedge face engagement with said diagonal webs, wedge means engaging both of said shoes, and resilient means housed in said bolster operative to urge said wedge means against said shoes and against said top and bottom walls.

7. In a railway car truck, a truss side frame having tension and compression members and spaced columns defining a bolster opening, springs upon said tension member, a bolster end supported on said springs in cooperative engagement with said columns, said bolster end comprising top and bottom walls and a transverse wall with reversely arranged diagonal friction faces, and friction means mounted in said bolster end comprising a pair of friction shoes engaging said faces respectively, a pair of wedge members each in frictional engagement with both of said shoes, and resilient means operative to urge said wedge members against said shoes and said shoes into frictional engagement with said columns, each of said friction faces having a plurality of angularly arranged surfaces engaging the adjacent shoe.

8. In a railway car truck, a truss side frame having tension and compression members and spaced columns defining a bolster opening, springs on said tension member in said opening, a bolster supported on said springs with guide lugs in cooperative engagement with said columns, said bolster having a box-section end portion with top and bottom walls and diagonal friction webs, and friction means resiliently mounted in said bolster end portion, said friction means comprising a pair of triangular friction shoes having flat face engagement with said columns respectively and wedge face engagement with said diagonal webs, a plurality of wedge members engaging both of said shoes, and resilient means housed in said bolster operative to urge said wedge means against said shoes.

9. In a railway car truck, a truss side frame having tension and compression members and spaced columns defining a bolster opening, springs on said tension member in said opening, a bolster supported on said springs with guide lugs in cooperative engagement with said columns, said bolster having a box-section end portion with top and bottom walls and diagonal friction webs, and friction means resiliently mounted in said bolster end portion, said friction means comprising friction shoes engaging said diagonal webs respectively, a plurality of wedge means each engaging both of said shoes, and resilient means operative to urge said wedge means against said shoes and against said top and bottom walls respectively.

10. In a railway car truck, a truss side frame having tension and compression members and spaced columns defining a bolster opening, springs on said tension member in said opening, a bolster supported on said springs with guide lugs in cooperative engagement with said columns, said bolster having a box-section end portion with top and bottom walls and diagonal friction webs, and friction means resiliently mounted in said bolster end portion, said friction means comprising friction shoes engaging said diagonal webs respectively, a plurality of wedge means each engaging both of said shoes, a spring seat mounted between said top and bottom walls, and resilient means compressed between said spring seat and said wedge means and operative to urge apart said wedge means.

11. In a railway car truck, a truss side frame having tension and compression members and spaced columns defining a bolster opening, springs upon said tension member, a bolster end supported on said springs in cooperative engagement with said columns, said bolster end comprising top and bottom walls and a transverse wall with reversely arranged diagonal friction faces, and friction means mounted in said bolster end comprising a pair of friction shoes engaging said faces respectively, a pair of wedge members each in frictional engagement with both of said shoes, and resilient means operative to urge said wedge members against said shoes and said shoes into frictional engagement with said columns.

12. In a railway car truck, a truss side frame having tension and compression members and spaced columns defining a bolster opening, springs upon said tension member, a bolster end supported on said springs in cooperative engagement with said columns, said bolster end comprising top and bottom walls and a transverse wall with reversely arranged diagonal friction faces, and friction means mounted in said bolster end comprising a pair of friction shoes engaging said faces respectively, a pair of wedge members each in

frictional engagement with both of said shoes, and resilient means operative to urge said wedge members against said shoes and said shoes into frictional engagement with said columns, each of said friction shoes having wedge engagement with the adjacent face.

13. In a railway car truck, a side frame having a tension member and spaced columns defining in part a bolster opening, a spring group on said tension member, a bolster end supported on said group in cooperative engagement with said columns, and a friction device mounted in said bolster end, said friction device including a pair of friction shoes each engaging a wall of said bolster and one of said columns, and relatively movable wedge means resiliently mounted in said bolster end and operative to urge said shoes into engagement with said walls and columns respectively, said wedge means comprising a pair of wedge members each engaging both of said shoes.

14. In a railway car truck, a side frame having a tension member and spaced columns defining in part a bolster opening, a spring group on said tension member, a bolster end supported on said group in cooperative engagement with said columns, and a friction device mounted in said bolster end, said friction device including a pair of friction shoes each engaging a wall of said bolster and one of said columns, and wedge means resiliently mounted in said bolter and operative to urge said shoes into engagement with said walls and columns respectively, said wedge means comprising a pair of wedge members each engaging both of said shoes and respectively seated against spaced walls of said bolster.

15. In a railway car truck, a side frame having a tension member and spaced columns defining in part a bolster opening, a spring group on said tension member, a bolster end supported on said group in cooperative engagement with said columns, and a friction device mounted in said bolster end, said friction device including a pair of friction shoes each engaging a wall of said bolster and one of said columns, and dual wedge means resiliently mounted in said bolster end and each operative to urge both of said shoes into engagement with said walls and columns respectively.

16. In a railway car truck, a truss side frame having tension and compression members and spaced columns defining a bolster opening, springs on said tension member in said opening, a bolster supported on said springs with guide lugs in cooperative engagement with said columns, said bolster having a box-section end portion and a transverse wall having diagonal friction webs, and friction means mounted in said bolster end including friction shoes engaging said webs and resiliently urged into engagement with said columns respectively.

17. A bolster assembly comprising a bolster end with top and bottom walls, side walls, and a transverse wall having diagonal friction faces, and a friction device mounted therein comprising a pair of friction shoes engaging said faces respectively, a pair of wedge members each engaging both of said shoes, and resilient means for urging each of said wedge members against both of said shoes and against said top and bottom walls respectively.

18. A bolster having a box-section end portion with top and bottom walls, and a transverse wall spaced from the extremity of said bolster and including a plurality of reversely arranged V-shaped friction surfaces for complementary engagement with friction shoes housed therein, and opposed friction surfaces on said top and bottom walls.

19. A bolster having a box-section end portion with top and bottom walls presenting opposed friction surfaces, and a vertical transverse wall having a pair of reversely diagonally arranged friction portions presenting wedge faces for engagement with associated friction shoes.

20. A bolster assembly comprising a box section bolster end with top and bottom walls and a transverse wall presenting reversely arranged wedge friction faces, triangular friction shoes in complementary engagement with said faces, dual wedge means each in engagement with both of said shoes, and resilient means operative to urge said wedge means into frictional engagement with said shoes and with said top and bottom walls respectively.

21. In a car truck, a side frame having spaced columns presenting opposed friction surfaces, and a bolster assembly spring-mounted between said columns and comprising friction means including triangular shoes each in frictional engagement with one of said surfaces and with a wall of said assembly, and resiliently mounted dual wedge means, each in frictional engagement with both of said shoes and with a wall of said assembly.

22. In a car truck, a side frame having spaced columns presenting opposed friction surfaces, and a bolster assembly spring-mounted between said columns and comprising friction means including triangular shoes each in frictional engagement with one of said surfaces and with a wall of said assembly, and resiliently mounted dual wedge means each in frictional engagement with both of said shoes and with a wall of said assembly, said wedge means being urged apart by engagement with said shoes.

23. In a car truck, a side frame having spaced columns presenting opposed friction surfaces, and a bolster assembly spring-mounted between said columns and comprising friction means including triangular shoes, each in frictional engagement with one of said surfaces and with a wall of said assembly, and resiliently mounted dual wedge means each in frictional engagement with both of said shoes and with a wall of said assembly, said wedge means being urged apart by engagement with said shoes to engage opposed walls of said assembly.

24. In a car truck, a side frame having spaced columns presenting opposed friction surfaces, and a bolster assembly spring-mounted between said columns and comprising friction means including triangular shoes each in frictional engagement with one of said surfaces and with a V-shaped wall of said assembly, and resiliently mounted dual wedge means each in frictional engagement with both of said shoes and with a wall of said assembly.

25. In a car truck, a supporting member presenting spaced friction faces, a member spring-supported between said faces and comprising a box section end portion housing friction means, said friction means including friction shoes at opposite sides thereof engaging said faces respectively, and resiliently mounted dual wedge means operative to urge said shoes against said faces and against respectively adjacent walls of said end portion, engagement with said shoes being operative to urge the respective members of said

dual wedge means into engagement with opposed friction surfaces on said end portion.

26. In a truck, a side frame having spaced columns presenting opposed friction surfaces, a bolster spring-supported between said columns with a box section end portion housing friction means, said friction means comprising sets of wedge members, and resilient means operative to urge said sets into engagement with each other, each member of one set having frictional engagement with an adjacent surface and with a wall of said end portion, and each member of the other set having frictional engagement with both members of the first-mentioned set and with an adjacent wall of said portion.

27. In a truck, a side frame having spaced columns presenting opposed friction surfaces, a bolster spring-supported between said columns with a box section end portion housing friction means, said friction means comprising two sets of wedge members, and resilient means operative to urge said sets into engagement with each other, each member of one set having frictional engagement with an adjacent surface and with a wall of said end portion, and each member of the other set having frictional engagement with both members of the first-mentioned set and with an adjacent wall of said portion, the members of one set being urged apart in a direction laterally of said portion and the members of the other set being urged apart in a direction vertically thereof.

28. In a car truck, a side frame having spaced columns, a bolster having an end spring-supported between said columns, said end having a box section with top and bottom and transverse walls having friction faces, and friction means mounted in said end and comprising two pairs of wedges and associated resilient means, said resilient means being operable to urge both wedges of one pair each into engagement with both wedges of the other pair and with an adjacent wall of said end, each wedge of the other pair having frictional engagement with an adjacent column and one of said walls.

29. In a car truck, a side frame having spaced columns, a bolster having an end spring-supported between said columns, said end having a box section with top and bottom and transverse walls having friction faces, and friction means mounted in said end and comprising two pairs of wedges and associated resilient means, said resilient means being operable to urge both wedges of one pair each into engagement with both wedges of the other pair and with an adjacent wall of said end, each wedge of the other pair having frictional engagement with an adjacent column and one of said walls, the engagement between each of said last-mentioned wedges with the associated wall being along a wedge surface.

30. In a truck, a side frame having spaced columns, a bolster end spring-supported between said columns and having a box section with top and bottom walls and a transverse wall, each of said walls presenting a friction surface, and friction means resiliently mounted in said end and comprising two pairs of wedge means, each wedge of one pair bearing against both wedges of the other pair and an adjacent wall of said bolster end, each wedge of the other pair bearing against one of said columns and against an adjacent wall of said bolster.

31. In a truck, a side frame having spaced columns, a bolster end spring-supported between said columns and having a box section with top and bottom walls and a transverse wall, each of said walls presenting a friction surface, and friction means resiliently mounted in said end and comprising two pairs of wedge means, each wedge of one pair bearing against both wedges of the other pair and an adjacent wall of said bolster end, each wedge of the other pair bearing against one of said columns and against an adjacent wall of said bolster, the engaging faces between said last-mentioned wedges and walls being along V-shaped surfaces.

32. In a truck, a side frame having spaced columns, a bolster having a box section end extending between said columns with a transverse wall and top and bottom walls presenting friction faces, and friction means resiliently mounted in said end and comprising two pairs of wedges, the respective wedges of one pair having frictional engagement with said columns and with friction surfaces on said transverse wall, respectively, and the wedges of the other pair each bearing against both of said first-mentioned wedges and against said top and bottom walls, respectively.

33. In a truck, a side frame having spaced columns, a bolster having a box section end extending between said columns with a transverse wall and top and bottom walls presenting friction faces, and friction means resiliently mounted in said end and comprising two pairs of wedges, the respective wedges of one pair having frictional engagement with said columns and with friction surfaces on said transverse wall respectively and the wedges of the other pair each bearing against both of said first-mentioned wedges and against said top and bottom walls respectively, said last-mentioned wedges bearing against said first-mentioned wedges along reversely arranged diagonal surfaces.

34. In a truck, a side frame having spaced columns, a bolster having a box section end extending between said columns with a transverse wall and top and bottom walls presenting friction faces, and friction means resiliently mounted in said end and comprising two pairs of wedges, the respective wedges of one pair having frictional engagement with said columns and with friction surfaces on said transverse wall, respectively, and the wedges of the other pair each bearing against both of said first-mentioned wedges and against said top and bottom walls, respectively, said first-mentioned wedges bearing against said transverse wall along reversely arranged diagonal surfaces.

35. In a truck, a side frame having spaced columns, a bolster having a box section end extending between said columns with a transverse wall and top and bottom walls presenting friction faces, and friction means resiliently mounted in said end and comprising two pairs of wedges, the respective wedges of one pair having frictional engagement with said columns and with friction surfaces on said transverse wall respectively, and the wedges of the other pair each bearing against both of said first-mentioned wedges and against said top and bottom walls respectively, said first-mentioned wedges bearing against said transverse wall along reversely arranged V-shaped diagonal surfaces.

LEO A. LEHRMAN.