April 12, 1949. G. F. COUCH 2,467,255

SNUBBED RAILWAY TRUCK

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Fig. 2.

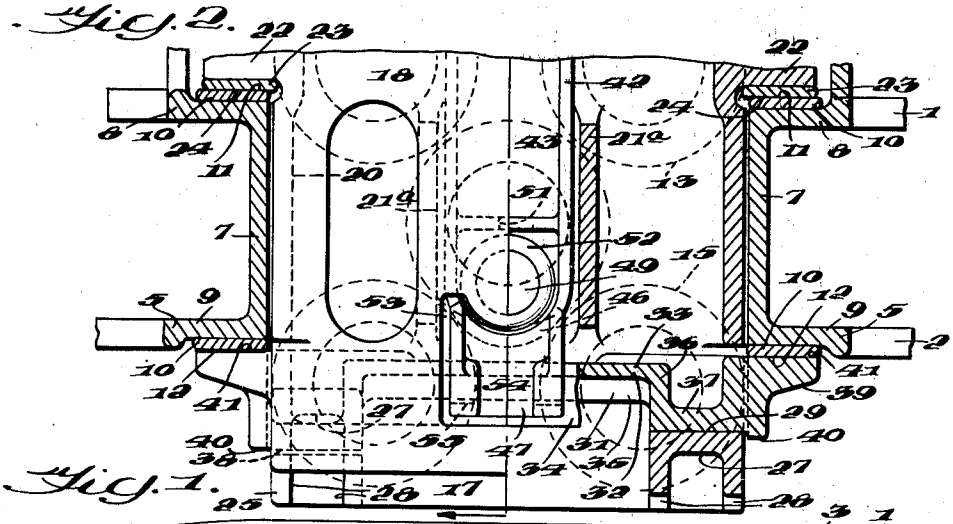
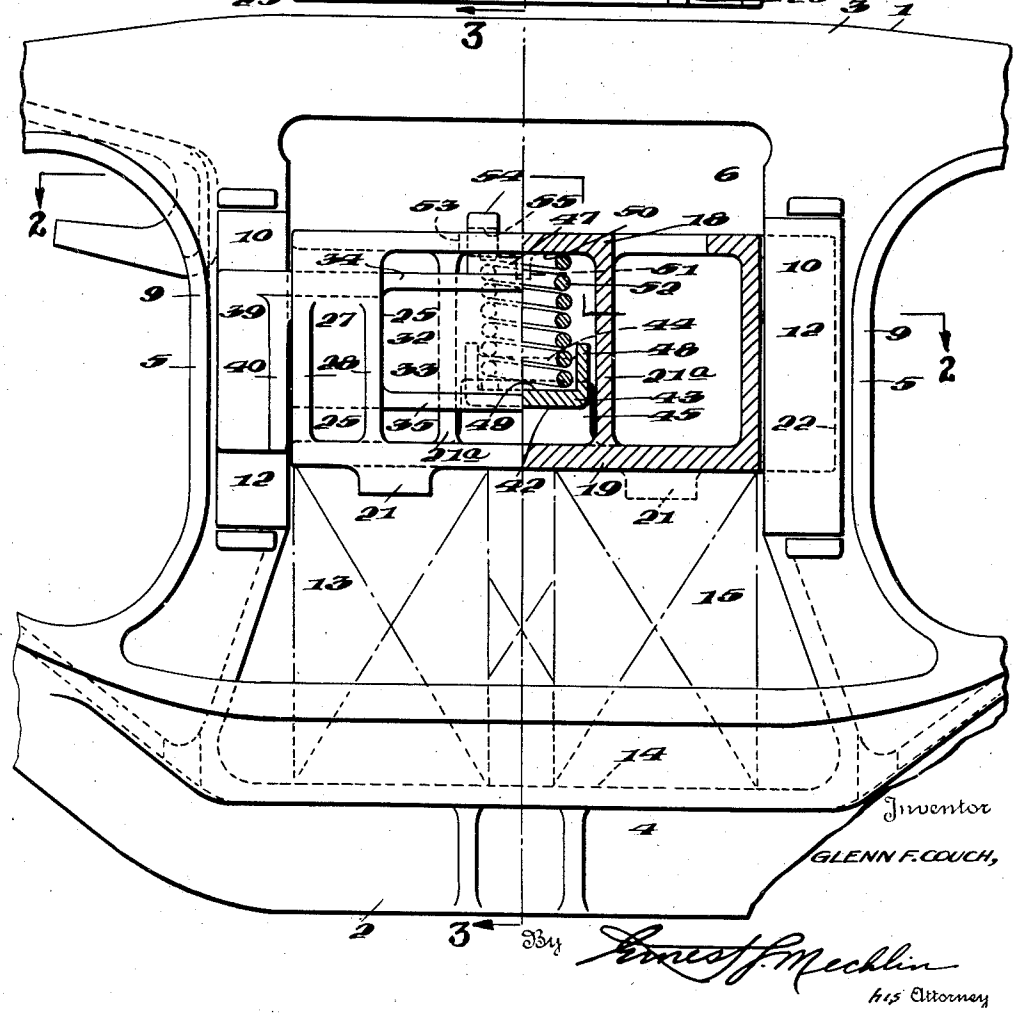


Fig. 1.



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Fig. 3.

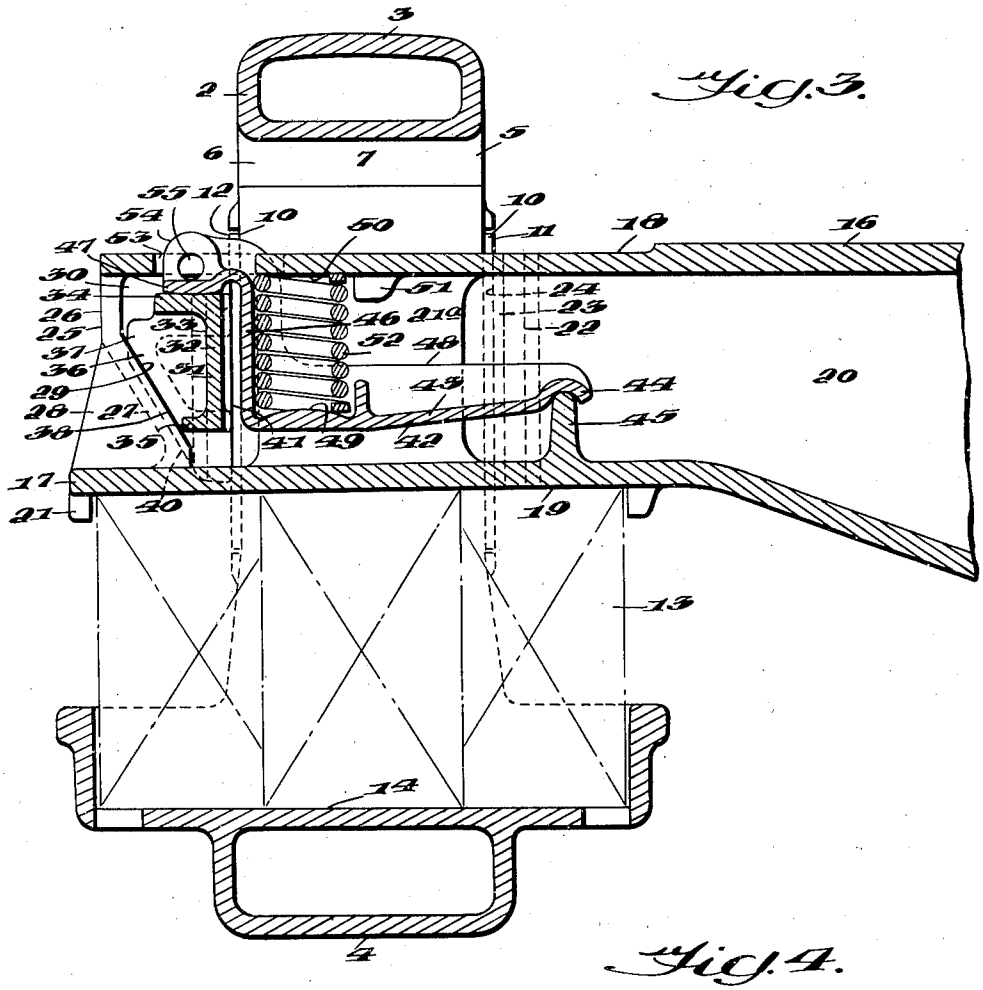
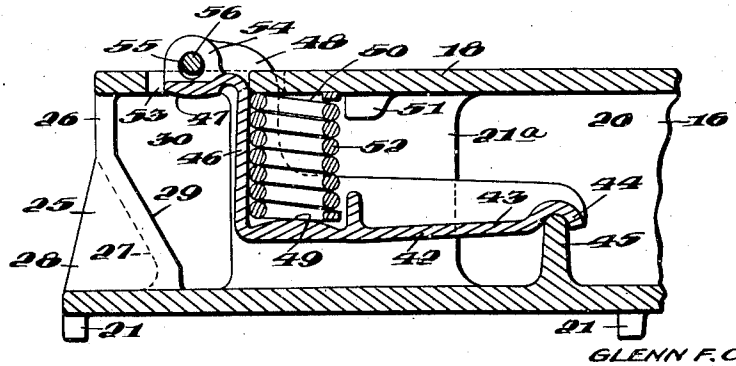


Fig. 4.



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SNUBBED RAILWAY TRUCK

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Application March 9, 1944, Serial No. 525,721

21 Claims. (Cl. 105—197)

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The invention pertains to improvements in a railway truck and more particularly in a type thereof wherein frictional forces control, in a snubbing manner, the action of resilient bolster supporting means.

An object of the invention is the provision of a removable member so associated with a bolster and side frame of a railway truck, that it may readily be removed to facilitate a quick wheel change operation.

Another object of the invention is to provide, in a railway truck, a movable member disposed outwardly of a side frame and urged toward columns of the side frame to effect a brushing or wiping action against the columns to thereby snub or control the action of bolster supporting springs.

A further object of the invention is to provide, in a quick wheel change railway truck, a movable member spanning columns of a side frame outwardly thereof with resilient means connected to the movable member and so arranged that the resilient means may be further precompressed to relieve the movable member of the forces built up in the resilient means and facilitate the entire removal of the movable member from the truck assembly.

An added object of the invention is to provide a railway truck having both quick wheel change and snubbing features and which is of simple and durable construction, efficient operation, positive action and relatively few parts for the work accomplished.

These and other objects of the invention will become apparent from the succeeding description considered together with the accompanying drawings, the latter of which disclose an exemplified form of the invention and wherein:

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

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

Figure 3 is a cross sectional view of the railway truck illustrating the present invention and is to be considered as taken along the lines 3—3 of Figure 1 looking in the direction of the arrows.

Figure 4 is a sectional view taken through a bolster removed from a side frame and showing some of its component parts in an abnormal position.

Referring now in detail to the drawings,

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wherein like reference characters designate like parts, the numeral 1 is employed to indicate, in a somewhat general manner, a railway truck of a form exemplary of the present invention and which comprises a pair of transversely spaced side frames 2, only a portion of one of which is shown. The side frame is more or less of a design recognized at the present writing as standard in that it includes a top or upper compression member 3 spaced vertically from a lower or bottom tension member 4 both of which are joined intermediate their ends by transversely spaced guide columns 5 which define a window or opening 6 therebetween. Each guide column preferably has a transverse web 7 terminating in or merging into transversely spaced inner and outer flanges 8 and 9, respectively, extending toward the associated end of the side frame away from the window or opening. Each column flange has a wear plate 10 welded or otherwise secured thereto to present inner and outer wear surfaces 11 and 12, respectively, which face away from the columns transversely of the truck. Occupying or positioned in the lower area of the side frame opening is a set or nest of springs or resilient means 13 seated upon a widened accommodating portion 14 of the tension member and desirably formed by symmetrically arranged all coil or helical springs 15.

A bolster 16 extending transversely of the truck intermediate the ends of the side frame, forms a load carrying member and has an extremity 17 thereof occupying a portion of the upper limits of each bolster opening. The bolster desirably comprises a top wall 18 spaced vertically from a lower wall 19 and both of which extend for substantially the entire length of the bolster and are joined, integrally at or adjacent their transverse limits, by vertical side walls 20. The side walls lie in the close proximity to the column webs but are spaced therefrom a sufficent distance to permit a relatively free, vertical or service movement of the bolster. The bottom wall bears directly upon the nest of all coil springs, the latter of which form a resilient or yieldable support for the bolster to effect a relatively free easy riding truck. Positioning lugs 21 are formed integrally with the bolster bottom wall to lie in the proximity of the springs of the nest to retain them in a predetermined operable position.

Due to certain well recognized operating conditions to which a railway truck is subjected in service, the bolster supporting springs, if not otherwise arrested, will have set up therein syn-

chronous vibrations, the latter of which will be detrimental and destructive to the truck structure and to the successful operation thereof. Means has been incorporated in the truck structure of the present invention toward the creation of frictional forces to thereby set up a snubbing action to damp out periodic, amplifying oscillations of the bolster supporting springs. Towards the accomplishment of this purpose, therefore, there has been provided, outwardly from the bolster side walls and inwardly of the side frame adjacent each column, a lug **22** which overlies the associated column and carries, through the medium of welds or any other desired means, a wear plate **23**. Each wear plate has an outwardly facing surface **24** in constant bearing relation with an associated inner surface **11** of the columns so that not only are frictional forces created on the contiguous surfaces **24** and **11** but, because of this surface relationship, the bolster is prevented from moving transversely of the truck as well as angling in a horizontal manner relative to the side frame. A substantially rigid truck is thus formed for reasons well recognized in the art to which it appertains.

Outwardly of the truck beyond the limits of the side frame, the bolster extremity is provided with a pair of longitudinally spaced upright means or posts, stanchions or columns **25** each of which extends between and is formed integrally with the top and bottom bolster walls at or adjacent to an outer corner thereof. Each post has an upper portion **26** formed as a web, vertically disposed which, intermediate the top and bottom bolster walls, merges into a lower portion **27** directed downwardly and inwardly of the bolster and side frame or of the truck structure. Reinforcing each post against stresses to which it will be subjected in service are a pair of gussets or knee braces **28** longitudinally spaced and merging with the bolster bottom wall and the free extremities of the lower portion **27**. Each post lower portion has, facing inwardly of the bolster or truck structure, a downwardly and inwardly sloping or extending wedge face **29** which defines partially one side of a window or opening **30** located within the confines of the bolster end. The window **30** extends longitudinally of the truck, perpendicularly to the side frame column defined opening or transversely of the bolster and projects entirely through the bolster end at a position removed from but in the proximity to, the related side frame columns.

Disposed within the bolster window **30** is a shoe, beam or bridge **31** spanning or overlapping the side frame columns and comprising an intermediate or central portion or connecting bar **32** formed by a vertically disposed web **33** having upper and lower horizontal plates **34** and **35**, respectively, formed integrally therewith to present an I configuration in cross section. At each extremity of the connecting bar in the proximity of the post, the web **33** is desirably directed outwardly of the truck toward the post, as at **36**, to merge into a sloping wear block **37** which is disposed in a direction longitudinally of the truck. Each wear block carries an outer sloping face **38** extending downwardly and inwardly of the truck to correspond with and bear against the sloping wedge face **29** of an associated post. By reason of the particular disposition of the sloping faces, the beam is arranged to tend to move in a direction downwardly and inwardly of the truck structure for the reasons to be hereinafter explained.

Forming the extremities of the beam or bridge are a pair of spaced flanges or abutments **39** reentering the truck from the free ends of the wear blocks toward the side frame columns. The bridge flanges have ribs **40** in overlying, overlapping or telescoping relation to the post bottom portion to form an interlock between the bridge and bolster and thereby guard against an unwarranted or accidental separation of the beam from the bolster. Each flange or abutment presents an inwardly facing vertical surface **41** bearing constantly against a related column outer surface **12** so that frictional forces will at all times be created also on the rubbing surfaces **41** and **12** during a vertical service movement of the bolster. This post and bridge arrangement also maintains the surfaces **24** and **11** in constant contact and, as will be noted from the foregoing, any vertical movement of the bolster in response to service loads, will cause a friction creating brushing or sweeping action of the bolster carried surfaces **24** and **41** along the side frame surfaces **11** and **12**, respectively.

It will further be noted from the foregoing and the hereinafter described structure and relationship between the various truck components that the frictional forces are not varied by different loads being applied to the bolster. A quick wheel change is effected by raising the beam or bridge upwardly toward the top wall of the bolster until the interlocking feature of the ribs and posts is removed, at which time the bridge may be withdrawn easily from the bolster window **30** in a direction longitudinally of the truck toward either end of the side frame. This upward movement of the bridge will cause the faces **41** to move outwardly of the truck away from the column surfaces **12**. When the bridge is thus removed from the bolster it will be observed that no obstruction will be present to prevent a movement of the side frame away from the bolster end.

Means has been provided in the railway truck of the present invention to resiliently urge the beam or bridge into intimate contact with the bolster posts and side frame columns as illustrated in Figures 1, 2 and 3 and, as exemplary of such a means, a unitary element or casting in the nature of a pivotal lever **42** is positioned within the confines of the bolster. Webs **21***a* extend vertically between the bolster top and bottom walls in spaced relation to the longitudinally extending lever. These webs **21***a*, lying preferably in the plane of the side frame, reinforce the bolster extremity to compensate for the metal removed by the formation of the cross opening or window **30**. The lever is formed by a lower or horizontal floor **43** having its innermost end thereof formed as an inverted or downwardly opening cup **44**. Upstanding from the bolster bottom wall intermediate the side walls is a bar or upright means **45** extending into the cup extremity and forming a suitable pivot bearing for the lever. The extremity of the lower floor, removed from the cup, merges into a vertical intermediate wall **46** which continues toward the top wall of the bolster where it terminates in an angularly disposed rocker, bearing on arm **47**. The rocker normally bears upon the bridge upper horizontal plate intermediate the ends thereof. Side flanges **48** extend the full length of the lever to reinforce it against stresses to which it will be subjected in service. Adjacent to the intermediate wall **46** on the floor is a spring seat **49** upwardly facing and desir-

ably cylindrical and convex in configuration. Immediately above the lever seat is a relatively flat, downwardly facing spring seat **50** formed on the under side of the bolster top wall and defined by a shoulder **51**. Interposed between and acting against the spaced spring seats is a vertically disposed coil or helical spring or resilient means **52** which, being precompressed or under an initial compression, urges the lever downwardly about its cup extremity and the bridge, through the medium of the rocker, into wedging engagement with the bolster posts and side frame columns.

When the truck structure is in an assembled relation as illustrated in Figures 1 through 3, it may be desired, as is the case during the life of a railway truck, to change the wheel and axle assemblies (not shown). As previously recited, this is effected by the removal of the bridge which spans the columns in overlying relation. However, the present construction contemplates maintaining the lever and spring assembled with the bolster during the quick wheel change operation and, accordingly, the top wall of the bolster is provided with an aperture **53** through which there extends a pair of pierced lugs or eyelets **54** upstanding through the plane of the top wall from the lever rocker. Normally, as shown in Figures 1 through 3, the holes **55** in the eyelets are in the plane of the bolster top wall so that when a quick wheel change is desired, a pinch bar or any other suitable instrument (not shown) is inserted into the bolster beneath the lever floor and, upon the application of proper forces to the pinch bar, the spring **52** will be further compressed to raise the holes, as shown most clearly in Figure 4, above the bolster top wall sufficiently to permit threading a bolt **56** through the holes to maintain the lever elevated away from the bridge.

From the foregoing description, considered together with the accompanying drawings, it will be noted that various changes and alterations may be made to the illustrated and described construction without departing from within the spirit of the invention and scope of the appended claims.

I claim:

1. In a quick wheel change truck, a side frame having guide columns defining an opening therebetween, a bolster having an end positioned in said opening, surfaces in said bolster end sloping downwardly and inwardly of said truck, removable friction means having spaced surfaces cooperating with said sloping surfaces and arranged to span said columns to be in frictional engagement therewith, pivot means within said bolster associated with said friction means, and spring means acting between a top wall of said bolster and said pivot means for urging said friction means downwardly.

2. In a quick wheel change truck, a side frame having guide columns defining an opening therebetween, a bolster having an end positioned in said opening, surfaces carried by said bolster end sloping downwardly and inwardly of said truck, bridge means in bearing relation with said sloping surfaces and in frictional engagement with said columns, pivot means extending between said bridge means and bolster, and spring means acting between said pivot means and bolster.

3. In a quick wheel change truck, a side frame having guide columns defining an opening therebetween, a bolster having an end portion in said opening and arranged to be removed horizontally

therefrom, surfaces carried by said bolster end outwardly of said side frame sloping downwardly and inwardly of said truck, means in bearing relation with said sloping surfaces and columns, means pivoted to said bolster and bearing against said first named means, and spring means acting against said pivot means.

4. In a quick wheel change truck, a side frame having guide columns defining an opening therebetween, a bolster having an end portion in said opening and arranged to be removed horizontally therefrom, spaced coplanar sloping surfaces carried by said bolster outwardly of said side frame, removable means spanning and arranged to engage said columns and in bearing relation with said sloping surfaces, removable pivot means carried by said bolster and bearing upon said spanning means, and spring means acting between said bolster and pivot means.

5. In a quick wheel change truck, a side frame having guide columns defining an opening therebetween, a bolster having an end portion in said opening and arranged to be removed horizontally therefrom, spaced coplanar sloping surfaces carried by said bolster outwardly of said side frame, removable means spanning and arranged to engage said columns and in bearing relation with said sloping surfaces, removable pivot means carried by said bolster and bearing upon said spanning means, spring means acting between said bolster and pivot means, and means on said pivot means for limiting movement of the latter toward said spanning means.

6. In a quick wheel change truck, a side frame having guide columns defining an opening therebetween, a bolster having an end portion in said opening and arranged to be removed horizontally therefrom, spaced coplanar sloping surfaces on said bolster directed downwardly and inwardly of said truck, means having spaced coplanar surfaces in engagement with said bolster sloping surfaces and at least one other surface in engagement with said columns, means bearing upon said first named means, and spring means acting between said bolster and last named means.

7. In a quick wheel change truck, a side frame having guide columns defining an opening therebetween, a bolster having an end portion in said opening and arranged to be removed horizontally therefrom, spaced coplanar sloping surfaces directed downwardly and inwardly of said bolster, means having oppositely facing spaced surfaces in engagement with said bolster surfaces and columns, pivot means bearing upon said first named means, and spring means acting between said bolster and last named means.

8. In a quick wheel change truck, a side frame having guide columns defining an opening therebetween, a bolster having an end portion in said opening and arranged to be removed horizontally therefrom, spaced coplanar sloping surfaces carried by said bolster and directed downwardly and inwardly of said truck, means having spaced surfaces in engagement with said spaced coplanar sloping surfaces and columns, lever means having one extremity bearing against said bolster inwardly thereof and another extremity bearing against said first named means, and spring means acting between said bolster and said lever means.

9. In a quick wheel change truck, a side frame having guide columns defining an opening therebetween, a bolster having an end portion in said opening and arranged to be removed horizontally therefrom, spaced coplanar surfaces directed downwardly and inwardly of said bolster, span-

ming means having oppositely facing spaced surfaces in engagement with said bolster surfaces and columns, lever means having one extremity bearing against said bolster inwardly thereof and another extremity bearing against said spanning means, and spring means acting between a top wall of said bolster and intermediate the ends of said lever means.

10. In a quick wheel change truck, a side frame having guide columns defining an opening therebetween, a bolster having an end portion in said opening and arranged to be removed horizontally therefrom, spaced sloping surfaces directed downwardly and inwardly of said bolster toward said side frame, bridge means extending through said bolster and having outwardly facing surfaces bearing against said sloping surfaces and inwardly facing surfaces bearing against said columns, lever means within said bolster bearing against said bridge means, and spring means for urging said lever means toward said bridge means.

11. The improvement in truck bolsters of the type comprising vertically spaced top and bottom walls joined by side walls to form a box-like structure arranged to be associated with an opening in a side frame; the combination of, rigid posts spaced outwardly of said side walls toward an end of said bolster and joining said top and bottom walls, coplanar surfaces carried by said posts directed downwardly and facing inwardly of said bolster, and knee braces joining said posts to one of said bolster walls.

12. The improvement in truck bolsters of the type comprising vertically spaced top and bottom walls joined by side walls to form a box-like structure arranged to be associated with an opening in a side frame; the combination of, rigid posts spaced outwardly of said side walls toward an end of said bolster and joining said top and bottom walls, copanar sloping surfaces carried by said posts directed downwardly and facing inwardly of said bolster, spaced webs intermediate said side walls connecting said top and bottom walls, and knee braces joining said posts to one of said bolster walls.

13. The improvement in truck bolsters of the type comprising vertically spaced top and bottom walls joined by side walls to form a box-like structure arranged to be associated with an opening in a side frame; the combination of, a rigid post spaced from said side walls, joining said top and bottom walls and a sloping surface carried by said post and facing inwardly of said bolster, said surface being directed downwardly and inwardly of said bolster and a knee brace joining said post to one of said bolster walls.

14. In a railway truck of the type having a side frame including vertical columns defining an opening therebetween and a spring supported bolster end positioned within said opening, said truck being characterized by, posts in said bolster outwardly of the plane of said columns, sloping surfaces on said posts, bridge means spanning said columns and being interlocked with said posts, sloping surfaces on said bridge means bearing against said post sloping surfaces, and spring means for urging said bridge means into engagement with said posts and columns.

15. In a railway truck of the type having a side frame including vertical columns defining an opening therebetween and a spring supported bolster end positioned within said opening, said truck being characterized by, posts in said bolster outwardly of the plane of said columns, sloping surfaces on said posts, bridge means spanning said columns and being interlocked with said posts, sloping surfaces on said bridge means bearing against said post sloping surfaces, and spring means removed inwardly of said bolster from said bridge means for urging said bridge means into engagement with said posts and columns.

16. In a railway truck of the type having a side frame including vertical columns defining an opening therebetween and a spring supported bolster end positioned within said opening, said truck being characterized by, posts in said bolster outwardly of the plane of said columns, sloping surfaces on said posts, bridge means spanning said columns and being interlocked with said posts, sloping surfaces on said bridge means bearing against said post sloping surfaces, spring means for urging said bridge means into engagement with said posts and columns, and means for maintaining said spring means assembled with said bolster while relieving said bridge means of the action of said spring means for facilitating the removal of said bridge means.

17. In a railway truck of the type having a side frame including vertical columns defining an opening therebetween and a spring supported bolster end positioned within said opening, said truck being characterized by, a post extending between top and bottom walls of said bolster and positioned outwardly of said side frame, a sloping surface on said post being directed downwardly and inwardly of said bolster, means outwardly of said side frame having a sloping surface bearing against said post surface, spaced surfaces on said first named means in frictional engagement with said columns, means etxending longitudinally of said bolster and bearing upon said first named means, and spring means acting between said bolster and said longitudinal extending means.

18. In a railway truck of the type having a side frame including vertical columns defining an opening therebetween and a spring supported bolster end positioned within said opening, said truck being characterized by, a post extending between top and bottom walls of said bolster and positioned outwardly of said side frame, a sloping surface on said post being directed downwardly and inwardly of said bolster, means outwardly of said side frame having a sloping surface bearing against said post surface, spaced surfaces on said first named means in frictional engagement with said columns, means extending longitudinally of said bolster and bearing upon said first named means, vertically acting spring means between said bolster and said longitudinally extending means, and means on said longitudinally extending means for temporarily holding the latter away from said first named means.

19. In a railway truck of the type having a side frame including vertical columns defining an opening therebetween and a spring supported bolster end positioned within said opening, said truck being characterized by, a post extending between top and bottom walls of said bolster and positioned outwardly of said side frame, a sloping surface on said post being directed downwardly and inwardly of said bolster, upstanding means within said bolster and spaced from said post, means disposed outwardly of said side frame and having inner and outer facing surfaces, said inner surfaces frictionally engaging said columns and said outer surface sloping to correspond with and engage said post surface, means pivotally mounted on said upstanding means and resting upon said outwardly disposed means, and spring

means acting between said bolster and pivotally mounted means.

20. In a railway truck of the type having a side frame including vertical columns defining an opening therebetween and a spring supported bolster end positioned within said opening, said truck being characterized by, a post extending between top and bottom walls of said bolster and positioned outwardly of said side frame, a sloping surface on said post being directed downwardly and inwardly of said bolster, upstanding means within said bolster and spaced from said post, means disposed outwardly of said side frame and having inner and outer facing surfaces, said inner surfaces frictionally engaging said columns and said outer surface sloping to correspond with and engage said post surface, means pivotally mounted on said upstanding means and resting upon said outwardly disposed means, vertically spaced spring seats on said bolster and pivotally mounted means, and a coil spring bearing against said spring seats.

21. In a railway truck of the type having a side frame including vertical columns defining an

opening therebetween and a spring supported bolster end positioned within said opening, said truck being characterized by, posts in said bolster outwardly of the plane of said columns, sloping surfaces on said posts, means spanning said columns and having sloping surfaces bearing against said post sloping surfaces, and a spring-lever arrangement for urging said spanning means into engagement with said posts and columns.

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