

May 17, 1938.

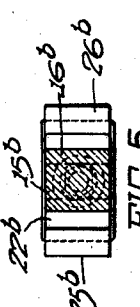
G. F. COUCH

2,118,006

RAILWAY TRUCK

Filed Jan. 14, 1935

4 Sheets-Sheet 1



May 17, 1938.

G. F. COUCH
RAILWAY TRUCK

2,118,006

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4 Sheets--Sheet 2

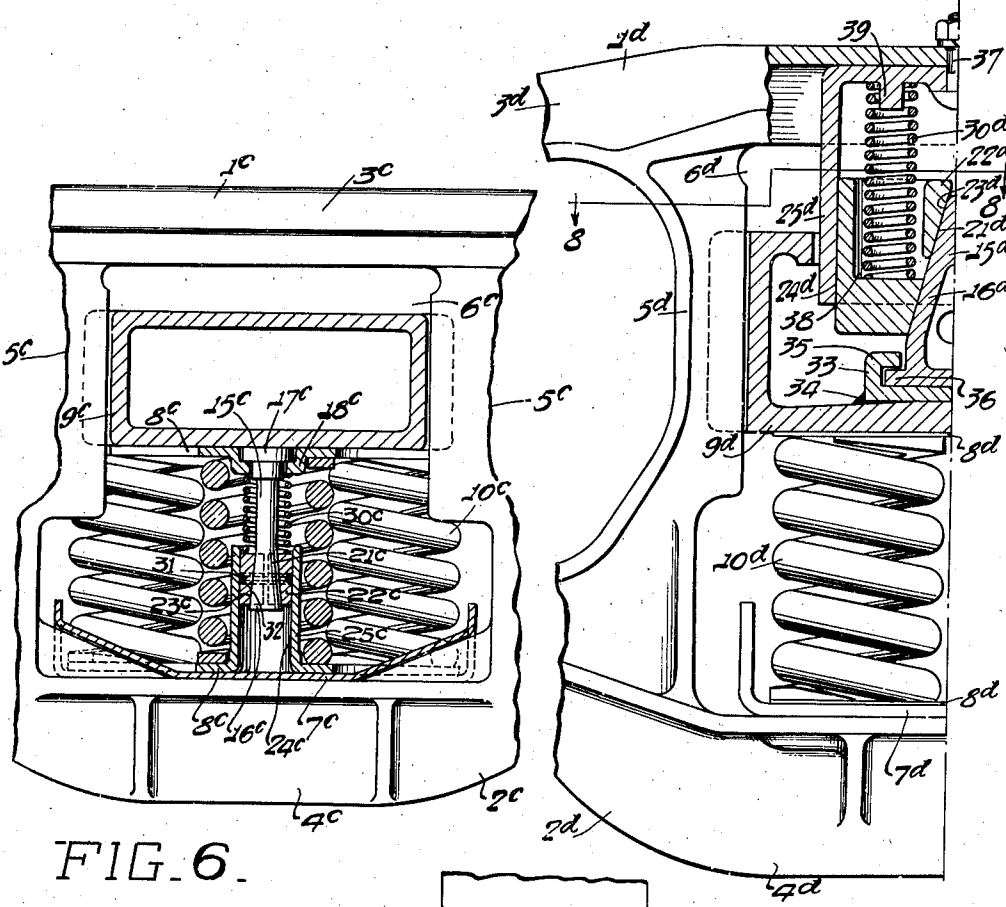


FIG. 6.

FIG. 7.

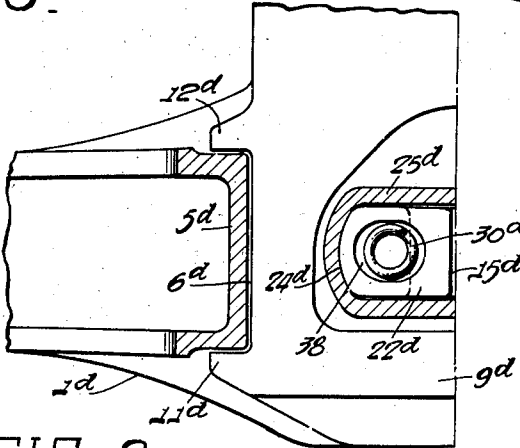


FIG. 8.

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2,118,006

RAILWAY TRUCK

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4 Sheets-Sheet 3

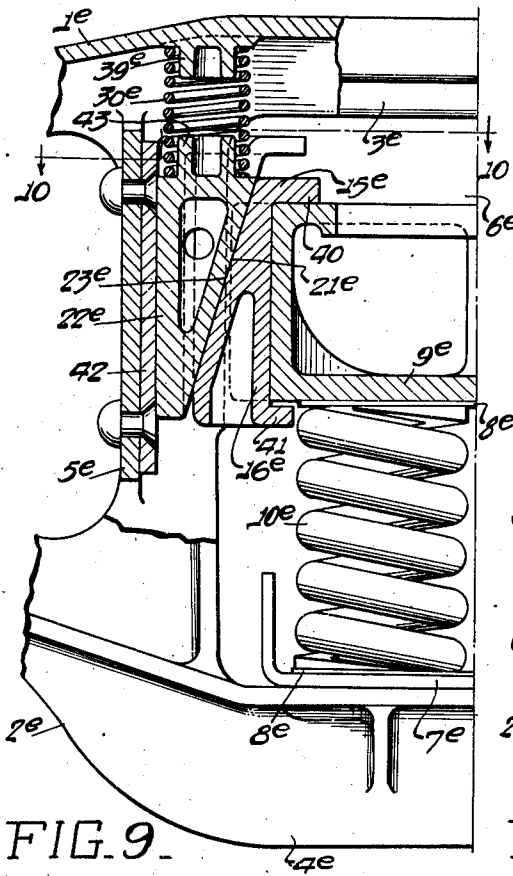


FIG. 9.

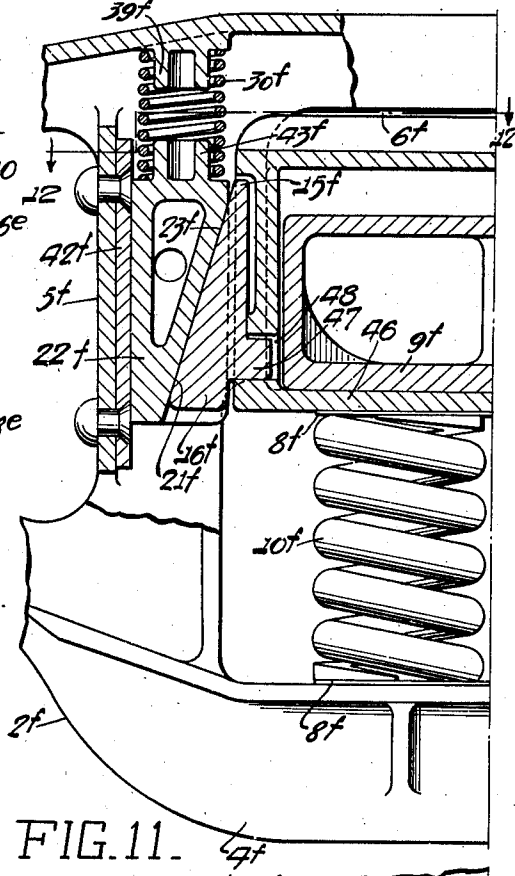


FIG. 11.

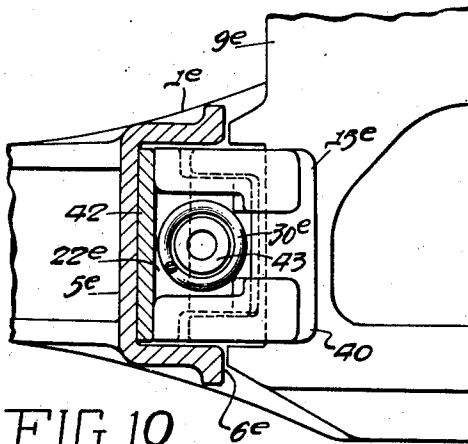


FIG. 10.

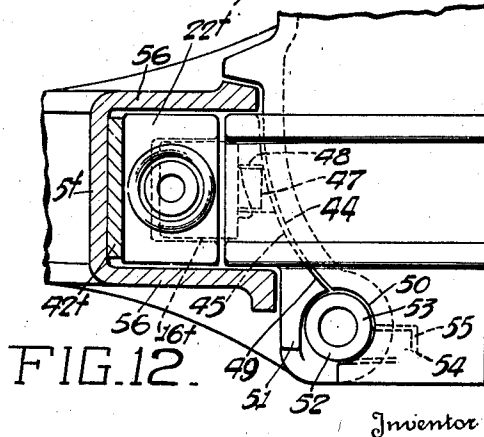


FIG. 12.

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2,118,006

RAILWAY TRUCK

Filed Jan. 14, 1935

4 Sheets-Sheet 4

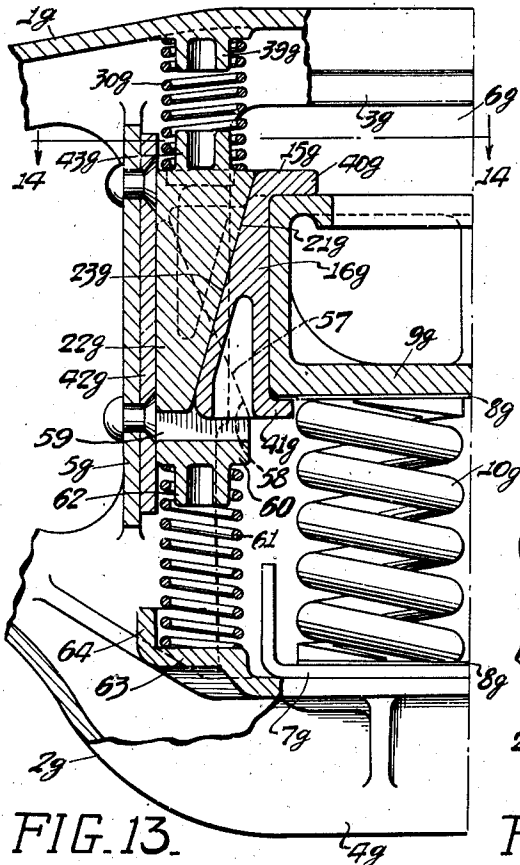


FIG. 13.

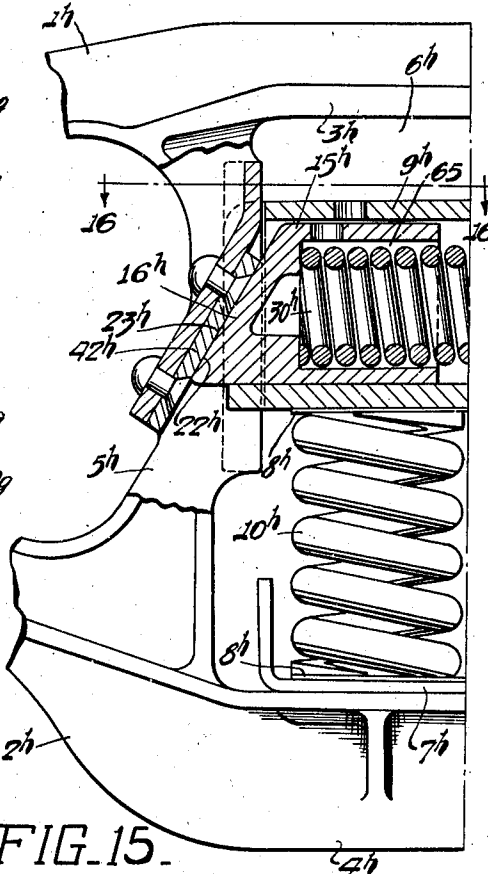


FIG. 15.

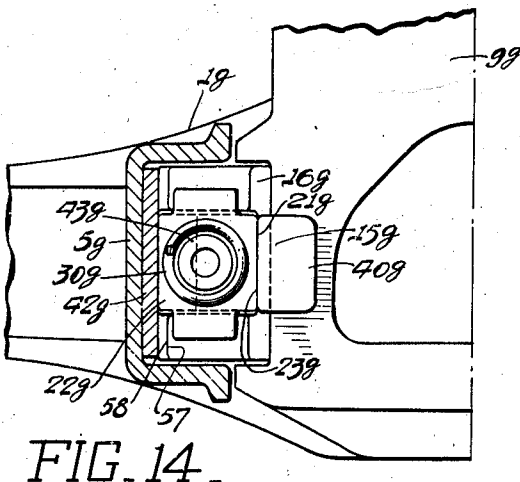


FIG. 14.

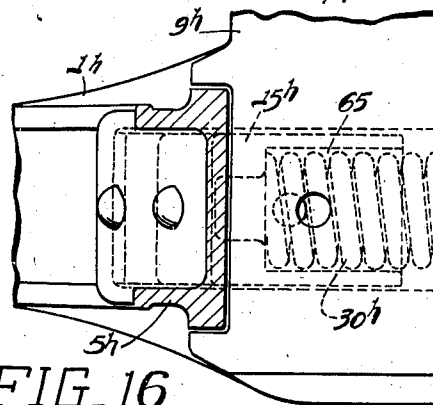


FIG. 16.

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UNITED STATES PATENT OFFICE

2,118,006

RAILWAY TRUCK

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Application January 14, 1935, Serial No. 1,792

25 Claims. (Cl. 105—193)

This application is a continuation, in part, of my application for railway trucks, Serial No. 575,080, filed November 14, 1931.

This invention relates to railway trucks, and, more particularly, to such involving a device adapted to snub the action of truck bolster springs.

The principal object of my invention, generally considered, is to provide a friction unit associated with a truck bolster and adapted to co-operate with the bolster springs by snubbing the action thereof.

Another object of my invention is to provide a friction device on a railway truck acting between the compression member of a side frame and the associated bolster for snubbing the recoil of the bolster springs.

A further object of my invention is the provision of a cushioning device comprising a spreader or central wedge element adapted to be connected or anchored to a railway truck side frame for vertical movement therewith, friction wedges normally engaging a portion of a bolster, and resilient means associated with said spreader element and wedges for urging said wedges into engagement with the spreader element and co-operating friction surfaces on the bolster.

Other objects and advantages of the invention relating to the particular arrangement and construction of the various parts will become apparent as the description proceeds.

Referring to the drawings illustrating my invention, the scope whereof is defined by the appended claims:—

Figure 1 is a fragmentary side elevation of a railway vehicle truck with portions thereof shown in vertical section.

Figure 2 is a fragmentary vertical transverse sectional view of that portion of the truck shown in Figure 1, portions of the bolster and associated springs and snubbing device being shown in elevation.

Figure 3 is a fragmentary view corresponding to Figure 2 but showing a modification.

Figure 4 is a fragmentary view corresponding to Figure 1, showing a modified form of snubber.

Figure 5 is a plan of the snubber shown in Figure 4, the central wedge element being shown in horizontal section.

Figure 6 is a fragmentary side elevation of a railway truck corresponding to Fig. 1, but showing another embodiment of my invention.

Figure 7 is a view corresponding to Fig. 1, but showing a further embodiment of my invention.

Figure 8 is a horizontal sectional view on the

line 8—8 of Fig. 7, looking in the direction of the arrows.

Figure 9 is a view corresponding to Fig. 1, but showing a still further embodiment of my invention.

Figure 10 is a sectional view on the line 10—10 of Fig. 9, looking in the direction of the arrows.

Figure 11 is a view also corresponding to Fig. 1, but showing an additional embodiment of my invention.

Figure 12 is a sectional view on the line 12—12 of Fig. 11, looking in the direction of the arrows.

Figure 13 is a view corresponding to Fig. 1, but showing a further embodiment of my invention.

Figure 14 is a horizontal sectional view on the line 14—14 of Fig. 13, looking in the direction of the arrows.

Figure 15 is a view corresponding to Fig. 1, but showing a still further embodiment of my invention.

Figure 16 is a horizontal sectional view on the line 16—16 of Fig. 15, looking in the direction of the arrows.

Referring to the drawings in detail, like parts being designated by like reference characters, and first considering the embodiment of my invention shown in Figures 1 and 2, there are shown portions of a railway truck 1 involving a side frame 2 having a compression member 3, and a tension member 4 spaced at intermediate portions thereof by bolster guide columns 5, leaving a bolster or window opening 6 therebetween.

The tension member 4 is provided with a spring plank seat portion 6' which normally serves for the support of the associated spring plank 7. In the present embodiment, the side frame 2, the associated spring plank 7, and upper and lower spring plates 8 are of the type described in the Barrows Patent No. 1,652,808, of December 13, 1927, although it will be understood that I do not wish to be limited to this showing, as my invention is adapted for use with other types of side frames, spring planks and spring plates.

An associated bolster or load-carrying member 9 has an end received in the bolster or window opening 6 of the frame 2 and supported on a nest of springs 10 disposed between the spring plates 8. The bolster has outer and inner guide lugs 11 and 12, respectively, the lugs 11 being sufficiently short so as to permit the bolster to be inserted to interlocking position with the frame by first inserting the end of the bolster in the enlarged lower portion 13 of the bolster opening and then moving it upwardly to interlocked position with the guiding portions 14 of the columns 55

5 before application of the supporting springs 10.

In order to snub the action of the springs 10, I provide a snubber or cushioning unit 15, said unit comprising an upper, inner, or central wedge or spreader friction element 16, preferably provided with a notch 17 adjacent its upper end, interlocking with the beading 18 on the outside of the compression member 3 of the frame, and a relatively short length of beading 19 on the inner side of the front flange 20 of said compression member 3. The lower portion of the spreader element 16 is preferably provided with converging friction surfaces or formed double frusto-conical, as indicated at 21, and interlocked with intermediate friction means or wedges 22 formed with inner friction surfaces 23 engaging the correspondingly inclined double frusto-conical friction portion 21 of the central element 16. The outer surfaces of the wedges 22 in the present embodiment are preferably cylindrical and normally urged into engagement with friction surfaces 24 on an apertured portion 25 of the bolster 9, or bushing received in an aperture thereof. The bushing or outer friction element 25 of the present embodiment, into which the inner friction element 16 telescopes and leaves a tapering or wedge-receiving space therebetween, is desirably formed with a shouldered upper portion 26 for limiting downward movement thereof and a tongue 27 split away from the lower peripheral portion thereof and engaging a corresponding notch 28 in the bolster, to thereby limit upward movement thereof and lock the bushing in place.

In order to hold the wedge elements in engagement with one another and the wedges 22 in engagement with the friction surface of the bushing 25, the upper or central wedge element 16 is desirably formed with a depending portion 29, the lower end of which is desirably threaded for receiving a nut 30 and associated resilient device or coil spring 30, preferably provided with upper and lower spring washers or caps 31 and 32, respectively.

When such a snubbing device is used on a railway truck as disclosed, it will be understood that the capacity of the bolster springs 10 is augmented, to some extent, by the cushioning action of the device upon downward movement of the bolster with respect thereto. It will be seen, however, that the capacity of the device is greater for snubbing the recoil of the springs 10, because the friction generated by movement of the bolster upwardly over the snubber 15 supplements the action of the spring 30 in urging the friction surfaces into engagement with each other, so that the recoil of the springs is efficiently snubbed or cushioned.

Referring now to the embodiment of my invention illustrated in Figure 3, it will be seen that I have shown a friction snubber 15^a which may be identical with that of the preceding embodiment, except that the upper portion of the central spreader member 16^a is interlocked with inwardly extending lug or flange portions 19^a on the main flange portions 20^a of the compression member 3^a of the side frame 2^a, rather than being interlocked to merely one of the flanges of the compression member. As in the preceding embodiment, the lower portion of the friction element 16^a extends into a bushing 25^a interlocked with the associated bolster 9^a.

Referring now to the embodiment of my invention illustrated in Figures 4 and 5, a snubbing device 15^b is there shown which may be identical with the device 15 or 15^a of the previous embodi-

ments, except that the central spreader element 16^b is of the rectangular rather than cylindrical-conical type, and has the lower portion provided with double inclined wedge surfaces 21^b rather than double frusto-conical portions, said surfaces being engaged by corresponding surfaces on a pair of double friction wedges 22^b which, as in the previous embodiments, provide shouldered or interlocked relationship, thereby preventing undesired displacement of the parts.

In the present embodiment, the wedges 22^b may be urged into frictional engagement with the spreader element 16^b and portions of the apertured part of the bolster 9^b or wear plates 25^b therein. The wear plates, it will be understood, preferably have their outer ends formed with interlocking lugs 26^b for holding them in place after application. As in the preceding embodiment, the wedges 22^b are desirably resiliently urged into engagement with the wedge surfaces 21^b on the spreader 16^b and on the wear members 25^b by a coil spring 30^b mounted on an extension 28^b between spring caps 31^b and 32^b, and held in place by a nut 30^b threaded on the extension 28^b. Except as specifically described in connection with the embodiment of Figures 4 and 5, the same may correspond with the embodiment of Figures 1 and 2, or that of Figure 3. It will also be understood that the snubber of Figures 1 and 2 and that of Figures 4 and 5 may be interlocked with the compression member either in the manner shown in Figures 1 and 2, or in the manner shown in Figure 3.

Referring now to the embodiment of my invention illustrated in Figure 6, there are shown portions of a railway truck 1^c involving a side frame 2^c having a compression member 3^c and a tension member 4^c spaced at intermediate portions thereof by bolster guide columns 5^c, leaving a bolster or window opening 6^c therebetween.

As in the first embodiment, the tension member 4^c is shown supporting an associated spring plank 7^c carrying a nest of springs 10^c having upper and lower spring plates 8^c, said nest of springs serving for the support of the associated bolster 9^c.

In order to snub the action, and particularly the recoil, of the springs 10^c, I provide one or more snubbers 15^c for the nest of springs 10^c, each snubber being associated with one of the coils of the nest of springs 10^c and comprising a central wedge or spreader friction element 16^c, preferably provided with a head 17^c adjacent its upper end interlocked with or engaging the upper spring plate 8^c or a countersunk shouldered portion 18^c thereof. The lower portion of the spreader element 16^c is provided with downwardly diverging friction surfaces or formed frusto-conical, as indicated at 21^c, and engaged by intermediate friction means or wedging elements 22^c formed with inner friction surfaces 23^c engaging the correspondingly inclined frusto-conical friction portions 21^c of the central element 16^c.

The outer surfaces of the wedging elements 22^c in the present embodiment are preferably cylindrical and normally urged into engagement with friction surfaces 24^c on an upstanding cylindrical or collar portion 25^c of the lower spring plate 8^c forming an outer friction element. The intermediate friction elements 22^c are normally urged into engagement with the central friction post or element 16^c, and the outer friction element or shell 25^c by a coil spring 30^c acting between the upper surfaces of the wedges or segmental annular members 22^c and the lower sur-

face of the upper spring plate 8^c. In order to hold the segmental wedge members 22^c assembled with the friction post or frusto-conical portion 21^c thereof, I desirably encircle said wedge members 22^c by a ring or wire 31 received in a groove 32, which ring is loose enough to allow full action of the spring 30^c in pressing the wedge members 22^c into engagement with the associated friction surfaces, while tight enough to prevent said wedges from dropping off the end of the frusto-conical portion 21^c of the friction post 15^c, when the latter is separated from the upstanding friction collar 25^c.

When a snubbing device as just described is used on a railway truck, it will be understood that while the capacity of the bolster springs 10^c is augmented to some extent by the cushioning action of the device 15^c upon downward movement of the bolster with respect thereto, yet the capacity of said device is greater for snubbing the recoil of the springs. The friction generated by movement of the upper spring plate 8^c upwardly, and the corresponding upward movement of the portion 16^c and wedges 22^c over the friction surfaces 24^c, said wedges being pressed into operative engagement with the associated parts by the action of the spring 30^c, thereby results in an efficient snubbing action on the associated nest of springs 10^c.

Referring now to the embodiment of my invention illustrated in Figures 7 and 8, there are shown portions of a railway truck 1^d involving a side frame 2^d having a compression member 3^d and a tension member 4^d spaced at intermediate portions thereof by bolster guide columns 5^d, leaving a bolster or window opening 6^d therebetween.

The tension member 4^d, as in the first embodiment, is shown supporting an associated spring plank 7^d, although it will be understood that I do not wish to be limited to the employment of a spring plank. An associated bolster or load-carrying member 9^d has an end received in the window or bolster opening 6^d and is supported on a nest of springs 10^d disposed between spring plates 8^d. The bolster has outer and inner guide lugs 11^d and 12^d, respectively, as is usual.

In order to snub the action of the springs 10^d, I provide a snubber or cushioning unit 15^d, said unit comprising a lower, inner or central wedge or spreader friction element 16^d interlocked with or connected to the bolster 9^d, as by means of a seat member 33 welded to the lower web of the bolster, as indicated at 34, and provided with upstanding angular flanges 35, portions of which overlie base flange portions 36 on the wedge member 16^d. The upper portion of the spreader element 16^d is provided with upwardly converging friction surfaces 21^d, normally engaged by intermediate friction means or wedges 22^d, formed with inner inclined friction surfaces 23^d engaging the correspondingly inclined friction surfaces 21^d of the central element 16^d.

The outer surfaces of the wedges 22^d in the present embodiment are normally urged into engagement with correspondingly curved or flattened friction surfaces 24^d on an outer friction element or housing 25^d connected to the upper web of the compression member 3^a as by means of a bolt 37 and downwardly opening to receive the wedges 16^d and 22^d. The wedges 22^d, only one of which is illustrated, are urged into engagement with the spreader 16^d and the outer friction element or housing 25^d by means of coil

springs 30^d, the lower ends of which are received in pockets 38 in the wedges 22^d, and the upper ends of which surround depending lugs 39 on the housing member 25^d. The action of the snubber 15^d of the present embodiment is similar to that of the snubber 15 of the embodiment of Figures 1 and 2, except that the corresponding parts are transposed, amounting to turning the snubber upside down without affecting its action.

Referring now to the embodiment of my invention illustrated in Figures 9 and 10, there are shown portions of a railway truck 1^e involving a side frame 2^e having a compression member 3^e and a tension member 4^e spaced at intermediate portions thereof by guide columns 5^e, leaving a window or bolster opening 6^e therebetween.

The tension member 4^e serves for the support of an associated spring plank 7^e in the present embodiment, although I do not wish to be limited to the use of a plank. Said spring plank 7^e, in turn, supports a nest of bolster springs 10^e, with associated upper and lower plates 8^e, although the plates, of course, may be dispensed with, said upper plate, in turn, supporting an associated bolster 9^e.

In order to snub the action of the springs 10^e, and particularly the recoil thereof, I provide a snubber or cushioning unit 15^e between each side of the bolster 9^e and the associated guide column 5^e. Inasmuch as the snubbers are desirably identical, only one will be described. Each snubber comprises a wedge member 16^e provided with flanges 40 and 41 overlying and underlying the bolster 9^e to cause said wedge 16^e to move with said bolster. The wedge 16^e has an outer friction surface 21^e which is inclined downwardly and outwardly and normally engaged by a correspondingly inclined friction surface 23^e on an associated wedge 22^e. Said wedge 22^e is urged between the wedge 16^e and the web of the guide column 5^e, or a wear plate 42 secured thereto, by means of a coil spring 30^e, the upper end of which surrounds a lug 39^e depending from the web of the compression member 3^e and the lower end of which surrounds a lug 43 upstanding from the top of the wedge 22^e, thereby acting to effectively snub upward movement of the bolster 9^e in a manner which will be understood from the preceding disclosure.

Referring now to the embodiment of my invention illustrated in Figures 11 and 12, there is shown a side frame 2^f formed with a bolster opening 6^f, receiving a bolster 9^f, which bolster is supported directly by a nest of springs 10^f, with upper and lower spring plates 8^f, resting directly on the tension member 4^f of the bolster without the employment of a spring plank. The bolster in the present embodiment is formed with vertical cylindrical surfaces 44 cooperating with corresponding cylindrical surfaces 45 on a spring cap member 46 disposed between the bolster 9^f and the upper spring plate 8^f, which cap member is interlocked with wedges 16^f of snubbing devices 15^f similar to the snubbing devices 15^e of the preceding embodiments, as by means of lugs 47 received in corresponding pockets 48 in the spring cap or bolster end housing member 46.

The bolster 9^f is allowed to angle horizontally with respect to the end receiving frame 46, and side frame 2^f to which said end frame is connected, on account of the coaxial cylindrical surfaces 44 on the end of the bolster which nest with corresponding surfaces on said frame 46. The surfaces 44 on the bolster and the corresponding surfaces 49 on the frame or housing 46 ter-

minate at their outer ends in portions 50 and 51 which together provide cylindrical pockets receiving locking members 52, only one of which is illustrated. Each locking member desirably comprises a normally vertical cylindrical portion 53 and a lower laterally extending lug 54 and is initially inserted with the lug extending outward so as to pass through a corresponding elongated aperture (not shown) in the base of the frame 46 formed to accommodate the body and lug portions. When the locking member 52 has been inserted so that the lug 54 lies above the base portion of the frame, the lug is then turned so as to point inward or toward the other locking member (not illustrated), while the bolster is elevated so that when the bolster is dropped to position, as shown in Figure 11, the lug portion 54 is received in a pocket 55 in the lower surface of the bolster and securely held in place. Sufficient clearance is provided between the locking members 52 and the bolster 9' and frame 46 to allow for the desired flexibility or angling in a horizontal plane, while preventing undesired displacement or withdrawal of the bolster. The construction of the bolster and manner of connecting it to a supporting frame is substantially as described and claimed in my U. S. Patent numbered 2,069,220, issued February 2, 1937.

The wedge members 16' are received between the flanges 56 of the guide columns 5' of the side frame 2' and thereby serve to prevent undesired withdrawal of the bolster from the side frame. Each wedge 16' has an outer friction surface 21' which is inclined downwardly and outwardly and normally engaged by a correspondingly inclined friction surface 23' on an associated wedge 22'. Said wedge 22' is urged between the wedge 16' and the web of the guide column 5', or a wear plate 42' secured thereto, by means of a coil spring 30', the upper end of which surrounds a lug 39' depending from the web of the compression member 3' and the lower end of which surrounds a lug 43' upstanding from the top of the wedge 22', thereby acting to effectively snub upward movement of the bolster 9' in a manner which will be understood from the preceding description.

Referring now to the embodiment of my invention illustrated in Figures 13 and 14, there are shown portions of a railway truck 1^s involving a side frame 2^s having a compression member 3^s and a tension member 4^s spaced at intermediate portions thereof by guide columns 5^s, leaving a window or bolster opening 6^s therebetween.

The tension member 4^s serves for the support of an associated spring plank 7^s in the present embodiment, although I do not wish to be limited to the use of a plank. Said spring plank 7^s, in turn, supports a nest of bolster springs 10^s, with associated upper and lower spring plates 8^s, although the plates, of course, may be dispensed with. The upper plate 8^s, in turn, supports an associated bolster 9^s.

In order to snub the action of the springs 10^s in both directions, I provide a snubber or cushioning unit 15^s between each side of the bolster and the associated guide column 5^s. Inasmuch as the snubbers are desirably identical, only one will be described. Each snubber comprises a wedge member 16^s provided with flanges 40^s and 41^s overlying and underlying the bolster 9^s to cause said wedge member 16^s to move therewith. The wedge 16^s has an outer intermediate friction surface 21^s which is inclined downwardly and outwardly and normally engaged by the correspond-

ingly inclined friction surface 23^s on an associated wedge 22^s. Said wedge 22^s is urged between the wedge 16^s and the web of the guide column 5^s, or a wear plate 42^s secured thereto, by means of a coil spring 30^s, the upper end of which surrounds a lug 39^s depending from the web of the compression member 3^s, and the lower end of which surrounds a lug 43^s upstanding from the top of the wedge 22^s, thereby acting to snub the recoil of the bolster springs 10^s.

Inasmuch as the snubbers 15^s of the present embodiment are double-acting, I form side and outer friction surfaces 57 disposed on either side of the friction surfaces 21^s and inclined downwardly and inwardly, and normally engaged by correspondingly inclined friction surfaces 58 on bifurcated portions 59 of an associated wedge 60. The bifurcations 59 of the wedge 60 are urged, between the side portions of the wedge 16^s and the friction surface on the guide column engaged by the wedge 22^s, by means of a coil spring 61, the upper end of which surrounds a lug 62 depending from the wedge 60, and the lower end of which engages a supporting portion 63 of the frame 2^s, which portion is desirably provided with a spring-positioning flange 64. It will thus be seen that in accordance with the present embodiment, movement of the bolster either upwardly or downwardly is effectively snubbed by the friction mechanism described.

Referring now to the embodiment of my invention illustrated in Figures 15 and 16, there are shown portions of a railway truck 1^h involving a side frame 2^h having a compression member 3^h and a tension member 4^h, spaced at intermediate portions thereof by guide columns 5^h, leaving a window or bolster opening 6^h therebetween.

The tension member 4^h serves for the support of an associated spring plank 7^h, although I do not wish to be limited to the use of a plank. Said plank, in turn, supports a nest of bolster springs 10^h, with associated upper and lower plates 8^h, said plates, however, being optional. The upper plate 8^h, or top of the nest of springs, in turn supports an associated bolster 9^h.

In order to snub the action of the springs 10^h, and particularly the recoil thereof, I provide a snubber or cushioning unit 15^h comprising a pair of wedge members 16^h urged away from each other and horizontally by a coil spring 30^h, the ends of which are received in pockets 65 in said wedges 16^h. Each wedge 16^h has a downwardly and outwardly inclined friction surface 21^h which is normally urged into engagement with a correspondingly inclined friction surface 23^h on the web of the associated guide column 5^h, or a wear plate 42^h secured thereto, by means of the coil spring 30^h. The snubbing device of the present embodiment, of course, acts to increase the capacity of the nest of springs 10^h as it provides some resistance to downward movement of the bolster. It will, of course, be understood, however, that the main snubbing action of the device 15^h is against recoil of the springs 10^h or upward movement of the bolster 9^h, on account of the fact that the friction surfaces on the movable friction wedges 16^h are inclined downwardly and away from one another.

Although I have disclosed preferred embodiments of my invention, it will be understood that modifications may be made within the spirit and scope of the appended claims, and that the terms used are those of description and not of limitation. It will also be clear that although only a portion of one side frame has been illustrated

receiving the corresponding end of the bolster, the other end of the bolster is preferably correspondingly received in the bolster opening of another side frame. It will also be understood that certain features of one embodiment may be interchanged with features of another and that spring planks and spring plates, for example, may be employed or omitted, as desired.

I claim:—

1. In a railway truck, in combination, a side frame having a bolster opening, a bolster with an end received therein, resilient means supporting said bolster, and means for snubbing the action of said resilient means comprising a wedge element connected to said frame for the transmission of vertical forces therebetween in both directions, friction means normally engaging a portion of the bolster, and resilient means associated with said wedge element and friction means for urging the latter into engagement with the wedge element and bolster.

2. In a railway truck, in combination, a side frame having a bolster opening, a bolster with an end received therein, resilient means supporting said bolster in said opening, said bolster having an upright aperture therethrough, means defining said aperture and providing friction surfaces, friction wedge means engaging said friction surfaces, a spreader element with its lower portion disposed in engagement with said wedge means and its upper portion connected to the frame above the bolster opening, and resilient means urging said spreader element into engagement with said friction wedge means and said friction wedge means into engagement with the friction surfaces of the bolster.

3. A cushioning device comprising a wedge element one end of which is notched to receive and interlock with beading on an associated railway truck side frame, friction wedges adapted to engage friction surfaces on an associated bolster and engage opposite sides of said wedge element, said wedge element having a portion extending beyond said friction wedges, and resilient means thereon adapted to urge said friction wedges into engagement with said wedge element and friction surfaces on the associated bolster.

4. In a railway truck, in combination, a side frame having a bolster opening, a bolster with an end received therein, said bolster having an upright aperture therethrough, a bushing mounted in said aperture and lining the inner surfaces thereof, and friction cushioning means received in said bushing, frictionally movable on the inner surfaces thereof, and acting between said bolster and that part of the frame thereabove.

5. A cushioning device comprising a wedge element, one end of which is notched to receive and interlock with beading on an associated railway truck side frame, a bushing in which the other end of said wedge element is received, said bushing providing inner friction surfaces, friction wedges disposed between the friction surfaces of said bushing and said wedge element, resilient means urging said friction wedges into engagement with said wedge element and bushing, and means for mounting said bushing in position in an associated bolster.

6. In a railway truck, in combination, a side frame having a window opening, a load-carrying member with an end received therein, a spring serving to support said load-carrying member, and means for snubbing the action of said spring comprising an outer friction element, an inner

elements having converging friction surfaces, means for holding one of said elements for vertical movement with said frame in both directions, said other element being arranged to act on the top of said spring for opposing recoil, friction wedges disposed between the telescoped portions of said outer and inner friction elements in engagement with said converging friction surfaces, and resilient means acting on said wedges and said inner element, longitudinally of the axis of the latter, for urging said wedges into engagement with said converging friction surfaces and the corresponding friction surfaces on the other friction element.

7. A snubbing device comprising outer and inner friction elements normally telescoping and leaving a tapering space between friction surfaces thereof, one of said elements being adapted to be supported by an associated side frame for vertical movement therewith in both directions, and the other of which is adapted to exert downward snubbing action on the top of an associated bolster-supporting spring, friction wedges disposed in said tapering space between said friction surfaces of said inner and outer friction elements, and resilient means acting on an end portion of the inner element and the blunt ends of said wedges for urging the latter into simultaneous engagement with the friction surfaces on both outer and inner elements.

8. In a railway truck, in combination, a side frame member having a bolster opening, a bolster member with an end received therein, resilient means supporting the bolster member from said frame, and friction means acting between portions of said members for snubbing the recoil of said resilient means, said friction means comprising a wedge secured for movement with one of said members and another wedge urged by a spring between, and into frictional engagement with, said first-mentioned wedge and a friction member secured for vertical movement with the other of said members.

9. In a railway truck, in combination, a side frame having a bolster opening, a bolster with an end received therein, resilient means supporting said bolster from said frame, and friction cushioning means acting between said bolster and that part of the frame thereabove, said means comprising an outer friction element secured to the frame and extending into an opening in the top of the bolster, a central wedge member secured to said bolster and extending into said outer friction element, and intermediate spring-actuated friction elements disposed between said outer and central friction elements.

10. In a railway truck, in combination, a side frame having a bolster opening, a bolster with an end received therein, resilient means supporting said bolster from said frame, friction cushioning means acting between each side portion of said bolster and said frame, each cushioning means comprising a wedge member secured to said bolster, and another wedge member disposed between said bolster wedge member and the corresponding guide column of the frame and urged downwardly by a spring acting between upper portions of said frame and second-mentioned wedge member.

11. In a railway truck, in combination, a side frame having a bolster opening, a bolster with an end received therein, resilient means supporting said bolster from said frame, and friction cushioning means acting between said bolster and frame for snubbing the action of said resilient

means in both directions, said cushioning means comprising a wedge member secured to said bolster and provided with friction surfaces, one of which is inclined downwardly and outwardly, and another of which is inclined downwardly and inwardly, and spring actuated wedges disposed between said wedge member and the adjacent portions of the frame, one of which wedges acts downwardly on one of said friction surfaces, and the other of which acts upwardly on the other of said friction surfaces.

12. In a railway truck, in combination, a side frame member having a bolster opening, a bolster member with an end received therein, resilient means supporting said bolster from said frame, and friction cushioning means acting between said bolster and frame for snubbing the action of said resilient means in both directions, said cushioning means comprising two pairs of friction surfaces on one of said members, one pair of which is inclined downwardly and outwardly, and the other pair of which is inclined downwardly and inwardly, and spring-actuated wedges disposed between said inclined surfaces and the adjacent portions of the other member, one pair of which wedges acts downwardly on the downwardly and outwardly inclined pair of said surfaces, and the other pair of which acts upwardly on the other pair of said surfaces.

13. In a railway truck, in combination, a side frame member having a bolster opening, a bolster member with an end received therein, resilient means supporting the bolster member from said frame and friction means in the vertical plane of the side frame member acting between portions of said members for snubbing the recoil of said resilient means, said friction means comprising a friction member secured to one of said members, a wedge movable with the other of said members, a wedge interposed between said friction member and said first-named wedge, and separate resilient means for forcing one of said wedges into frictional engagement with the other of said wedges and friction member.

14. In a railway truck, in combination, a side frame having a bolster opening, a bolster with an end received therein, resilient means supporting said bolster from said frame and friction cushioning means in the vertical plane of the resilient means acting between said bolster and side frame, said friction cushioning means comprising a friction element secured to the frame and extending toward the bolster, a wedge element secured to the bolster and extending into overlapping relationship with said friction element, and an intermediate spring-actuated wedge interposed between the said friction element and wedge element.

15. In a railway truck, in combination, a side frame having a bolster opening, a bolster with an end received therein, resilient means supporting said bolster from said side frame and separate friction cushioning means acting between said bolster and side frame for snubbing the recoil of said resilient means, said friction cushioning means comprising an outer friction element secured to the frame, a seat member secured to the bolster, a central wedge element engaging the seat member and extending within said outer friction element, and an intermediate spring-actuated wedge interposed between the outer and central elements.

16. In a railway truck, in combination, a side frame member having a bolster opening, a bolster member having an end received therein, resilient

means supporting said bolster member from said frame member, friction cushioning means acting between said members for snubbing the recoil of said resilient means, said friction cushioning means comprising a wedge interlocked with one of said members so as to move with said member at all times and relative to said other member, another wedge disposed between said first-mentioned wedge and the other member, and a vertically disposed spring acting between one of the members and one of the wedges.

17. In a railway truck, in combination, a side frame member having a bolster opening formed between bolster guide columns, a bolster member having an end positioned within said opening and having portions overlapping said guide columns, springs for supporting said bolster end within said opening and resilient means for snubbing the recoil of said springs, said means comprising a wedge secured to one of said members against relative vertical movement, a wearing member secured to the other of said members, a second wedge having a wedging frictional engagement with said first-named wedge and wearing member, and spring means for urging said last-named wedge into said frictional engagement with said first-named wedge and wearing member.

18. In a railway truck, in combination, a side frame having a bolster opening, a bolster with an end received therein, resilient means supporting said bolster from said frame, and friction means acting between said bolster and frame for snubbing the action of said resilient means, said friction means comprising a housing secured to the frame and extending into an opening provided in the bolster, a central wedge element secured to said bolster and extending into said housing, and an intermediate spring-actuated wedge interposed between said housing and central wedge.

19. In a railway truck, in combination, a side frame having a bolster opening, a bolster with an end portion received therein, resilient means supporting said bolster from said side frame, and friction means acting between said bolster and side frame for snubbing the action of said resilient means, said friction means comprising a housing secured to the side frame, a seat member secured to the bolster, a wedge interlocked with said seat member and extending into said housing, and a spring-actuated wedge interposed between the first-mentioned wedge and housing.

20. In a railway truck, in combination, a side frame having a bolster opening, a bolster with an end portion received therein, resilient means supporting said bolster from said side frame, and friction means acting between said bolster and side frame for snubbing the action of said resilient means, said friction means comprising a housing associated with said side frame and extending into an opening provided in the top of the bolster, a seat member positioned within and secured to the bolster, a wedge secured to said seat member and extending within said housing, and a spring-actuated wedge interposed between said first-mentioned wedge and housing.

21. In a railway truck, in combination, a side frame having a bolster opening, a bolster with an end received therein, resilient means supporting said bolster from said frame, and friction cushioning means acting between said bolster and frame for snubbing the action of said resilient means in both directions, said cushioning means comprising a wedge member having flanges

embracing said bolster end and provided with angularly disposed friction surfaces, intermediate wedges interposed between and engaging said first-mentioned wedge and the adjacent portion 5 of the side frame, one of the intermediate wedges acting downwardly on one of said friction surfaces and the other of said intermediate wedges acting upwardly on the other of said friction surfaces, and spring means interposed between the side frame and each of said intermediate wedges. 10

22. In a railway truck, in combination, a side frame having a bolster opening, a bolster with an end portion received therein, resilient means supporting said bolster, and means for snubbing the 15 action of said resilient means comprising a wedge element associated with said frame and extending into an aperture in said bolster for transmission of vertical forces therebetween in both directions, a bushing positioned in said bolster 20 aperture and interlocked with said bolster, friction means interposed between said wedge element and bushing, and resilient means associated with said friction means and wedge element for urging the former into engagement with the 25 wedge element and bushing.

23. In a railway truck, in combination, a side frame having a bolster opening, a bolster with an end portion received therein, an aperture in said bolster end, a bushing positioned in said bolster 30 ster aperture and secured to said bolster, and

friction cushioning means received in and frictionally engaging said bushing, said friction cushioning means acting between said bolster and side frame.

24. In a railway truck, in combination, a side 5 frame having a bolster opening, a bolster with an end portion received therein, resilient means supporting said bolster end, and a cushioning device for snubbing the action of said resilient means comprising a wedge element, one end of 10 which is notched to interlock with a portion of said side frame, a bushing positioned in an aperture in said bolster end and receiving the other end of said wedge element, and resiliently urged friction elements engaging said bushing and 15 wedge element.

25. In a railway truck, in combination, a side frame having a bolster opening, a bolster with an apertured end portion received therein, resilient means supporting said bolster end, and 20 a cushioning device for snubbing the action of said resilient means comprising a bushing lining said aperture in said bolster end, a wedge element interlocking with a portion of the side frame and extending into said bushing, friction 25 elements interposed between and in engagement with said bushing and wedge element, and resilient means acting between said wedge element and friction elements.

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