Oct. 18, 1955 G. F. COUCH 2,720,848

SNUBBED RAILWAY TRUCK

Filed May 8, 1946 2 Sheets-Sheet 1

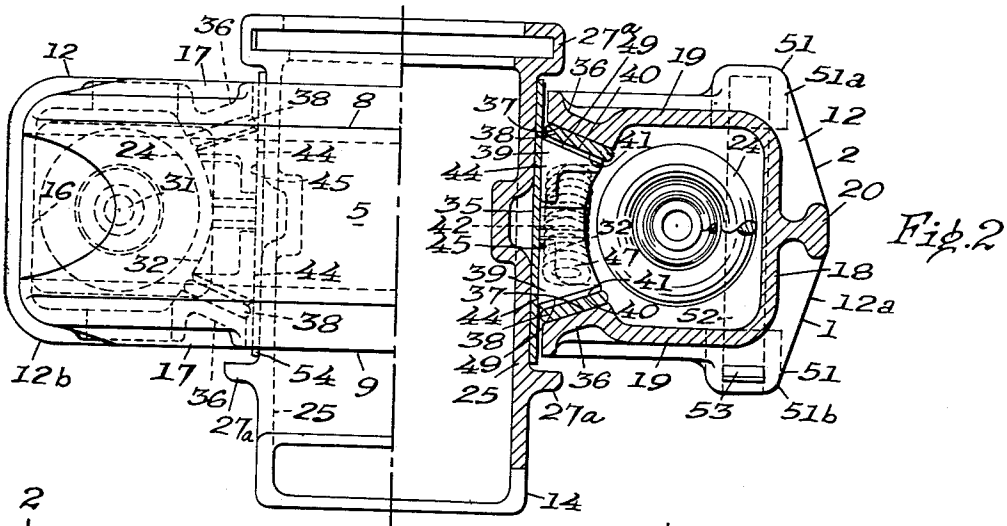


Fig. 2

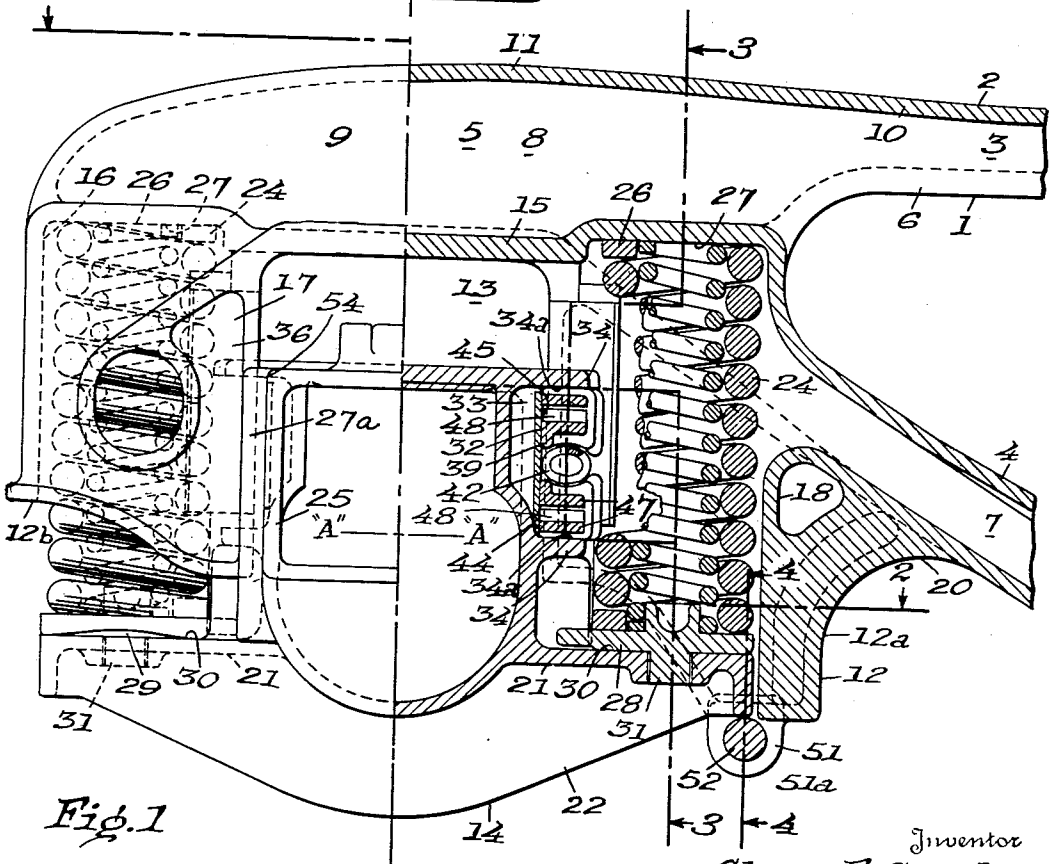


Fig. 1

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SNUBBED RAILWAY TRUCK

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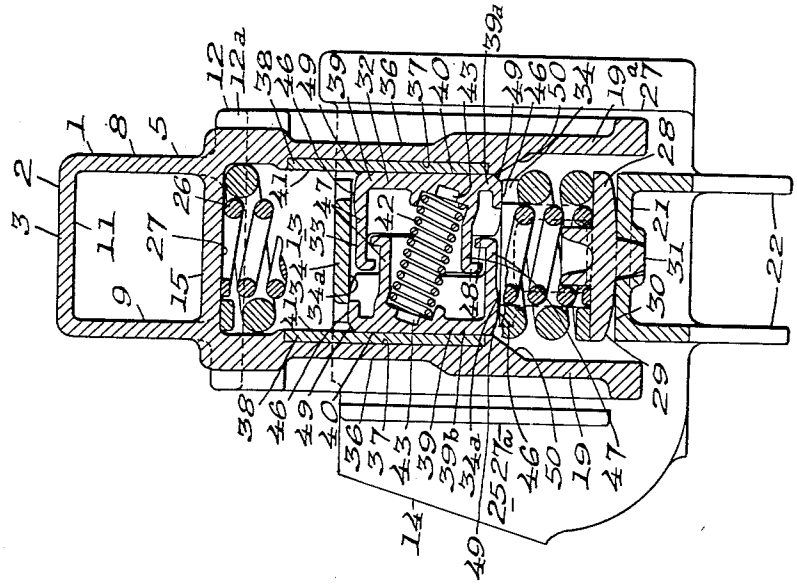


Fig. 3

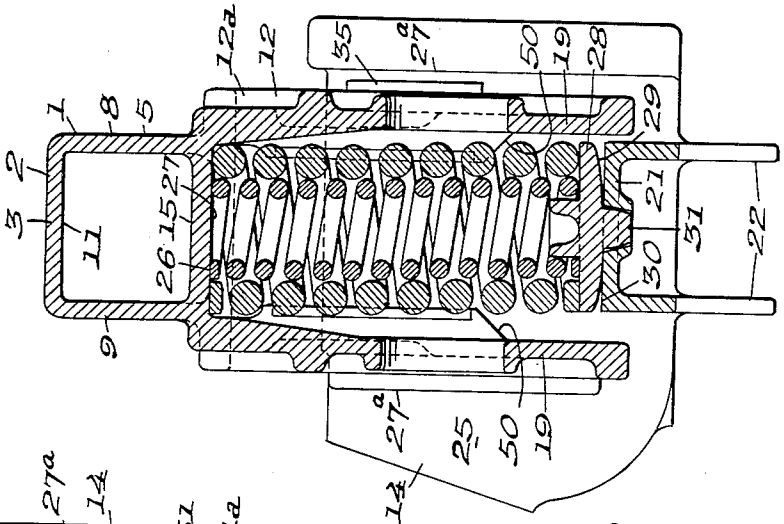


Fig. 5

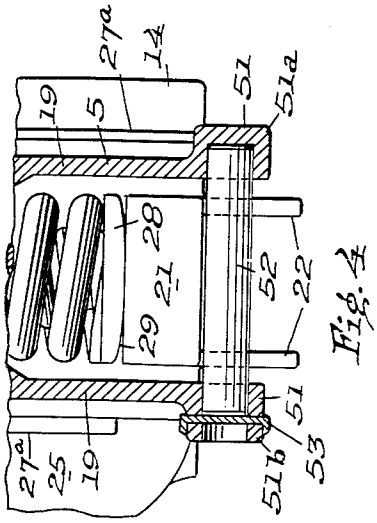


Fig. 4

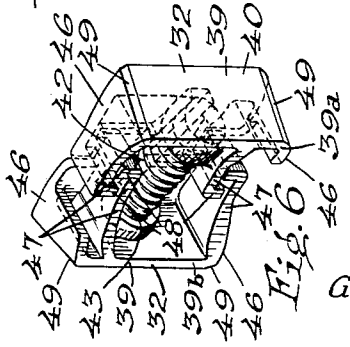


Fig. 6

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2,720,848

SNUBBED RAILWAY TRUCK

Glenn F. Couch, Rochester, N. Y., assignor to The Symington-Gould Corporation, Rochester, N. Y., a corporation of Maryland

Application May 8, 1946, Serial No. 668,129

29 Claims. (Cl. 105—224)

This invention pertains to a railway truck and more particularly to a type thereof wherein a side frame and journal box are arranged for relative vertical and transverse movements.

An object of the invention is the provision of an improved railway truck wherein a snubbing device is carried by the journal box and this device is so arranged to snub both a relative vertical and transverse movement of the journal box and side frame.

Another object of the invention is the provision, in a railway truck, of a snubbing device carried by a journal box with a part of the snubbing device being so arranged as to check rattling of component parts.

A further object of the invention is the provision, in a railway truck, of snubbers carried by side walls of a journal box with friction shoes which form a part of the snubbers having integral means arranged to interlock for limiting an expansive movement of the snubbers.

The above and numerous other objects will become apparent from the succeeding description of an exemplified form of the invention which is illustrated in the accompanying drawings wherein:

Figure 1 is a partial front elevational view and a partial vertical sectional view of a railway truck embodying the present invention.

Figure 2 is a partial plan view and partial horizontal sectional view taken along the lines 2—2 of Figure 1, looking in the direction of the arrows.

Figure 3 is a vertical transverse sectional view taken along the lines 3—3 of Figure 1, looking in the direction of the arrows.

Figure 4 is a vertical transverse sectional view taken along the lines 4—4 of Figure 1, looking in the direction of the arrows.

Figure 5 is a vertical transverse sectional view somewhat similar to the showing of Figure 3, but differing therefrom in that the illustrated components of the railway truck are disposed in an abnormal relationship.

Figure 6 is a perspective view of a friction means employed in the present structure.

Referring now in detail to the various figures of the drawings, wherein like reference characters indicate like parts, the numeral 1 is employed to indicate in a somewhat general manner, a railway truck exemplary of the present invention. Only a portion of the improved railway truck is illustrated in the drawings, since the undisclosed part may be of any conventional design or, if desired, it may be in accordance with the teachings of the copending joint application of Donald S. Barrows and myself, filed February 12, 1946, and bearing Serial Number 647,139, now U. S. Patent No. 2,608,937. Further, as will be clearly understood, the disclosed part of the truck is characteristic of but one of the four corners of the railway truck.

The railway truck is comprised, generally, of a side frame 2 having a top or compression member 3 which, at a predetermined position along its length, is merged

with an upward inclined lower or tension member 4. Both the compression member and tension member continue beyond their merger toward an extremity of the side frame to form an end or extremity or receptacle 5.

Inner and outer depending flanges 6 of the compression member and correspondingly disposed depending flanges 7 of the tension member beyond their merger form transversely spaced inner or inboard walls 8 and outer or outboard walls 9 of the receptacle. A web 10 of the compression member forms an upper defining web 11 of the receptacle and as such connects the upper limits of the inboard and outboard walls out to the end of the side frame. Forming a part of the receptacle are longitudinally spaced jaws, columns or pedestals 12 comprising an inner or inside column 12*a* and an outer or outside column 12*b*. These particular descriptive terms are used to distinguish the columns from one another and by considering the side frame correctly, as a longitudinal member.

The jaws or columns open downwardly and toward one another to define therebetween an opening 13 (see Figure 1) extending transversely of the side frame for the accommodation or reception of a journal box 14. Accordingly, each jaw is substantially of U-shape or design in horizontal section with the upper extremities of the jaws being defined by an upper web or seat 15 which grows out of the tension member to extend substantially horizontally intermediate the height of the receptacle or side frame end. The web 15 when it reaches the extremity of the side frame turns downwardly and vertically to form an end wall 16 of the outer jaw and also connects inboard and outboard flanges 17 thereof adjacent or along their free extremities. An end wall 18 of the inner jaw also grows out of the tension member to be directed vertically and join or connect adjacent adges of inboard and outboard flanges 19 of the inner jaw. Because the inner jaw may, as hereinafter made apparent, be subjected to abnormal stresses a reinforcing or knee brace 20, formed I-shaped in cross section, extends between the tension member and the inner column or jaw.

The journal box 14 may be of a type to accommodate a plain bearing or, if preferred, of a type to accommodate a roller bearing since the particular type of bearing encased by the journal box may be optional just so long as the journal box and side frame are arranged, as hereinafter set forth, for relative movement therebetween. In the instant structure, the journal box, at a location below a horizontal line indicated at "A—A" (see Figure 1) passing through the center of an axle (not shown) is provided with oppositely disposed or horizontally directed shelves, ledges or rests 21 which extend into a vertical extension of the space included within the jaws. Reinforcing ribs 22 underlie or depend from the journal box proper and rests to thereby reinforce the shelves against forces to which they will be subjected in service.

As previously indicated, the journal box and side frame are arranged for relative movement therebetween and one of these movements is in a vertical direction. Toward the accomplishment of this relative vertical movement there is provided, between the side frame and journal box, a pair of load carrying, spring or resilient means 24 with each means being characterized by a double coil or helical spring. Each double coil spring is disposed within the horizontal limits of a related jaw to thus extend in a vertical direction substantially or normally parallel to but spaced from an associated side wall 25 of the journal box. Each resilient means has an upper substantially flat extremity 26 bearing against a downwardly facing or suitable top spring seat 27; the latter of which is formed on the upper web 15. As will be understood while these latter mentioned spring seats are illustrated and described as

being formed on the web **15** this arrangement lends itself to spring means of a given travel but if it is desired to employ spring means of a longer travel then and in that event the spring seats may as readily be formed on the compression member web with suitable apertures then being provided in the web **15** for the passage of the coil springs therethrough.

To add to the flexibility of the railway truck and thus among other reasons to compensate for irregularities in the rails, the journal box is arranged to move in a direction transversely of the side frame or railway truck, thus a second or horizontal relative movement between the journal box and side frame is provided. The extreme limits between which the journal box may move transversely is determined by the guiding lugs **27***a* outstanding from the journal box side walls and being spaced horizontally, a predetermined distance from the related jaw flanges in overlapping relation thereto.

Since the journal box is capable of a transverse movement inwardly and outwardly of the truck within the limits above mentioned, means have been provided in the journal box mounting to afford a relatively partial rocking action of the spring means and shelves. This latter referred to means is characterized by a spring plate **28** interposed between each coil spring means and a subjacent shelf. Each spring plate is provided with a lower, convex or transversely curved surface **29** which bears upon a plane upper surface **30** of a related shelf. This provision for a rocking action coupled with the flat contact between the upper extremity of each coil spring and its related seat will result in the coil springs, upon a transverse movement of the journal box in either an inward or outward direction from its normal position, becoming distorted. This temporary distortion of the coil springs will build up additional stresses therein and because of the inherent characteristics of coil springs which by their very nature tend to return to a normal position the thus additional stresses will tend to urge or return the journal box to its normal or centralized position relative to the side frame.

The spring plates are interlocked with the coil springs and shelves by means of oppositely disposed studs **31** to thus retain the lower extremities of the coil springs in a predetermined position relative to the shelves.

With the thus described flexible connection between the side frame and journal box, that is to say, their capacity to move relative to one another in a vertical and horizontal direction, it is believed essential for the complete or successful operation of the truck that some means notably of a frictional character be incorporated in the structure for the control of both of these movements. With this thought, therefore, uppermost in mind, an effective and positive friction creating means commonly and hereinafter conveniently termed a friction or snubbing means, is built into the structure hereinabove described. The friction means generally designated by the reference character **32** is disposed at each side of the journal box and each friction means is positively confined against a relative vertical movement with respect to the journal box, in an open-sided housing **33**; the latter of which is formed in part by vertically spaced outer ledges or upper and lower lugs **34** formed integrally with the journal box. The ledges extend horizontally from the side walls of the journal box into the space defined by the side frame columns with sufficient clearance thereabout to avoid any interference or interferences between the ledges and side frame columns throughout the entire range of relative movement therebetween. The ledges are positioned intermediate the height of the coil springs as illustrated (see Figures 1 and 3) and are of such horizontal extent toward the coil springs from the journal box as to terminate short of the coil springs thereby avoiding interference therebetween. A wear plate **35** is welded or otherwise secured to each journal box side wall for the express purpose to be hereinafter made apparent and thus each housing is

formed at least in part by the vertically spaced ledges and an interposed vertically and transversely disposed wear plate. Each housing, therefore, is preferably formed, so far as the journal box is concerned, so as to open away from the journal box longitudinally of the side frame and also transversely of the truck.

The leading or free portion of each inboard and outboard flange of both the inner and outer jaws is, for at least a part of its vertical extent, flared or inclined as at **36**; the inboard flange of each jaw being flared inwardly of the truck and the outboard flange of each jaw being flared outwardly of the truck. These flared portions present sloping or inclined surfaces **37** which have wear or rubbing plates **38** secured thereto by any desired manner, method or fashion. In effect, therefore, the rubbing plates may be, if desired, also considered as portions of the housings **33** in that they define the lateral or transverse limits of the housings.

Disposed or confined within each housing is a pair of preferably counterpart wedges or shoes **39**. Each shoe desirably comprises a transversely flaring, sloping or inclined or rubbing surface **40** arranged to bear constantly against a correspondingly disposed surface **41** of a related rubbing plate. The shoes are of such vertical extent that they remain substantially stationary with respect to the journal box during a relative vertical movement between the side frame and journal box since they are held so by means of the overlying or telescoping ledges. There is, of course, some clearance between some of the shoes and some of the ledges but this clearance is compensated for by another means hereinafter particularly referred to. Accordingly, any relative vertical movement between the journal box and side frame is definitely and positively controlled by the creation of frictional forces on the mated movable surfaces **40** and **41** which disturb the otherwise harmonic vibrations of the resilient means **24**. The shoes of each pair are urged oppositely and transversely of the truck by any type of compressible or resilient means which in the instant application is characterized by a single coil or helical compression spring **42** and thus the surfaces **40** and **41** are at all times maintained in frictional contact with one another for the creation of frictional forces during the slightest relative vertical movement between the journal box and side frame. At the present writing it is believed necessary to provide only a single compression spring intermediate the height of each pair of counterpart shoes but if desired, as will be appreciated, two or more springs of any type of resilient means may be here employed just so long as the shoes of each pair are, through the action of the interposed resilient means, urged in a direction away from one another. A recess **43** is provided in each shoe for the reception of an extremity of the compression spring to thereby maintain the latter in an operative position.

In order to provide for, so far as possible, an antirattling device or feature in the snubbing means, the coil spring **42** at each side of the journal box is disposed at an angle preferably acute, to the horizontal so that each of these shoe springs are inclined or sloped transversely of the truck. The recesses in the shoes are arranged normal to the axis of the associated spring so that a full and complete bearing will be effected between each spring and its related shoes. By thus disposing the spring **42** it will be noted that the friction shoe **39***a*, arranged to bear against the inboard column flange, is urged vertically or downwardly against the lower journal box ledge while the related counterpart friction shoe **39***b* is urged vertically or upwardly against the related journal box upper ledge (see Fig. 3). This particular spring disposition is intended to not only urge the shoes transversely of the truck for the creation of the previously indicated frictional forces but it also tends to urge the shoes vertically away from one another to maintain constant contacts with the aforesaid ledges to thereby incorporate an antirattling feature in the snubbing device.

Disposed at an angle to the transversely inclined rubbing surface 40 of each shoe there is provided a substantially truly transverse and vertical, brushing surface 44 which, through the means of the transversely inclined surfaces 40 and 41, assisted by the action of the interposed compression spring, is at all times maintained in intimate contact with a plane, vertical and transverse or outer surface 45 on a related wear plate 35. By reason of the particularly illustrated and described arrangement and construction it will be noted that the journal box is free to move transversely of the truck without disturbing the relationship between the shoes and side frame and, further, any such journal box transverse movement will be positively and definitely controlled by the creation of frictional forces on the surfaces 44 and 45. It will be noted still further that because of the relatively large or sharp disposition of the surfaces 40 and 41 the surface 45 of the journal box wear plate will in effect merely brush across the shoe surfaces 44 to thereby control rather than stop or arrest such transverse journal box movement except to prevent secondary vibratory movements.

It is well known in the art to which this invention appertains that in certain types of bearings housed in the journal box there is no provision for a transverse vertical angling movement between the journal box and axle. In such instances some provisions should be made in the journal box-snubbing means-side frame connection to compensate for such an angling movement which periodically occurs in service. In this regard, therefore, the structure under immediate consideration may be considered as having universal application in that it has incorporated therein certain features to permit a vertical angling movement of the journal box and axle relative to the side frame. In this regard, therefore, reference is made to upper and lower end surfaces 46 on the shoes. The surfaces are desirably convex, cylindrical, crowned or arcuate and are arranged to roll on or contact flat or plane surfaces 34*a* on the ledges. Accordingly, the journal box may freely tilt or angle in a transverse vertical direction without otherwise disturbing the predetermined relationship between the surfaces 44 and 45 and the surfaces 40 and 41.

Locking means have been provided in the construction to maintain the shoes and compression springs in an assembled relation preparatory to assembling these elements with the side frame and journal box as well as prevent the friction means inclusive of the shoes and springs from exploding upon removal of a side frame from a journal box and supporting springs. Toward this end, therefore, each shoe is provided with a plurality of or upper and lower or vertically spaced, transversely extending arms 47 formed preferably integral with the related shoe. The arms of each shoe extend transversely of the truck away from their related surface 41 and preferably parallel with their related surface 44. The arms of each shoe terminate in vertically or angularly disposed shoulders 48 with the shoulders of the arms of each shoe preferably extending in the same direction, thus assisting in making the shoes counterparts of one another. It will be noted that the arms of mated shoes overlap in spaced relation to one another with the shoulders of one shoe extending into the area of and back of the shoulders of another shoe. More specifically, the shoulders of the shoe 39*a* are illustrated extending downwardly and the shoulders of the shoe 39*b* are illustrated extending upwardly. The distance, therefore, between the shoulders 48 on the related shoes is determinative of the permissible expansive movement of the related shoes away from one another. When the side frame is removed from a supporting journal box the snubbing means at each side of the journal box is permitted to expand only to the limit of the distance between oppositely spaced shoulders 48 and thus the shoes are prevented from becoming entirely separated and possibly rendering injury to an operator.

Means has also been provided in the construction to further facilitate an assembly of the friction means with the journal box and side frame. Toward the accomplishment of this end each friction shoe at or near the juncture of the inclined surface 40 and the curved arcuate or crowned end surfaces 46 is provided with a beveled surface 49. The side frame column, inboard and outboard flanges are, at the lower extremity of the inclined surfaces, provided with beveled surfaces 50 of the same or similar inclination as the surfaces 49 (see Figure 3). In the process of assembly the journal box has, associated with each housing thereof, a nest of friction means each inclusive of a pair of shoes and an interposed spring. The coil springs 24 with their spring plates 28 are then mounted on their journal box shelves and the side frame is then lowered down over this described assemblage until the side frame beveled surfaces 50 come in contact with and moves along the shoe surfaces 49 at which time the shoes will be urged toward one another until upon a continued downward movement of the side frame, the components of the truck will assume a normal relation as illustrated particularly in Figure 1 of the drawings.

In order to further improve the truck construction and particularly the side frame-journal box connection, a safety means is incorporated in the structure to positively prevent an unwarranted or accidental separation of the journal box and side frame. This safety means is herein characterized by the inner jaw having at its lowermost extremity, transversely spaced bearings 51 formed integrally therewith. Extending transversely of the truck and bridging the space between the bearings is a safety pin or tie bar 52 having its ends seated in suitable sockets forming a part of the bearings. The innermost bearing 51*a* is of a closed socket type preventing a shifting movement of the tie bar inwardly of the truck from an operative position while the outermost bearing 51*b* is of an open socket type for the introduction of the tie bar into the bearings. A locking means 53 or key is removably secured to or associated with the outermost bearing 51*b* to prevent an unwarranted shifting of the tie bar outwardly of the truck. It is to be noted that the tie bar is spaced a predetermined distance below an overlying journal box shelf with this distance between the tie bar and shelf being determined by the permissible movement of the side frame upwardly from the journal box from its illustrated normal position. Further it is to be noted that the tie bar is in a position spaced below an overlying shelf adjacent a free extremity thereof. The purpose behind this association or relationship is to present an appreciable lever arm so that when conditions are such that the journal box shelf comes to rest against the tie bar the journal box will be canted or rotated about the axis of its contained axle and the upper outer corner of the journal box designated by the reference character 54 will come to rest against the outer jaw flanges at a point adjacent to their upper extremities or in the close proximity to the intermediate web 15. This above described arrangement eliminates entirely the provision of a safety means on the outer column and thereby makes possible the shortening of the effective and material length of the outer column. Also because of the absence of a safety means on the outer column any forces tending to shear off the outer column are transmitted to this member in an area adjacent to its connection to the intermediate web.

From the above it will be noted that various changes and alterations may be made to the illustrated and described specie of the invention without departing from the spirit of the invention and scope of the appended claims.

I claim:

1. In a railway truck of the character having a side frame and journal box arranged for relative vertical and transverse movements, the combination of, coil springs supporting said side frame from said journal box, vertically spaced means on said journal box, relatively flared surfaces fixed with respect to said side frame, shoes car-

ried by said vertically spaced means and having surfaces engaging said journal box between said vertically spaced means and additional surfaces frictionally engaging said relatively flared surfaces, overlapping means formed on said shoes for limiting an expansive movement of said shoes, and spring means urging said shoes apart.

2. In a railway truck of the character having a side frame and journal box arranged for relative vertical movements, the combination of, coil springs supporting said side frame from said journal box, friction shoes carried by said journal box, relatively flared surfaces fixed with respect to said side frame and frictionally engaged by said shoes, spring means interposed between said shoes for urging the latter apart, and overlapping means formed on said shoes for limiting a spreading movement thereof.

3. In a railway truck of the character having a side frame and journal box arranged for relative vertical movements, the combination of, coil springs supporting said side frame from said journal box, friction shoes carried by said journal box, relatively flared surfaces fixed with respect to said side frame and frictionally engaged by said shoes, and spring means interposed between said shoes; said spring means being so arranged with said shoes that the latter are urged vertically in opposite directions and transversely of said truck.

4. In a railway truck of the character having a side frame and journal box arranged for relative vertical movements, the combination of, coil springs supporting said side frame from said journal box, friction shoes carried by said journal box, relatively flared surfaces carried by said side frame and frictionally engaged by said shoes, and coil spring means interposed between said shoes; said coil spring means being inclined transversely of said truck.

5. In a railway truck of the character having a side frame and journal box arranged for relative vertical movements, the combination of, coil springs supporting said side frame from said journal box, friction shoes carried by said journal box, relatively flared surfaces on said side frame and frictionally engaged by said shoes, and coil spring means seated against said shoe means, said coil spring means being so arranged as to urge said shoe means vertically in opposite directions and transversely of said truck.

6. In a railway truck of the character having a side frame and journal box arranged for relative vertical movements, the combination of, coil springs supporting said frame from said journal box, friction shoes carried by said journal box, relatively flared surfaces on said side frame and frictionally engaged by said shoes, and resilient means interposed between and reacting against said friction shoes for urging the latter in opposite directions against said side frame in an inclined direction transversely of said truck.

7. In a railway truck of the character having a side frame and journal box arranged for relative vertical movements, the combination of, coil springs supporting said side frame from said journal box, friction shoes carried by said journal box, relatively flared surfaces on said side frame and frictionally engaged by said shoes, and compressible resilient means extending between and engaging said shoes; said compressible resilient means being so arranged and constructed that said shoes are urged apart in an inclined direction transversely of said truck.

8. In a railway truck of the character having a side frame and journal box arranged for relative vertical and transverse movements, the combination of, coil springs supporting said side frame from said journal box, relatively flared vertically directed surfaces on said side frame, friction shoes carried by said journal box and having correspondingly disposed surfaces engaging said relatively flared surfaces for snubbing said vertical movement, transverse surfaces on said shoes engaging correspondingly disposed surfaces on said journal box for snubbing said transverse movement, and inclined spring means urging said shoes apart.

9. In a railway truck of the character having a side frame and journal box arranged for relative vertical and transverse movements, the combination of, coil springs supporting said side frame from said journal box, relatively flared vertically directed surfaces on said side frame, friction shoes carried by said journal box and having correspondingly disposed surfaces engaging said relatively flared surfaces for snubbing said vertical movement, transverse surfaces on said shoes engaging correspondingly disopsed surfaces on said journal box for snubbing said transverse movement, and spring means inclined transversely of said truck for urgng said shoes in a direction in alignment with an axis of said spring means.

10. In a railway truck of the character having a side frame and journal box arranged for relative vertical movements, the combination of, columns formed on said side frame defining a space for said journal box therebetween, one of said columns terminating short of a bottom of said journal box and another of said columns extending downwardly below said journal box, coil spring means within said columns and acting between said side frame and journal box, snubbing means carried by sides of said journal box for frictionally engaging said columns during said vertical movements, and safety means removably secured to the longer of said columns for limiting a vertical separating movement between the journal box and side frame.

11. In a railway truck of the character having a side frame and journal box arranged for relative vertical movements, the combination of, longitudinally spaced inner and outer columns formed on said side frame defining a space for said journal box therebetween, said outer column terminating short of a bottom of said journal box and said inner column terminating below a bottom of said journal box, coil spring means within said columns and acting between said journal box and side frame, spring urged shoes witnin said columns and carried by said journal box for frictionally engaging said columns, and removable means secured to said inner column and spaced below said journal box for limiting a vertical separating movement between said journal box and side frame.

12. In a railway truck of the character having a side frame and journal box arranged for relative vertical movements, the combination of, longitudinally spaced inner and outer columns formed on said side frame defining a space for said journal box therebetween, shelves outstanding from said journal box, said outer column terminating short of an associated shelf and said inner column terminating below an associated shelf, coil spring means mounted upon said shelves and supporting said side frame, friction means within said columns for snubbing the action of said coil spring means, and safety means carried by said inner column only and arranged to be contacted by an associated shelf for limiting a separating movement of said journal box and side frame.

13. In a railway truck of the character having a side frame and journal box arranged for relative vertical movements, the combination of, longitudinally spaced inner and outer columns formed on said side frame defining a space for said journal box therebetween, shelves outstanding from said journal box, said outer column terminating short of an associated shelf and said inner column terminating below an associated shelf, snubbed coil springs mounted upon said shelves and positioned within said columns for supporting said side frame, and safety means removably secured to said inner column only for engagement by a portion of an associated shelf adjacent an extremity thereof.

14. In a railway truck of the character having a side frame and journal box arranged for relative vertical and transverse movements, the combination of, coil springs supporting said side frame from said journal box, transverse friction surfaces on side walls of said journal box,

relatively flared friction surfaces carried by said side frame, shoes carried by said journal box, and spring means disposed at an acute angle to the horizontal for urging said shoes against all friction surfaces to snub said vertical and transverse movements.

15. In a railway truck of the character having a side frame and journal box arranged for relative vertical movements, the combination of, coil springs supporting said side frame from said journal box, transverse friction surfaces on side walls of said journal box, relatively flared friction surfaces carried by said side frame, shoes moved vertically by said journal box, and coil spring means sloping transversely of said truck for urging said shoes into intimate contact with said friction surfaces to snub said relative movements.

16. In a railway truck of the character having a side frame and journal box arranged for relative vertical movements, the combination of, coil springs supporting said side frame from said journal box, transverse friction surfaces on side walls of said journal box, transversely spaced and relatively flared friction surfaces in said side frame, wedge shaped shoes moved vertically by said journal box, resilient means having an axis sloping transversely of said truck and urging said wedge-shaped shoes into intimate contact with all of said friction surfaces.

17. In a railway truck of the character having a side frame member and a load carrying member arranged for relative vertical movements, the combination of, supporting coil springs interposed between said members, vertical and transverse friction surfaces on one of said members, relatively flared friction surfaces carried by the other of said members, shoes carried by one of said members, and resilient means disposed diagonally transversely of said truck and between said shoes for urging the latter against all friction surfaces to snub all of said relative movements.

18. In a railway truck of the character having a journal box provided with supporting shelves and a side frame carried by springs supported by said shelves, the combination of, means at a side of said journal box and located between said journal box and springs, and friction means carried by said first named means and arranged to engage frictionally said side frame for controlling movement of said springs; said friction means containing a spring having an axis disposed diagonally transversely of said truck for expanding said friction means into said frictional engagement.

19. In a railway truck of the character having a journal box provided with supporting shelves and a side frame carried by springs supported by said shelves, the combination of, means at a side of said journal box and located between said journal box and springs, and friction means carried by said first named means and arranged to engage frictionally said side frame and journal box for controlling movements of said springs; said friction means containing a coil spring having an inclined axis disposed transversely of said truck for expanding said friction means into said frictional engagement.

20. In a railway truck of the character having a journal box provided with supporting shelves and a side frame carried by springs supported by said shelves, the combination of, vertically spaced means outstanding from said journal box and terminating short of said springs and within said side frame, and friction means held against vertical movement by said first named means; said friction means containing a helical spring having an axis arranged so as to react diagonally and transversely of said truck for expanding said friction means into frictional engagement with said side frame.

21. In a snubbed unit, the combination of, a pair of members arranged to move vertically relative to one another, supporting coil springs between said members, a vertically directed friction surface carried by one of said members, a substantially rigid horizontally directed shelf carried by another of said members spaced from and at a height intermediate said friction surface, a friction shoe having a horizontally directed face in contact with said horizontally directed shelf and a vertically directed face in contact with said friction surface, said shoe being movable horizontally relative to said shelf, a spring seat in said shoe disposed at an angle to said friction surface and shelf, and a spring having an axis inclined with respect to said faces and bearing against said spring seat for urging said shoe against said friction surface and shelf.

22. In a railway truck of the character having a side frame member and a load carrying member arranged for relative vertical movements, the combination of, coil springs interposed between said members for resiliently supporting one member from another member, a vertical friction surface carried by one of said members in horizontal spaced relation to said other member, a substantially rigid horizontal abutting surface carried by said other member adjacent and in horizontal spaced relation to said friction surface, said horizontal surface being normal to said vertical friction surface and intermediate the height thereof, an angularly shaped friction shoe movable vertically by the member carrying said abutting surface, a spring seat within the confines of said friction shoe and exposed diagonally of said friction shoe, and a precompressed helical spring extending out of said friction shoe beyond the limits thereof; said helical spring having an axis disposed diagonally of said members and friction shoe and bearing against said spring seat to hold said friction shoe against said horizontal abutting surface and urge said shoe horizontally of said horizontal surface into frictional contact with said vertical friction surface.

23. In a railway truck of the character having a side frame member and a load carrying member arranged for relative vertical movements, the combination of, coil springs interposed between said members for resiliently supporting one member from another member, a vertical friction surface carried by said side frame member in horizontal spaced relation to said load carrying member, a substantially rigid horizontal abutting surface carried by said load carrying member adjacent to and intermediate a height of said vertical friction surface, a friction shoe movable vertically by said load carrying member relative to said side frame member, a horizontally disposed face on said shoe in bearing relation with said horizontal abutting surface, a vertically disposed friction face on said shoe in frictional engagement with said vertical friction surface, a spring seat within said shoe exposed outwardly of said shoe and arranged at an oblique angle to said shoe horizontally disposed face and vertically disposed friction face, and a precompressed coil spring bearing against said spring seat and extending outwardly of said shoe; said coil spring having an axis disposed at an oblique angle to said shoe horizontally disposed face and vertically disposed friction face for urging said shoe along said load carrying member horizontal abutting surface into frictional engagement with said side frame member vertical friction surface.

24. In a snubbed unit, the combination of, a pair of members arranged to move vertically relative to one another, supporting coil springs between said members, one of said members comprising an upstanding element, a vertically directed friction surface carried by said element, a substantially rigid horizontally directed shelf carried by another of said members spaced from and at a height intermediate the upper and lower extremities of said element, a friction shoe having a substantially horizontally directed face in contact with said horizontally directed shelf and a vertically directed face in contact with said friction surface, said shoe being movable horizontally relative to said shelf, a spring seat in said shoe disposed at an angle to said friction surface and shelf, and a spring having an axis inclined with respect to said faces and bearing against said spring seat for urging said shoe against said friction surface and shelf.

25. In a railway car truck of the character having a side frame member and a load carrying member arranged for relative vertical movements, the combination of, coil springs interposed between said members for resiliently supporting one member from another member, one of said members comprising an upstanding element, a vertical friction surface carried by said element in horizontal spaced relation to said other member, a substantially rigid horizontal abutting surface carried by said other member adjacent and in horizontal spaced relation to said friction surface, said horizontal surface being normal to said vertical friction surface and intermediate the height of said element, an angularly shaped friction shoe movable vertically by the member carrying said abutting surface, a spring seat within the confines of said friction shoe and exposed diagonally of said friction shoe, and a precompressed helical spring extending out of said friction shoe beyond the limits thereof; said helical spring having an axis disposed diagonally of said members and friction shoe and bearing against said spring seat to hold said friction shoe against said horizontal abutting surface and urge said shoe horizontally of said horizontal surface into frictional contact with said vertical friction surface.

26. In a railway car truck of the character having a side frame member and a load carrying member arranged for relative vertical movements, the combination of, coil springs interposed between said members for resiliently supporting one member from another member, said side frame member comprising a column having a substantially vertical friction surface in horizontal spaced relation to said load carrying member, a substantially rigid approximately horizontal abutting surface carried by said load carrying member adjacent to and intermediate a height of said column, a friction shoe movable vertically by said load carrying member relative to said side frame member, a substantially horizontally disposed face on said shoe in bearing relation with said abutting surface, a substantially vertically disposed friction face on said shoe in frictional engagement with said substantially vertical friction surface, a spring seat within said shoe exposed outwardly of said shoe and arranged at an oblique angle to each of said faces, and a precompressed coil spring bearing against said spring seat and extending outwardly of said shoe; said coil spring having an axis disposed at an oblique angle to each of said faces for urging said shoe along said abutting surface into frictional engagement with said substantially vertical friction surface.

27. In a snubbed unit, the combination of, a pair of members arranged to move vertically relative to one another, supporting coil springs between said members, a vertically directed friction surface carried by one of said members, a substantially rigid horizontally directed shelf carried by another of said members and spaced from said friction surface, a friction shoe having a substantially horizontally directed face in contact with said horizontally directed shelf and a vertically directed face in contact with said friction surface, said shoe being movable horizontally relative to said shelf, a spring seat in said shoe disposed at an angle to said friction surface and shelf, and a spring having an axis inclined with respect to said faces and bearing against said spring seat for urging said shoe against said friction surface and shelf.

28. In a railway truck of the character having a pair of members arranged for relative vertical movements and having coil springs interposed between said members for resiliently supporting one member from another member, the combination of, a vertically directed friction surface carried by one of said members, a substantially rigid horizontally directed shelf carried by another of said members and spaced from said friction surface, a friction shoe having a substantially horizontally directed face in contact with said horizontally directed shelf and a vertically directed face in contact with said friction surface, said shoe being movable horizontally relative to said shelf, a spring seat in said shoe disposed at an angle to said friction surface and shelf, and a spring having an axis inclined with respect to said faces and bearing against said spring seat for urging said shoe against said friction surface and shelf.

29. In a railway truck of the character having a pair of members arranged for relative vertical movements and having coil springs interposed between said members for resiliently supporting one member from another member, the combination of, vertically directed friction surfaces carried by one of said members, a pair of vertically spaced substantially rigid horizontally directed shelves carried by the other of said members and spaced from said friction surfaces, a pair of friction shoes each having a substantially horizontally directed face in contact with one of said horizontally directed shelves and a vertically directed face in contact with one of said friction surfaces, said shoes being movable horizontally relative to said shelves, a spring seat in each shoe disposed at an angle to one of said friction surfaces and shelves, and spring means bearing against each of said spring seats and having an axis inclined with respect to said faces for urging each of said shoes against the friction surface and shelf in contact with the faces thereof.

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