

Nov. 9, 1943.

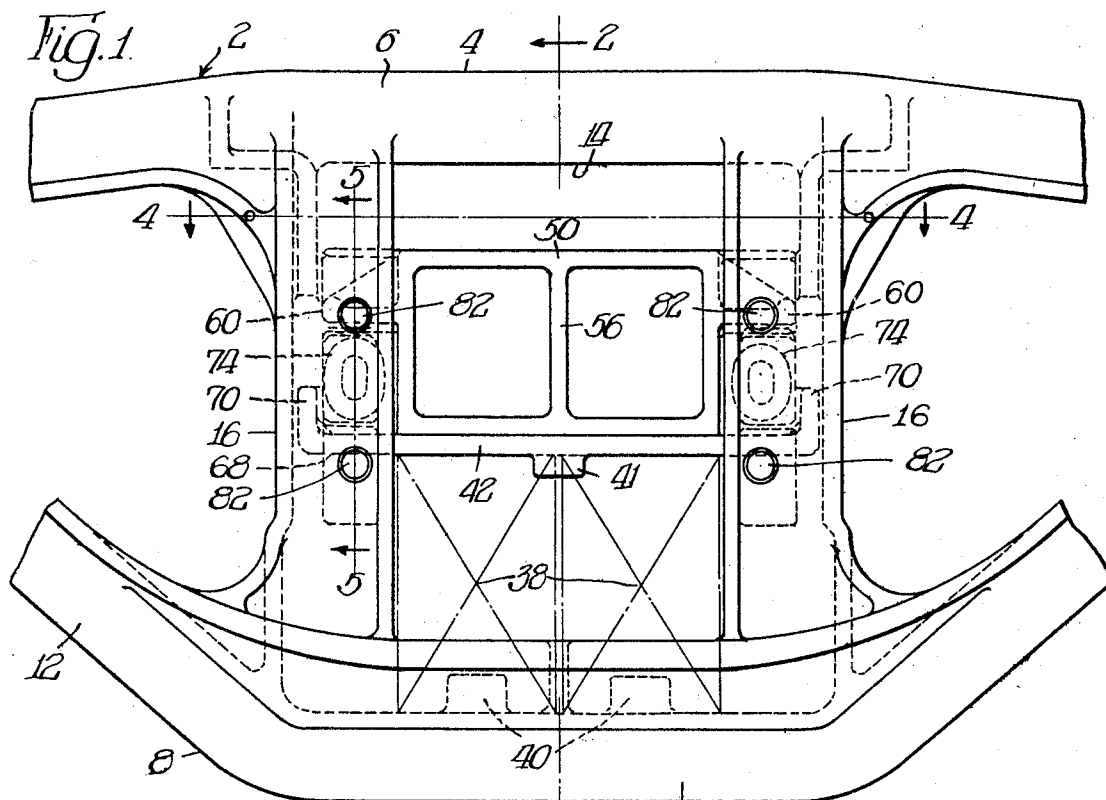
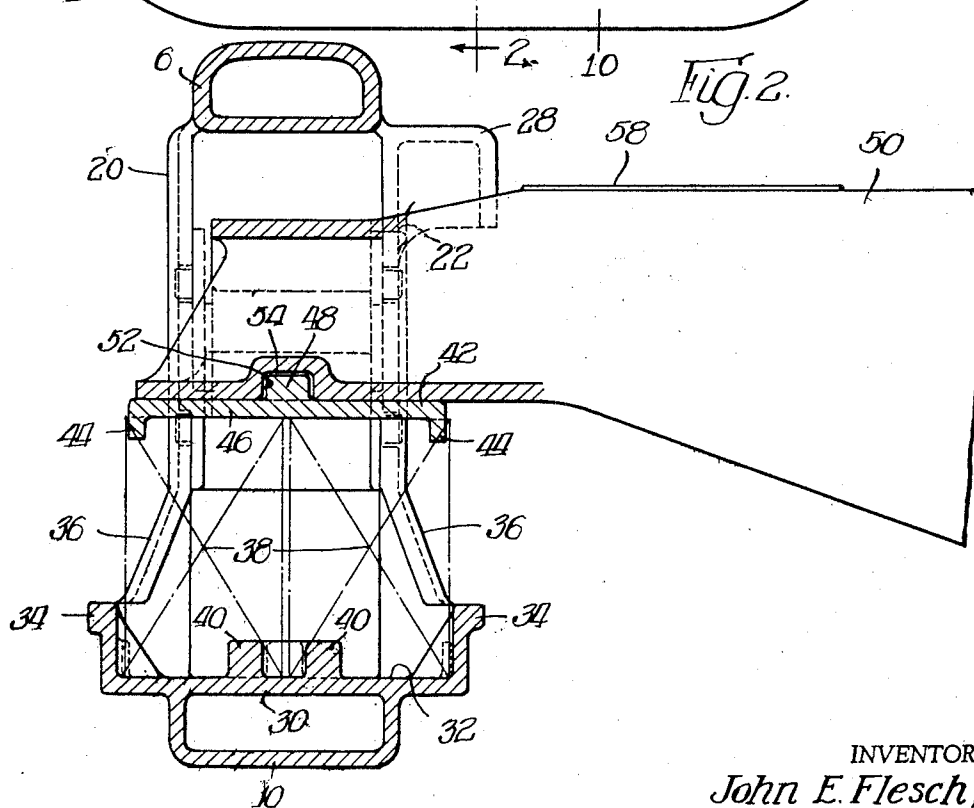
J. E. FLESCH

2,333,920

CAR TRUCK

Filed Nov. 14, 1940

2 Sheets-Sheet 1



INVENTOR.
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Nov. 9, 1943.

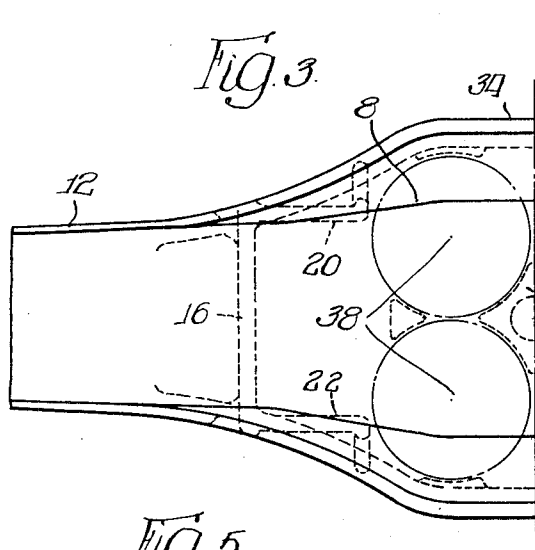
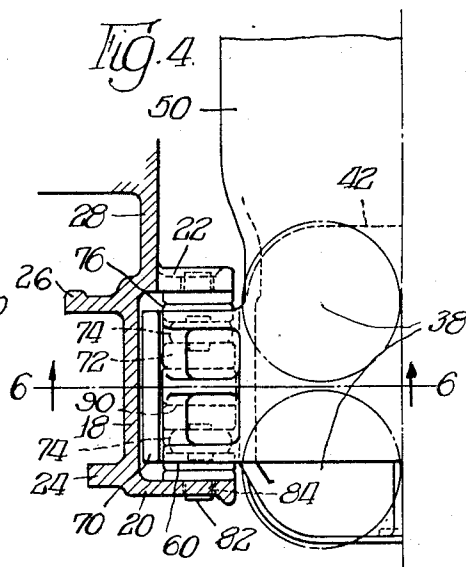
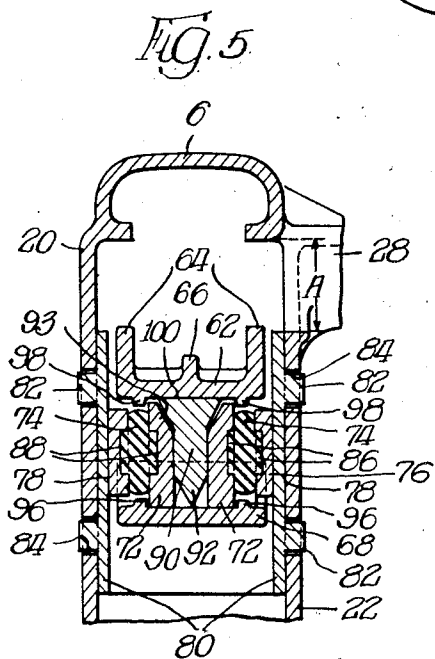
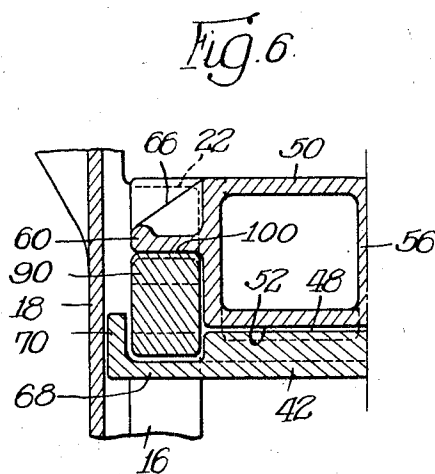
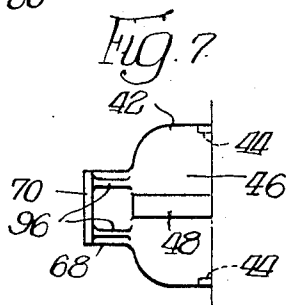
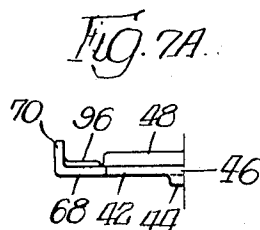
J. E. FLESCH

2,333,920

CAR TRUCK

Filed Nov. 14, 1940

2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,333,920

CAR TRUCK

John E. Flesch, Chicago, Ill., assignor to American Steel Foundries, Chicago, Ill., a corporation of New Jersey

Application November 14, 1940, Serial No. 365,580

28 Claims. (Cl. 105—197.2)

My invention relates to railway car trucks and more particularly to a spring plankless car truck of the quick wheel change type.

An object of my invention is to design a spring plankless quick wheel change truck wherein the bolster and side frames are maintained in squared relationship by cushioning means which afford a connection between each bolster end and the guide columns on each side frame.

My invention contemplates such a connection between the side frames and bolster wherein the cushioning means exerts uniform and constant pressure against the guide columns of the side frame.

A different object of my invention is to design a railway car truck wherein means are afforded in U-section columns to cushion relative lateral movement between the bolster and the side frames.

A further object of my invention is to devise a railway car truck whose side frames embody U-section columns within which laterally projecting shelves on an associated bolster may be accommodated, and wherein the inboard legs of the U-section columns terminate short of the compression member of the side frame to permit passage of the shelves during assembly and dismantling of the bolster and side frames, thus affording a quick wheel change.

A specific object of my invention is to devise a car truck wherein cushioning means are accommodated within each U-section column between laterally projecting members on the spring cap and the bolster, and wherein the cushioning means is designed to exert constant and uniform pressure against the legs of the U-section columns.

In the drawings, Figure 1 is a fragmentary side elevation of a railway car truck embodying my invention.

Figure 2 is a fragmentary sectional view of the car truck shown in Figure 1, the section being taken substantially in the vertical transverse plane bisecting the car truck as indicated by the line 2—2 of Figure 1.

Figure 3 is a fragmentary bottom view of the car truck shown in Figure 1.

Figure 4 is a fragmentary sectional view of the structure shown in Figure 1, the section being taken substantially in the horizontal transverse plane indicated by the line 4—4 of Figure 1.

Figure 5 is a fragmentary sectional view taken substantially in a vertical transverse plane passing through my novel cushioning device as indicated by the line 5—5 of Figure 1.

Figure 6 is a fragmentary sectional view taken substantially in the vertical longitudinal plane indicated by the line 6—6 of Figure 4.

Figure 7 is a half top plan view of a spring cap used in the car truck shown in Figure 1, the other half of said spring cap not being shown because it is similarly arranged. Figure 7A is a half side elevation of the spring cap shown in Figure 7, the other half of said spring cap not being shown because it is similarly arranged.

It will be understood by those skilled in the art that the car truck generally indicated at 2 is supported by spaced wheel and axle assemblies (not shown) through journal means (not shown) adjacent to opposite ends of each side frame 4 in usual manner. Each side frame 4 includes a top compression member 6 and a bottom tension member 8 having a central horizontal portion 10 and diagonal end portions 12, 12 which merge with end portions of the compression member 6 at said journal means. A bolster opening 14 is defined by the top and bottom members 6 and 8 and the spaced struts or columns 16, 16 extending between said members. Each strut 16 may be of U-section (Figure 4) for a major portion of its length and comprises a vertical web 18 with inwardly extending outboard and inboard legs 20 and 22. The merge of the upper end of the web 18 and the outboard leg 20 with the top compression member 6 may be reinforced by outboard and inboard ribs 24 and 26. Adjacent to the juncture of each column 16 and the top member 6 may be formed a brake hanger bracket 28 of any suitable structure. The top wall 30 of the horizontal central portion 10 of the tension member 8 may be widened to afford a spring seat 32. Upstanding vertical walls 34, 34 may be formed along opposite edges of the top wall 30, and the outboard and inboard legs 20 and 22 respectively may be flared outwardly as at 36, 36 to merge with said walls 34, 34. A spring pocket is thus afforded for the bolster supporting springs diagrammatically indicated at 38, 38 to prevent their possible accidental loss, and positioning means for said springs may be afforded by lugs 40, 40 projecting upwardly from the spring seat 32.

Seated on top of the spring means 38, 38 is a spring cap 42 having outboard and inboard lugs 44, 44 serving as retaining means for the upper portions of said springs. The spring cap 42 is shown in detail in Figure 7 and comprises a flat plate 46 having an upwardly projecting rib 48 extending longitudinally of the side frame. An end of the bolster 50 is received within the bolster

opening 14 and is seated on the spring cap 42, the bottom wall of said bolster being afforded a transverse channel 52 which accommodates as at 54 the rib 48 to interlock the bolster with the spring cap.

The bolster 50 may be of generally box section with a central vertical reinforcing rib 56 and affords a seat at 58 for a side bearing (not shown). At opposite sides of the bolster end and accommodated between the legs 20 and 22 of each column 16 may be formed laterally projecting shelf-like members 60, 60, each comprising a bottom wall 62, inboard and outboard walls 64, 64 and an intermediate diagonal reinforcing rib 66 extending between the bottom wall 62 and the adjacent side wall of the bolster. The inboard leg 22 is terminated short of the compression member a distance A which is slightly greater than the vertical depth of the projecting members 60, 60 to permit passage of the members 60, 60 in assembly and dismantling of the bolster and side frames.

The spring cap 42 is afforded at opposite sides thereof laterally projecting shelves 68, 68 with upstanding transverse vertical flanges 70, 70 along their outer edges accommodated within the U-section columns 16, 16.

Extending between each shelf 68 and each laterally projecting member 60 may be a cushioning device comprising spaced parallel blocks 72, 72 (Figure 5), seated on the shelf 68. Generally oval-shaped pads 74, 74 of any suitable resilient material such as rubber composition are compressed between the blocks 72, 72 and friction shoes 76, 76. The shoes 76, 76 frictionally engage as at 78, 78 the wear plates 80, 80 which are interlocked with the inboard and outboard legs 20 and 22 by means of spaced lugs 82, 82 projecting through complementary spaced openings 84, 84 in said legs. Each resilient pad 74 is positioned between a shoe 76 and a block 72 by studs 86, 86 formed on opposite faces of said resilient pad and received within complementary recesses on the adjacent shoe 76 and block 72 as at 88, 88. The resilient pads 74, 74 may be placed and maintained under compression by a member 90 interposed between the blocks 72, 72. The member 90 may be afforded a tapered end 92 which with the diagonally arranged upper portions 93, 93 of the blocks 72, 72 facilitates the insertion of the member 90 therebetween. On each shelf 68 spaced parallel ribs 96, 96 afford retaining means for the lower ends of blocks 72, 72 and likewise on the bottom surface of wall 62 of each laterally projecting member 60 on the bolster spaced parallel ribs 98, 98 afford retaining means for the upper portions of the blocks 72, 72. It is apparent that the vertical upstanding flanges 70, 70 on the shelves 68, 68 serve to retain said cushioning devices against movement longitudinally of the side frame.

It will be understood that the thickness of member 90 and the size of the resilient pads 74, 74 may be varied to regulate the amount of compression in the resilient pads.

The assembly of my novel device is simple. The parts may be assembled on each shelf 68 on the spring cap with the tapered end of member 90 seated on the diagonally arranged end portions of the blocks 72, 72. The bolster end is inserted into the bolster opening and each wall 62 of the laterally projecting members 60 is afforded abutment as at 100 with the top of the wedge member 90. As the bolster is lowered the member 90 is forced between the blocks 72, 72, the resilient pads

are compressed, and the friction shoes are urged against the wear plates on the legs of each column 16.

It is apparent that upon relative vertical movement of the bolster and side frame the friction shoes slidably engage the wear plates on the legs of the columns and exert a uniform pressure thereagainst because the compression of the resilient members remains constant upon such vertical movement. The frictional absorption thus developed affords a snubbing action which prevents synchronous oscillations of the bolster spring group and thus reduces to a minimum lading damage.

Out-of-square movement of the bolster with relation to the side frames is resisted by further compression of said resilient members and such further compression acts to restore the bolster to its squared relationship with the side frame.

It is also readily apparent that relative lateral movement of the bolster and side frame is cushioned by the resilient pads.

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 side frame including a compression member, a tension member and spaced U-section columns defining a bolster opening, spring means on said tension member in said opening, a spring cap for said spring means having lateral portions accommodated within said columns, a bolster seated on said cap and having lateral means extending within said columns, and friction means confined between said lateral portions and said lateral means and including friction shoes engaging legs of said columns, blocks seated on said lateral portions, resilient pads between said blocks and said shoes, and a member receivable between said blocks for placing said pads under compression.

2. In a railway car truck, a side frame having a top member, a bottom member and spaced U-section columns defining a bolster opening, spring means on said bottom member in said opening, a spring cap having portions received between legs of said U-section columns, a bolster end supported on said cap and having lateral members spaced from said portions, and cushioning means extending between said portions and said lateral members and including friction shoes engaging said legs, spaced blocks seated on said spring cap, resilient pads between said shoes and said blocks, and a member insertable between said blocks for compressing said pads and having abutment with said lateral members.

3. In a railway car truck, a side frame having a top member, a bottom member and spaced U-section columns defining a bolster opening, spring means on said bottom member in said opening, a spring cap having portions received between legs of said U-section columns, a bolster end supported on said cap and having lateral members spaced from said portions in said columns, and cushioning means extending between said portions and said lateral members and including friction shoes engaging said legs, spaced blocks seated on said spring cap, resilient pads between said shoes and said blocks, and a member insertable between said blocks for compressing said pads.

4. In a railway car truck, a side frame having a top member, a bottom member and spaced U-section columns defining a bolster opening, spring means on said bottom member in said opening, a spring cap having portions received between legs of said U-section columns, a bolster end supported on said cap and having lateral members spaced from said portions in said columns, and friction means between said portions and said lateral members and including friction shoes engaging said legs, means extending between said portions and said lateral members, and resilient members between said last-mentioned means and said shoes retained under substantially uniform compression.

5. In a railway car truck, a side frame including a compression member, a tension member and spaced U-section columns defining a bolster opening, spring means on said tension member in said opening, a spring cap for said spring means having lateral portions accommodated within said columns, a bolster seated on said cap and having lateral means extending within said columns, and friction means confined between said lateral portions and said lateral means and including friction shoes engaging legs of said columns, blocks seated on said lateral portions, and resilient pads compressed between said shoes and said blocks.

6. In a railway car truck, a side frame including a compression member, a tension member and spaced U-section columns defining a bolster opening, spring means on said tension member in said opening, a spring cap for said spring means having lateral portions accommodated within said columns, a bolster seated on said cap and having lateral means extending within said columns, and friction means confined between said lateral portions and said lateral means and including friction shoes engaging legs of said columns, blocks seated on said lateral portions, resilient pads interposed between said blocks and said shoes, and a member between said blocks for compressing said pads.

7. In a railway car truck, a side frame comprising a bolster opening, spring means on said frame in said opening, spaced friction surfaces on said frame, a friction device comprising friction shoes in engagement with respective surfaces, rigid means between said shoes and resilient means compressed between said rigid means and said shoes, a member supported on said spring means and affording support for said device, and a bolster supported on said member and having means between said surfaces and seated on said device, said member bearing against the bottom of said rigid means.

8. In a railway car truck, a side frame comprising spaced columns partially defining a bolster opening, a spring group on said frame in said opening and comprising a spring cap, spaced friction surfaces on said frame within at least one of said columns, a friction device comprising spaced friction means in engagement with respective surfaces, rigid means, and resilient means compressed between said rigid means and each friction means and acting in a substantially horizontal plane to urge said friction means into said engagement, a bolster supported on said group, and means on said bolster and said cap extending between said spaced surfaces respectively overlying and underlying said device for actuation thereof.

9. In a truck, a side frame having a tension member, a compression member, and spaced U-

section columns affording with said members a bolster opening, spring means on said tension member, a spring cap having lateral portions extending into said columns, a bolster end received within said opening and seated on said spring cap, lateral means on said bolster end accommodated within said U-section columns, friction means extending between said lateral means and said lateral portions and having frictional engagement with legs of said columns, and resilient means under compression between the friction means associated with each column.

10. In a truck, a side frame having a tension member, a compression member, and spaced U-section columns defining a bolster opening, spring means on said tension member in said opening, a bolster supported on said spring means and having lateral members accommodated in said U-section columns, and means supported within said columns by said spring means and including friction shoes engaging said columns, blocks intermediate said shoes, and resilient means compressed by and between said shoes and said blocks.

11. In a truck, a side frame having a tension member, a compression member, and spaced U-section columns affording with said members a bolster opening, spring means on said tension member, a spring cap on said spring means, a bolster end received within said opening and seated on said spring cap, lateral means on said bolster end accommodated within said U-section columns, friction shoes positioned between said cap and said lateral means and having sliding engagement with respective legs of said columns and resilient means spaced from said lateral means under substantially uniform pressure, between said shoes.

12. In a truck, a side frame having a tension member, a compression member, and spaced U-section columns defining a bolster opening, spring means on said tension member in said opening, a bolster supported on said spring means and having members accommodated in said U-section columns, rigid means supported within said columns in engagement therewith and resilient means for cushioning relative lateral movement of said bolster and said side frame, said resilient means being spaced from said members and positioned between said rigid means.

13. In a railway car truck, a side frame comprising a bolster opening, a spring group on said frame in said opening and comprising a spring cap, spaced friction surfaces on said frame, a friction device comprising spaced friction means in engagement with respective surfaces, and resilient means compressed between said friction means, a bolster supported on said group, and means on said bolster and said cap extending between said spaced surfaces and respectively overlying and underlying said device for actuation thereof.

14. In a railway car truck, a side frame comprising top and bottom members and spaced columns defining therewith a bolster opening, each column having spaced legs, spring means on said bottom member, a bolster end supported on said means and comprising lateral shelves, rigid means engaged with each shelf, and friction means resiliently supported from said rigid means and exerting a constant pressure against the legs of said columns, said friction means being supported relative to said frame by said spring means.

15. In a truck, a side frame having a tension

member, a compression member, and spaced U-section columns defining a bolster opening, spring means on said tension member in said opening, a bolster supported on said spring means and having lateral members accommodated in said U-section columns, and means supported within said columns by said spring means and including friction shoes engaging respective legs of each column, and resilient means under compression between the shoes associated with each column.

16. In a truck, a side frame having a tension member, a compression member, and spaced U-section columns defining a bolster opening, spring means on said tension member in said opening, a bolster supported on said spring means and having lateral members accommodated in said U-section columns, and means supported within said columns by said spring means and including friction shoes engaging said columns, rigid means intermediate said shoes, and resilient means compressed by and between said shoes and said rigid means.

17. In a railway car truck, a side frame having top and bottom members and spaced U-section columns defining a bolster opening, spring means on said bottom member in said opening, a bolster supported on said spring means and having lateral members accommodated in said U-section columns, and means engaged with said members, supported within said columns, and including friction shoes engaging respective legs of said columns, and resilient means under compression between the shoes associated with each column.

18. In a railway car truck, a side frame having top and bottom members and spaced U-section columns defining a bolster opening, spring means on said tension member in said opening, a bolster supported on said spring means and having lateral members accommodated in said U-section columns, and means supported within each column and including friction means engaging respective legs thereof, rigid means intermediate said friction means, and resilient pads compressed by and between said friction means and said rigid means, said rigid means being engaged with the associated lateral member.

19. In a truck, a side frame having a tension member, a compression member, and spaced columns defining a bolster opening, each of said columns comprising inboard and outboard legs, spring means on said tension member in said opening, a bolster supported thereon and having lateral means accommodated between the legs of each of said columns, and means supported between the legs of each column by said spring means and including friction means engaging respective legs, and resilient means under compression between said friction means.

20. In a railway car truck of quick wheel change type, a side frame having a tension member, a compression member, and spaced U-section columns affording with said members a bolster opening, each of said columns comprising inboard and outboard legs, spring means on said tension member, a spring cap on said spring means, a bolster end received within said opening and seated on said spring cap, lateral means on said bolster and accommodated within said U-section columns, and friction means confined within said columns between portions of said spring cap and lateral means and having frictional engagement with the legs of said U-section columns, the inboard leg of each column being spaced from said compression member

whereby said lateral means may clear said frame during removal of said bolster end from said bolster opening during a quick wheel change.

21. In a quick wheel change truck, a side frame having a tension member, a compression member and spaced U-section columns affording with said members a bolster opening, spring means on said tension member, a two-part bolster structure including a spring cap on said spring means and a bolster end received within said opening and seated on said spring cap, lateral means on said bolster end accommodated within said U-section columns, and friction means supported by said spring cap within said columns and engaged by said lateral means, said friction means reacting against legs of said columns for maintaining one part of said bolster structure and side frame in squared relation, the inboard leg of each column being spaced from said compression member a distance greater than the depth of the associated lateral means whereby said bolster end may be raised in said bolster opening and removed therefrom during a quick wheel change.

22. In a railway car truck, a side frame comprising top and bottom members and spaced columns defining therewith a bolster opening, each column having spaced legs, spring means on said bottom member, a bolster end supported on said means and comprising lateral shelves projecting between the legs of said columns, rigid means engaged with each shelf, and friction means resiliently supported from said rigid means and exerting a constant pressure against the legs of said columns, the inboard legs of said columns being relieved to afford clearance for said shelves as the bolster is elevated in said bolster opening and removed therefrom during a quick wheel change, said friction means being supported relative to said frame by said spring means.

23. In a truck, a side frame having a tension member, a compression member and spaced columns defining a bolster opening, each of said columns comprising inboard and outboard legs, spring means on said tension member in said opening, a bolster supported thereon and having lateral means accommodated between the legs of each of said columns, and means supported between the legs of each column by said spring means and including friction means engaging respective legs, and resilient means under compression between said friction means, the inboard legs of said columns being relieved to afford clearance for said lateral means as said bolster is elevated in said bolster opening and removed therefrom during a quick wheel change, said lateral means overlying said friction means and being operatively associated therewith for actuation thereof.

24. In a railway car truck, a side frame comprising a bolster opening, a spring group on said frame in said opening and comprising a spring cap, spaced inboard and outboard friction surfaces on said frame, a friction device comprising spaced friction means in engagement with respective surfaces, and resilient means under compression between said friction means, a bolster supported on said group, and means on said bolster and said cap projecting between said spaced surfaces and respectively overlying and underlying said device for actuation thereof.

25. In a railway car truck, a side frame comprising a bolster opening, a spring group on said frame in said opening, spaced friction surfaces

on said frame, a friction device comprising spaced friction means in engagement with respective surfaces, and resilient means under compression between said friction means, a bolster supported on said group, and spaced means associated with said bolster, extending between said surfaces, and respectively underlying and overlying said device for actuation thereof.

26. In a railway car truck, a side frame comprising spaced columns partly defining a bolster opening, inboard and outboard legs on each column, a spring group on said frame in said opening, a friction device comprising spaced friction means in engagement with respective legs, and resilient means under compression between said friction means, a bolster supported on said group, and spaced means associated with said bolster, projecting between said legs, and respectively underlying and overlying said friction device for actuation thereof.

27. In a railway car truck, a side frame having a tension member, a compression member, and spaced U-section columns affording with said members a bolster opening, spring means

on said tension member, a two-part bolster structure including a spring cap on said spring means and a bolster end received within said opening and seated on said spring cap, lateral means on said bolster end accommodated within said U-section columns, and friction means supported by said spring cap within said columns and engaged by said lateral means, said friction means comprising resilient means formed and arranged to resist under compression out of square movements of one part of said bolster structure.

28. In a railway car truck, a side frame having spaced columns partly defining a bolster opening, each column having inboard and outboard legs, resilient means on said frame in said opening, a spring cap on said means, a bolster supported on said cap, friction means in each column reacting against the legs thereof, and actuating means for said friction means comprising lateral means on said bolster and cap overlying and underlying said friction means and interlocked therewith, said friction means comprising resilient means adapted to resist in compression out of square movements of said bolster.

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