

Nov. 2, 1954

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2,693,152

RAILWAY TRUCK DAMPING DEVICE

Filed Jan. 19, 1946

3 Sheets-Sheet 1

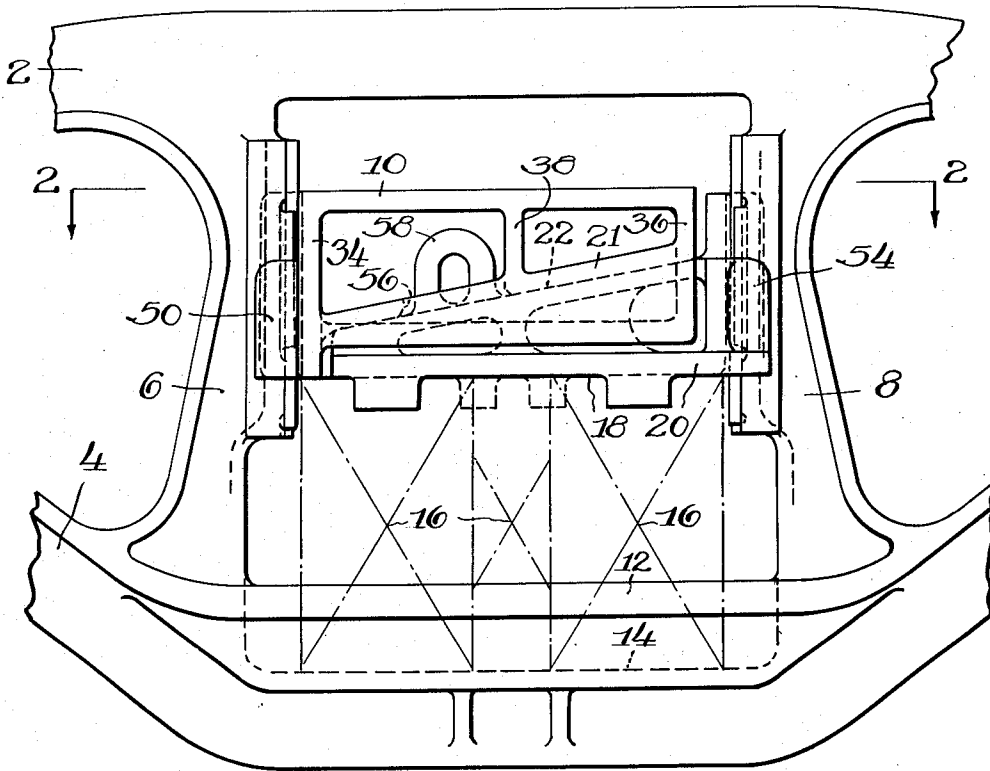


Fig. 1

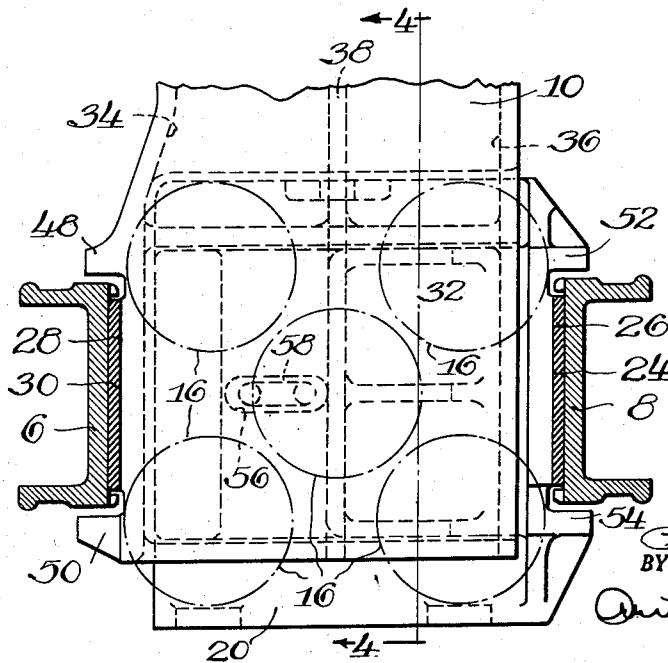


Fig. 2

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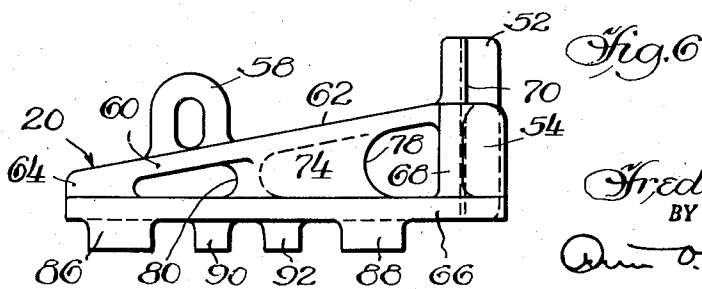
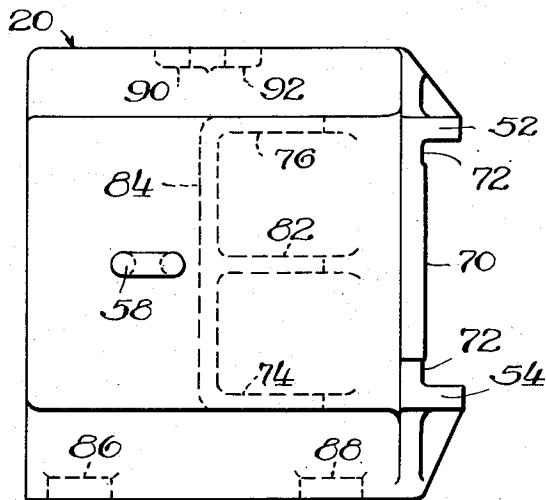
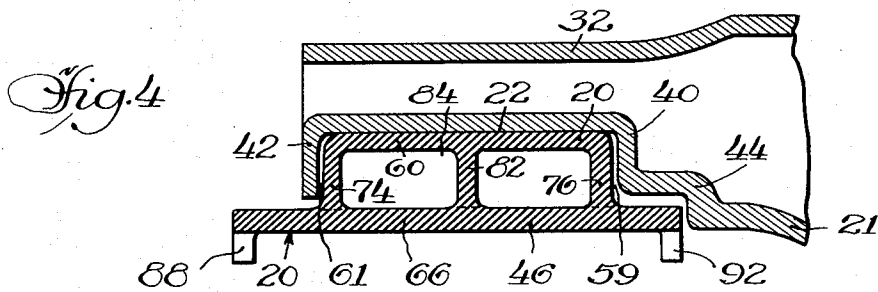
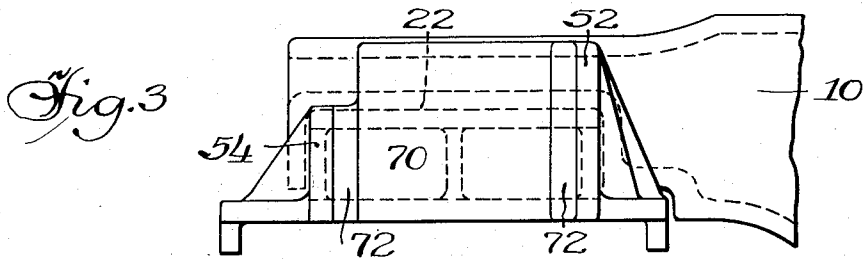
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RAILWAY TRUCK DAMPING DEVICE

Filed Jan. 19, 1946

3 Sheets-Sheet 2



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3 Sheets-Sheet 3

Fig. 7

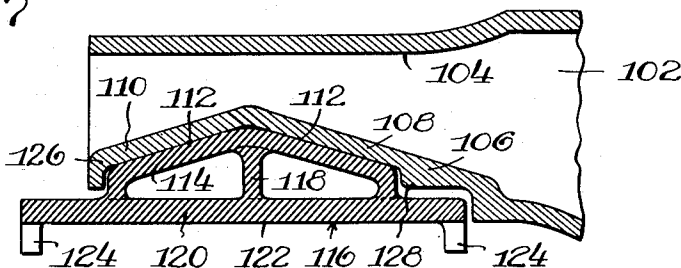


Fig. 8

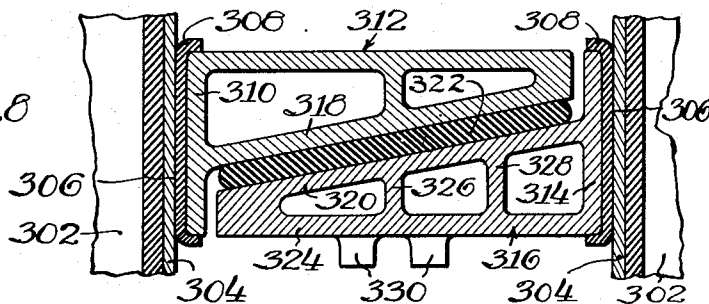


Fig. 9

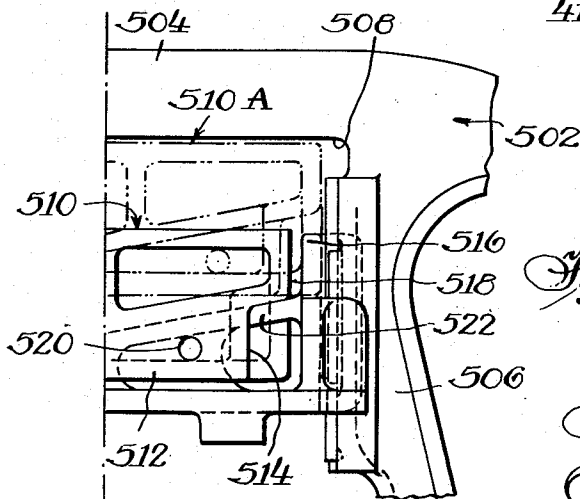
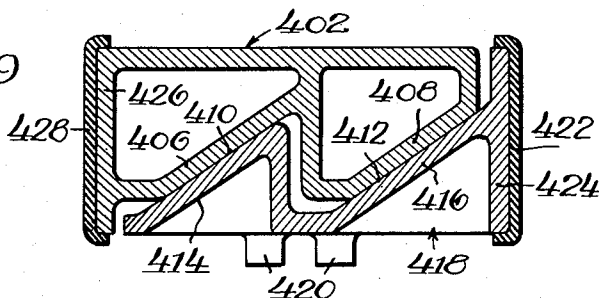


Fig. 10

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2,693,152

RAILWAY TRUCK DAMPING DEVICE

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Application January 19, 1946, Serial No. 642,278

12 Claims. (Cl. 105—197)

My invention relates to a railway car truck of snubbed type wherein means of interengagement between the bolster end and the supporting side frame may serve as damping means for the bolster-supporting springs.

My invention is illustrated as applied to a four-wheel freight car truck utilizing a well-known truss type side frame with spaced columns between which the bolster end may be received and spring-supported as well as guided.

The general object of my invention is to devise such a railway car truck wherein a special spring cap member may support each end of the bolster and have such engagement therewith as to effect a snubbing engagement between the spring cap member and one side frame column and between the bolster end and the opposite side frame column.

A more specific object of my invention is to devise a railway car truck wherein spaced side frames may support the opposite ends of a load-carrying bolster and the ends of the bolster may be supported on a wedge-shaped spring cap member or on a spring cap member comprising one or more wedges along the bolster-engaging surface. My invention comprehends an arrangement wherein such wedging surfaces may slope longitudinally of the truck and other wedge engagement between the spring cap member and the bolster may be afforded transversely of the truck to add to lateral stability.

My invention also contemplates such an arrangement as that described wherein the spring cap wedge member or the wedge face on the bolster may have vulcanized thereto or otherwise support a resilient pad for abutment with the opposite wedge face in order to facilitate relative longitudinal movement of the two members.

As illustrated, my novel invention comprehends such an application as will permit removal of the bolster end from the side frame in order to accommodate quick wheel change.

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 through the structure shown in Figure 1, the section being taken approximately in the transverse horizontal plane indicated by the line 2—2 of Figure 1, with the bolster end shown in plan;

Figure 3 is a side elevation of the bolster end and spring cap in assembled relation;

Figure 4 is a sectional view through the bolster end and spring cap taken in the vertical transverse plane approximately indicated by the line 4—4 of Figure 2;

Figure 5 is a top plan view of my novel spring cap and interlocking member and Figure 6 is a side elevation thereof taken from the bottom as seen in Figure 5;

Figure 7 is a sectional view comparable to Figure 4, showing an alternate therefor;

Figures 8 and 9 are sectional views approximately in the vertical longitudinal plane of the side frame, illustrating modifications of the arrangement shown in Figure 1; and

Figure 10 is a fragmentary view corresponding in general to the similar portion of Figure 1, illustrating a modification thereof to permit quick wheel change.

In the modification illustrated in Figures 1 to 6, I have shown my novel arrangement as applied to a four-wheel freight car truck including a side frame of well-known truss type with a compression member 2 and tension member 4 with the usual spaced integral columns 6 and

2

8 having guiding engagement with the end of the bolster, generally designated 10. The central portion of the tension member is of well known box section, flanged at the sides as indicated at 12 to form the depressed spring seat 14 on which may be supported coil springs diagrammatically indicated at 16, 16 on which may seat as at 18 my novel form of spring cap and interlocking member, generally designated 20.

The combination interlocking member and spring cap 20 may be a box section structure as seen in Figures 4, 5 and 6, as hereinafter described in detail, of wedgelike form as viewed at the bolster end and the top of the member 20 may have an inclined surface upon which a complementary face on the bottom wall 21 of the bolster may seat as at 22 and the engagement of the bolster and spring cap along such an inclined surface will tend to urge the spring cap into frictional engagement as at 24 (Figure 2) with the wear plate 26 on the column 8 and at the same time to urge the bolster into frictional engagement as at 28 with the wear plate 30 on the opposite column 6. The angle of inclination along which the surfaces meet at 22 may be modified to suit varying surface conditions as may be desired.

The end of the bolster 10 is of box section with the top wall 32, the lateral wall 34 extending the full depth of the bolster to the extremity thereof, the lateral wall 36 having a restricted depth for the width of the member 20, the longitudinal rib 38, the transverse wall or shoulder 40 (Figure 4), and the depending flange 42 at the extremity of the bolster, said flange 42 and intermediate transverse wall 40 affording confining means for the spring cap 20 positioned therebetween. The wall 40 may be offset as at 44, therebeyond merging with the bottom wall 21, thus accommodating the extending portion of the bottom wall 46 of the member 20. Inboard and outboard guide lugs 48 and 50 on the bolster side wall 34 may have cooperative guiding engagement with the column 6 and inboard and outboard guide lugs 52 and 54 on the member 20 may have guiding engagement with the opposite column 8. Additional means of tying together the bolster end and the member 20 may consist of a slot 56 in the bottom wall 21 on the end portion of the bolster accommodating the loop 58 integrally formed with the member 20 and suitable for receiving retaining means as might permit such relative motion between the member 20 and the bolster end as will permit them to seat against the respective columns for frictional engagement therewith. Certain clearances are provided between the lateral bolster wall 40 and the depending flange 42 at opposite edges of the member 20 in order to accommodate some slight out-of-squareness therebetween and permit relative freedom of motion under varying conditions, said clearance being well seen at 59, 61 in the sectional view of Figure 4.

The detail of the member 20 is well shown in Figures 3 to 6, said member being illustrated as a casting having the sloping top wall 60 having an upper friction face 62 affording a seat for the bolster. Upstanding from the wall 60 may be the before-mentioned bolster tie loop 58 and said diagonal wall at the lower edge may merge as at 64 with the bottom wall 66, said walls 60 and 66 being joined at the opposite side of the member 20 by the vertical wall 68. On the vertical wall 68 may be formed the before-mentioned guide lugs or stops 52 and 54 and between them said wall may have a friction face 70 relieved at opposite sides thereof as at 72, 72 to accommodate wear along the surface 70. This member 20 may also have the spaced inboard and outboard walls 74 and 76 cored away at each end as seen at 78 and 80 (Figure 6), the intermediate wall 82 as well as the rib 84 merging with said walls 74, 76 and 82 as well as with the top and bottom walls 62 and 66. Depending from the bottom wall 66 at one edge thereof may be the widely spaced spring-positioning means 86 and 88 and at the opposite edge thereof the closely adjacent spring-positioning means 90 and 92.

In Figure 7 I have illustrated a sectional view comparable to that of Figure 4 in which the seating of the bolster upon the spring cap is of somewhat different character. In this modification the bolster end portion, generally designated 102, has a top wall 104, a bottom

wall 106, said bottom wall 106 having diverging inboard and outboard portions 108 and 110 forming a V section, said V section being inclined much as in the previous modification and being seated as at 112, 112 upon the complementary top wall 114 of the spring cap and interlocking member, generally designated 116, said member having an intermediate rib 118 extending along the ridge or apex of the top wall 114 and merging at its opposite edge with the horizontal bottom wall 120, the lower face of which may afford a seat as at 122 for supporting springs. Depending from the bottom wall 122 may be spring-positioning means 124, 124. The bottom bolster wall 108 may have a depending flange 126 at the extremity thereof and a shoulder 128, said flange and shoulder conveniently accommodating therebetween the member 116. In this arrangement the bolster is permitted relative movement longitudinally of the truck along the inclined diverging planes at 112, 112, frictional movement therealong permitting one lateral wall of the bolster to engage a friction face on one side frame column and the opposite column to be engaged by a lateral wall on the member 120 in manner similar to the previous modification.

In the arrangement illustrated in Figure 8, the structure is generally similar to that of Figure 1 except that a resilient pad may be interposed between the spring cap member and the bolster end. In this modification are shown the spaced side frame columns 302, 302 having wear plates 304, 304 in frictional engagement as at 306, 306 with wear plates 308, 308 mounted respectively on the lateral wall 310 of the bolster, generally designated 312, and on the lateral wall 314 of the spring cap member, generally designated 316. The bolster end may have the inclined bottom wall 318, and the interlocking member 316 may have the complementarily inclined top wall 320 between which may be received the resilient pad 322 conveniently permitting such relative motion therebetween as may be desirable in order to accommodate the development of friction at the side frame columns. The structure illustrated contemplates the pad 322 being fixed to the member 316 as by vulcanizing or other convenient securing means. The wedge-shaped member 316 is shown with the bottom wall 324 and the reinforcing ribs 326 and 328 as well as depending spring-positioning means 330, 330.

The modification illustrated in Figure 9 is substantially self-explanatory in view of those previously described. In this arrangement the bolster end, generally designated 402, has the spaced diagonal walls 406 and 408 lying in parallel planes and designed to have frictional engagement as at 410 and 412, respectively, with the diagonal walls 414 and 416 arranged at a complementary angle on the spring cap and interlocking member, generally designated 418. The interlocking member 418 may have the spring-positioning means 420, 420 as well as the wear plate 422 on the vertical wall 424 affording a frictional surface for engagement with an adjacent side frame column while the vertical bolster wall 426 may carry a wear plate 428 for similar frictional engagement with an opposite column. The modification illustrated in Figure 9 contemplates also a structure wherein one of the diagonal walls 414 or 416 may have V-shaped engagement with the complementary superposed bolster wall as illustrated in the previously described modification of Figure 7.

It will be understood that a rubber pad may be interposed between the bolster and the spring cap or interlocking member in any modification I have illustrated although in the modifications of Figures 7 and 9 a plurality of such pads would be required. Such pads not only would conveniently afford relative movement between the bolster and the supporting interlocking member, but would also conveniently take up any tolerances that might be desirable in practical manufacturing, particularly if the parts were to be formed as unmachined castings.

In the modification of Figure 10 is illustrated the manner in which my novel device may be adapted for quick wheel change. The structure illustrated in Figure 10 is substantially identical with that shown in Figure 1 except that a small portion of the flange at the extremity of the bolster is cored away in order to afford clearance from the spring cap and interlocking member as the bolster is elevated and moved laterally in the bolster opening to clear the outboard column guide lug at the side of the bolster. In this figure the side frame, generally designated 502, has the compression member 504, the column 506 and the bolster opening 508 within which

may be received the end of the bolster, generally designated 510. The form of the bolster structure 510 is the same as that illustrated in Figure 1 except that the depending flange 512 at the extremity of the bolster is cored away at the lower right corner thereof as at 514 in order to afford clearance from the upper corner 516 of the spring cap interlocking member, generally designated 518. The interlocking member 518 is recessed within the bottom of the bolster in the manner already described and may have frictional engagement with the adjacent side frame column as already described. The position of the bolster 510 when elevated for quick wheel change is shown in phantom lines at 510A wherein it will be noticed that the notch in the lower right corner of the bolster end has adequate clearance from the upper right corner of the spring cap member 518.

In this modification an additional form of interlock between the bolster and the spring cap and interlocking member is shown consisting of a cored opening 520 in the wall 512 and an aligned opening in the spaced wall of the bolster at the other side of the spring cap member 518, said openings being suitable for accommodation of a pin which may underlie the diagonally arranged top wall 522 of the member 518.

It is to be understood that I 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.

I claim:

1. In a railway car truck, a side frame having spaced columns, a horizontal element supporting springs intermediate said columns, a member seated on said springs and having a diagonal surface supporting a bolster along a complementary face thereof, said surface and face sloping upwardly toward one column and downwardly toward the other column, said diagonal support effecting a horizontal force component operative to urge said member and said bolster into frictional engagement with respective columns, and resilient means interposed between said bolster and said member intermediate said face and surface.

2. In a railway car truck, a side frame having spaced columns, a horizontal element supporting springs intermediate said columns, a member seated on said springs and having a diagonal face supporting a bolster along a complementary face thereof, said faces sloping upwardly toward one column and downwardly toward the other column, said diagonal support effecting a horizontal force component operative to urge said member and said bolster into frictional engagement with respective columns, and resilient means interposed between said bolster and said member.

3. In a railway car truck, a side frame comprising spaced columns, a bolster therebetween and comprising a top web, spaced side walls, an intermediate wall between said side walls, and diagonal bottom webs disposed between said intermediate wall and respective side walls and formed integral therewith and sloping upwardly toward one of said columns, said walls being formed integral with said top web, friction means on the side web adjacent the other column and in engagement therewith, a single shoe beneath the bolster bottom webs, said shoe extending substantially the full width of the bolster and engaging said one column and comprising diagonal walls disposed at opposite sides of said intermediate wall and in complementary engagement with respective diagonal bottom webs, and resilient means beneath said shoe including a plurality of springs adjacent respective columns compressed between said shoe and said frame.

4. In a railway car truck, a side frame comprising spaced guide surfaces, a bolster extending between said surfaces, said bolster comprising a pair of substantially diagonal walls on the bottom side thereof disposed adjacent respective surfaces and presenting on their bottom sides substantially parallel wedge faces sloping upwardly toward one of said surfaces longitudinally of said frame, a shoe extending substantially the full width of the bolster and disposed therebeneath and engaging said one surface, said bolster engaging the other surface, said shoe having spaced wedge means in engagement with respective wedge faces, and supporting springs for said shoe and bolster disposed beneath said shoe and reacting between the shoe and said frame.

5. In a railway car truck, a side frame comprising

5

spaced columns, a bolster comprising substantially triangular portions adjacent respective columns, said portions presenting on the underside thereof, respectively, wedge surfaces sloping upwardly toward one of said columns, a shoe beneath said bolster having spaced substantially triangular portions in engagement with respective wedge surfaces, said shoe engaging said one column and said bolster engaging the other of said columns, and spring means including a plurality of springs supporting said bolster and shoe and reacting solely between said shoe and said frame.

6. A railway car truck comprising spaced columns, a bolster extending between said columns and formed on the bottom side thereof with substantially parallel wedge surfaces disposed at opposite sides of the longitudinal vertical plane of the bolster and sloping upwardly toward one of said columns, a single friction shoe disposed beneath the bolster and comprising wedge faces in complementary engagement with respective bolster wedge surfaces, said shoe engaging said one column and said bolster the other column, and a plurality of springs beneath said shoe in engagement therewith and said frame and affording sole support for said bolster through said shoe.

7. In a railway car truck, a side frame comprising spaced columns having mutually facing friction areas respectively, a bolster extending between said columns, a single shoe beneath said bolster engaging one of said friction areas, said bolster engaging the other of said friction areas, said shoe and bolster engaging each other along spaced diagonal surfaces disposed adjacent respective columns and sloping upwardly toward said one friction area, and spring means compressed on a vertical axis and reacting between said frame and said shoe for urging the bolster and shoe into engagement with each other and into engagement with the respective friction area, said spring means supporting said bolster.

8. In a railway car truck, a side frame comprising a pair of spaced columns having mutually facing substantially vertical friction surfaces, respectively, a bolster having an end disposed between said columns, said bolster end having a sloping bottom side extending substantially the full width thereof and extending diagonally upwardly toward one of said friction surfaces, and means for supporting said bolster and urging said bolster against the other of said friction surfaces including a shoe engaging said one friction surface and comprising a top side substantially coextensive with said bottom side of said bolster and sloping upwardly toward said one friction surface and engaging said bottom side, and a plurality of springs compressed on vertical axes and reacting between said shoe and said frame.

9. In a railway car truck, a side frame comprising spaced columns having mutually facing substantially vertical friction surfaces, respectively, a bolster having an end interposed between said columns and comprising a bottom side extending the full width of said end and sloping upwardly laterally of said bolster toward one of said columns friction surfaces, and means for supporting said bolster and urging the same into engagement with the other of said friction surfaces and including a shoe having a top surface substantially coextensive with the bottom side of said bolster end, said shoe engaging said one friction surface, cooperating wedge means between said bottom side of said bolster and said top side of said shoe substantially coextensive therewith, and a plurality of springs compressed on vertical axes between the shoe and said frame.

6

10. In a railway car truck, a side frame comprising spaced columns having mutually facing substantially vertical friction surfaces, respectively, a bolster having an end between said columns, a single friction shoe beneath said bolster end in engagement with one of said friction surfaces, said bolster end engaging the other of said friction surfaces, wedge means between said shoe and bolster end urging the same against respective friction surfaces, said wedge means and said shoe extending substantially the full width of said bolster end, and a spring group below said shoe including springs adjacent respective columns compressed on substantially vertical axes between the shoe and said frame.

11. In a railway car truck, a side frame comprising a spring seat and a pair of vertical columns spaced longitudinally of the truck and extending upwardly from the seat, a bolster having an end extending between the columns, a spring cap beneath the bolster in engagement at one end with one column and extending at the other end to a point adjacent to the other column, a plurality of vertical springs on the seat supporting said cap, and wedge means for urging the bolster longitudinally of the truck against the other column and the cap against said one column, said wedge means comprising cooperating substantially parallel wedge faces on the top of said cap and on the bottom of said bolster, said wedge faces being wider than said columns transversely of the frame and extending longitudinally of the truck across substantially the full bottom side of the bolster, the bottom side of said cap presenting a flat horizontal seat, the upper ends of all of said springs bearing against the seat and said seat extending inboardly and outboardly of the frame and at opposite sides of the longitudinal central vertical plane of the bolster.

12. In a truck, a side frame comprising a pair of spaced vertical columns and a spring seat interconnecting the lower ends of the columns, a bolster between said columns, a spring cap beneath the bolster, vertical coil springs on the seat supporting the cap, wedge means including cooperating wedge surfaces on the top and bottom of said cap and bolster respectively extending from adjacent one column to adjacent the other column, said wedge means urging said bolster into engagement with one column and the cap into engagement with the other column, said surfaces on the cap and bolster being substantially co-extensive and extending inboardly and outboardly of the side frame and inclined to the horizontal longitudinally of the truck, said cap providing a flat seat on the bottom thereof and all of said springs bearing at their upper ends against the seat, said springs including coils located adjacent each corner of said cap, said cap comprising top and bottom portions joined by spaced vertical webs disposed between the edges of said cap.

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