May 8, 1951 D. S. BARROWS 2,552,144

RAILWAY TRUCK SPRING SNUBBER

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Fig. 4

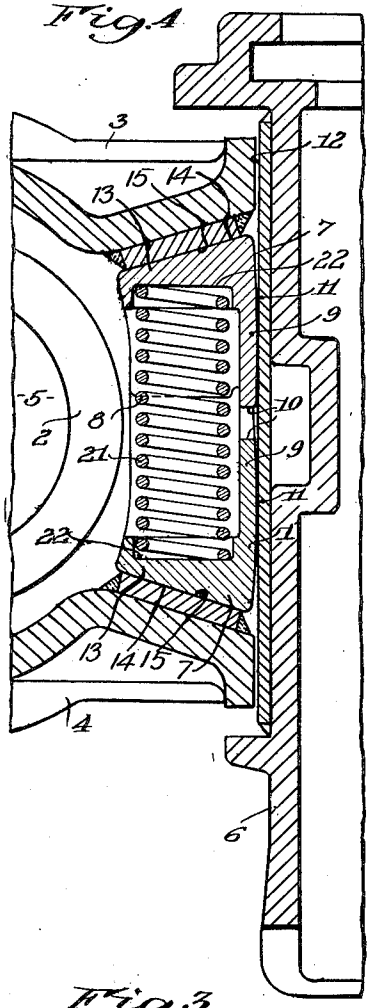


Fig. 5

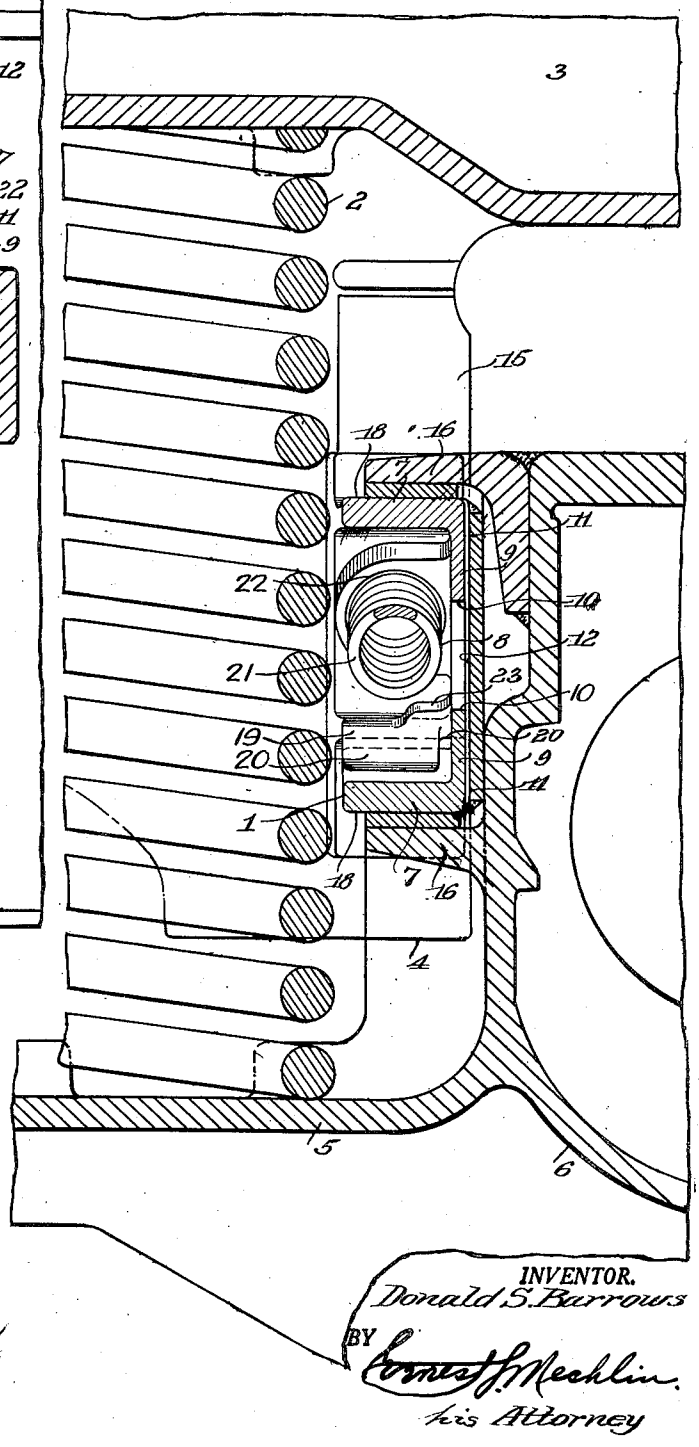
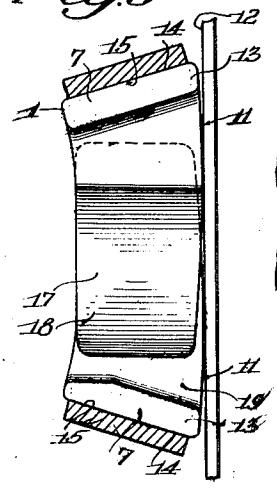


Fig. 3



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RAILWAY TRUCK SPRING SNUBBER

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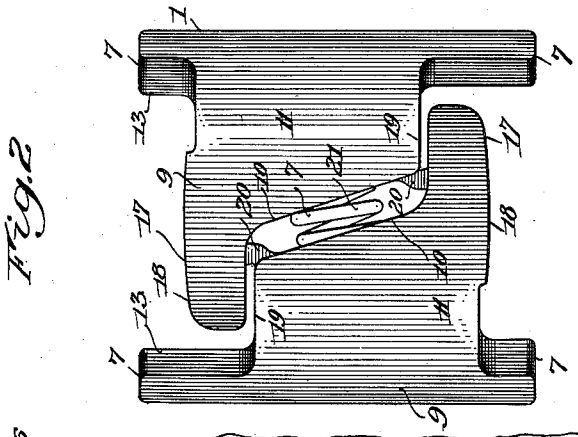


Fig. 2

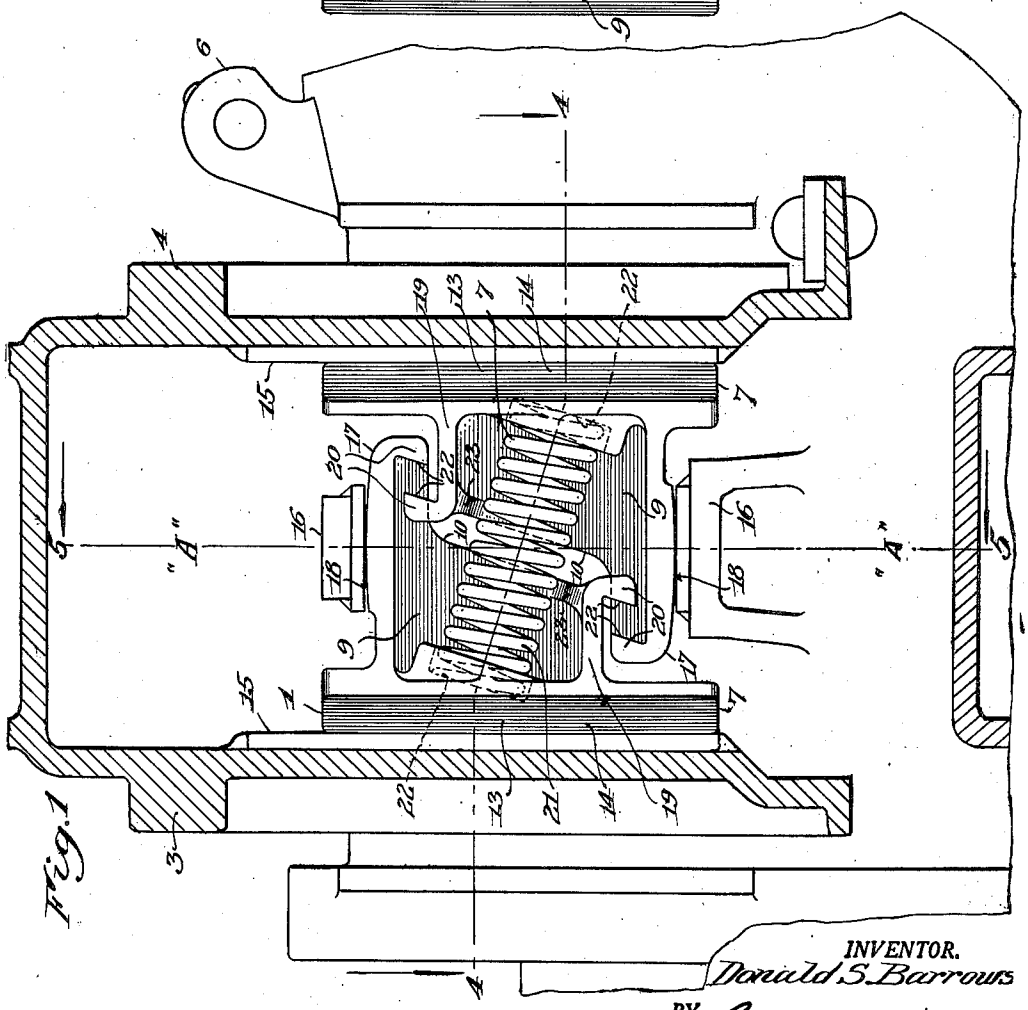


Fig. 1

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UNITED STATES PATENT OFFICE

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RAILWAY TRUCK SPRING SNUBBER

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Application February 18, 1947, Serial No. 729,326

20 Claims. (Cl. 105—224)

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This invention pertains to a snubber or snubbing means for use in a railway truck.

An object of the invention is the provision of an improved snubbing means for a railway truck.

Another object of the invention is the provision, in a snubbing means, of a plurality of counterpart shoes arranged to engage frictionally several parts of a related railway truck.

A still further object of the invention is the provision of a snubbing means having a plurality of counterpart shoes urged resiliently apart and arranged to be moved or expanded horizontally in a plurality of directions.

An added object of the invention is the provision of a snubbing means wherein counterpart shoes are interlocked in such a manner that upon the removal of the snubbing means the component parts thereof will not become unintentionally separated.

A general object of the invention is the provision of a snubbing means containing certain improvements whereby, when associated with parts of a railway truck the snubbing means will not create chattering or rattling noises.

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

Figure 1 is an inside elevational view of a snubbing means embodying the present invention.

Figure 2 is an outside elevational view of the snubbing means shown in Figure 1.

Figure 3 is a plan view of the snubbing means.

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

Figure 5 is a vertical sectional view taken along the lines 5—5 of Figure 1, looking in the direction of the arrows.

Referring now in detail to the drawings, wherein like reference characters designate like parts, the numeral 1 is employed, in a somewhat general manner, to indicate a snubber or snubbing means of the present invention. As indicated hereinabove, the snubber or snubbing means is particularly adaptable for use in a railway truck and, therefore, in order to demonstrate its function more clearly the related parts or components of a railway truck are illustrated diagrammatically in the drawings. By way of further illustration of the complete and detailed showing of what might constitute related truck parts reference is hereby made to two co-pending applications for Letters Patent; the one application being

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of Donald S. Barrows, Serial Number 630,230, filed November 23, 1945, for Railway Truck and the other application being of Glenn F. Couch, Serial Number 668,129, filed May 8, 1946, for Railway Truck. In both of these referred to applications the snubber or snubbing means of the present application is applicable.

The present snubbing means is employed to iron out, cushion or snub otherwise harmonic vibrations of a coil or group of coil springs 2 employed as a resilient support or yieldable carrier means for a side frame 3; the latter of which is provided with a column or jaw 4 forming a housing for the coil spring. The coil spring is in turn supported by a shelf 5 outstanding horizontally from a journal box 6 which is associated with a wheel and axle assembly (not shown) as is well known in the art. In the instant illustrative structure the side frame and journal box, by reason of the yieldable support, are arranged for relative vertical movement and further to provide a somewhat flexible connection between these two truck components the journal box is also arranged to move transversely of the truck relative to the side frame, as well described and illustrated in the above referred to co-pending Barrows application. Both the relative transverse and vertical movements should be checked, snubbed or controlled and the present structure is of relatively simple design to accomplish just this function as will be clearly brought out hereinafter.

Two counterpart or substantially counterpart shoes or blocks 7 and a resilient means 8 make up the entire snubbing means of the present invention. As will be hereinafter made apparent the shoes are preferably but not necessarily made interchangeable or in other words as of one hand and not one hand and reverse thereof so that, among other features, there will be no likelihood of the snubber being misassembled, they will be easier and cheaper to manufacture and it will not be necessary to carry, in stock, a plurality of different types of replacement parts.

Each shoe 7 desirably comprises a web plate 9 disposed vertically and extending for only a limited distance throughout the height of the shoe. This web plate is arranged to be directed transversely of the truck and has a leading edge 10 thereof disposed at an angle to a vertical and horizontal plane in order that when two shoes are mated the web plates thereof will not interfere with one another. Each web plate presents an outwardy facing vertically and transversely directed brushing face or surface 11

maintained at all times in intimate contact with a correspondingly disposed wear face 12 carried by a side of the journal box. Since the shoes are movable relative to the journal box when the latter moves transversely of the truck frictional forces will be created on the contiguous surfaces 11 and 12 to dampen or check or retard such journal box transverse movements.

While it is desirable, as hereinafter brought out, to prevent or attempt to prevent the journal box from getting out of a substantially truly right angular or perpendicular relation with respect to the side frame the art of casting side frames is such that this may not be possible. The casting of side frames as now employed may result, due to shrinkage, in the mated side frames, in a truck having slight differences in their wheel base; that it is to say the horizontal distance from the center of one axle and wheel assembly to another axle and wheel assembly. In mated side frames of a railway truck the wheel base of one side frame may be equal to the wheel base of the other side frame or the wheel bases may vary as much as three-eighths of an inch. If the wheel bases of the side frames happen to be different then some arrangement should be made to permit the axles and journal boxes to assume, as close as possible a true perpendicular relationship relative to the side frames without disturbing other surface bearing relationships herinafter treated in detail. While the brushing face 11 of each shoe may be a true and smooth plain surface it is preferred in the instant structure to arrange for a slight angular movement of the journal box and this feature is accomplished by a slight crowning of the brushing faces or surfaces. By a slight crowning is meant that the brushing face of each shoe is formed by a fairly large radius and at the present writing it is believed desirable to form the brushing face of each shoe convex, arcuate or cylindrical in configuration. Since two shoes are paired in each snubber or snubbing device the journal box is then capable of a slight horizontal angular movement relative to the side frame if side frame conditions are such as to necessitate an angular movement and without disturbing shoe and side frame pre-arranged relationship hereinafter considered.

Outstanding from along one vertical edge of each shoe web is a flange or angularly directed wall 13 carrying an outwardly exposed, rubbing face or surface 14 arranged at an oblique angle relative to the brushing face 11. For reasons to be made hereinafter apparent the included angle between the surfaces 11 and 14 is an acute angle. Since, as previously stated, the relative vertical movement of the journal box and side frame is caused by the action of the coil spring it is deemed advisable to form the rubbing face of appreciable extent and accordingly this face of each shoe is extended upwardly and downwardly beyond the vertical limits of the brushing face 11. The rubbing face of each shoe engages an inwardly facing correspondingly disposed and directed surface 15 carried by the side frame jaw. Since the shoes are arranged to be carried by the journal box any vertical movement of the side frame relative to the journal box will result in frictional forces being created on the mating surfaces 14 and 15 to snub the action of the side frame supporting spring. By reason of the particular disposition of the rubbing and brushing faces and their related surfaces carried by the truck components any spreading action of the shoes will

result in the faces 11 and 14 being maintained in constant intimate contact with the journal box and side frame surfaces.

As previously indicated the shoes remain with the journal box when the side frame moves vertically and to carry out this feature the journal box is provided with vertically spaced ledges 16 outstanding from a side wall thereof into a related side frame jaw or column. Each shoe is provided with a long or extended leg 17 angularly disposed to and formed integral with a related wall and web adjacent one end thereof. This leg extends away from both the brushing and rubbing faces and, on one shoe of a pair, is positioned adjacent the top of the shoe and on the mated or companion shoe is positioned adjacent the bottom thereof. It is only this long leg of the shoes that contacts the jonrnal box ledges since by viewing particularly Figure 1 of the drawings it will be noted that the long legs extend for a considerable distance on each side of a central vertical plane designated by the diagrammatic line A—A. Because of a particular action of the journal box and side frame which at times causes the journal box to execute a vertical angling movement relative to the side frame, each long leg is provided with an arcuate, crowned or cylindrically curved surface 18 exposed outwardly of the snubber so as to effect, at least technically, a line contact between the shoe leg and a related ledge. More important, this configuration and relationship will effect a constant contact between the long legs and ledges irrespective of the vertical angular disposition of the journal box and thus also allow the shoe rubbing surfaces to maintain a constant surface bearing against their related jaw or column surfaces.

Spaced vertically from the long leg each shoe is provided with a short leg 19 which also outstands from the shoe web and wall away from the brushing and rubbing surfaces. The short leg is, as indicated, of less transverse horizontal extent than its companion long leg and also is spaced inwardly of the shoe from its related extremity adjacent to an edge of the web. Each shoe leg merges at its free extremity, into a toe or terminal flange 20 thus presenting legs of angular or hook configuration with the toes on the legs of the same shoe being extended in the same general direction. As further indicated by referring particularly to Figure 1 of the drawings, the toe of a short leg on one shoe is arranged to engage or interlock with a toe of a long leg of a companion shoe thus definitely limiting the expansive movement of the shoes away from one another. While the flanges are indicated as being spaced apart an appreciable distance in an assembled snubber they are primarily formed on the legs so as to engage one another when a side frame is removed from a journal box and thus prevent the snubber parts from separating during a disassembly of the truck.

Various means and arrangement of means may be employed to urge the shoes apart. However, the least expensive and simplest means is believed at the present writing to be a coil or helical spring 21 which acts or expands transversely of the truck and has its ends suitably encased in accommodating spring pockets or seats 22. Each shoe is provided with such a spring seat or pocket to thus retain the related spring end in a fixed and definite position during all service movements of the snubber. Each spring pocket is contained in a shoe flange or wall so that the

force of the spring will urge the shoe rubbing face against its related side frame surface and the latter will cause the shoe brushing face to be directed and urged against the journal box surface. In order to prevent the shoes from rattling or causing chattering noises the axis of the preferred spring means is disposed at an angle to the horizontal and vertical plane. While the axis of the coil spring is substantially parallel to the shoe brushing surfaces it is, nevertheless, disposed at an oblique angle so that one shoe will be at all times urged upwardly and the companion shoe will be urged downwardly to maintain the shoe long legs in intimate contact with the journal box ledges. Thus the shoes are urged diagonally and the single resilient means acting in one line will result in the shoes being held in tight engagement with the side frame and journal box. Because of the particular disposition of the resilient element **21** the leg toes have inwardly facing or exposed surfaces **22** which are normal to the axis of the spring **21**. Thus when the snubber is removed from a truck structure the surfaces **22** of the legs will contact one another over an appreciable area to eliminate any component which would tend to make the interlocks slip by each other and thus prevent the shoes from slipping apart.

Each short leg has a stud or shoulder **23** formed thereon so as to be in a position to act as an abutment or guide against which the intermediate part of the coil spring may bear in service.

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

I claim:

1. In a snubbing means for use in a railway truck, the combination of, counterpart shoes having substantially aligned vertical surfaces arranged to engage a truck member, vertical surfaces carried by said shoes arranged at an oblique angle to said first named surfaces and arranged to engage another truck member, and spring means between said shoes arranged to urge the latter apart.

2. In a snubbing means for use in a railway truck, the combination of, counterpart shoes having substantially aligned vertical surfaces arranged to engage a truck member, vertical surfaces carried by said shoes arranged at an oblique angle to said first named surfaces and arranged to engage another truck member, and spring means arranged at an angle to a vertical and horizontal axis and disposed between said shoes for urging them apart.

3. In a snubbing means for use in a railway truck, the combination of, counterpart shoes having substantially aligned vertical surfaces arranged to engage a truck member, vertical surfaces carried by said shoes arranged at an oblique angle to said first named surfaces and arranged to engage another truck member, and a coil spring acting between said shoes for urging them in a direction at an angle to a vertical and a horizontal plane.

4. In a snubbing means for use in a railway truck, the combination of, counterpart shoes having substantially aligned vertical surfaces arranged to engage a truck member, vertical surfaces carried by said shoes arranged at an oblique angle to said first named surfaces and arranged to engage another truck member, and a coil spring acting against walls of said shoes carrying said second named surfaces for urging said shoes in opposite directions.

5. In a snubbing means for use in a railway truck, the combination of, counterpart shoes having substantially aligned vertical surfaces arranged to engage a truck member, vertical surfaces carried by said shoes arranged at an oblique angle to said first named surfaces and arranged to engage another truck member, and a coil spring having an axis parallel to said first named surfaces and at an oblique angle relative to said second named surfaces for urging said shoes apart.

6. In a snubbing means for use in a railway truck, the combination of, substantially counterpart interlocked shoes, substantially aligned vertical surfaces on said shoes arranged to engage a truck member, vertical surfaces on said shoes arranged at an oblique angle to said first named surfaces and arranged to engage another truck member, overlappingly arranged legs on said shoes, and spring means urging said shoes apart.

7. In a snubbing means for use in a railway truck, the combination of, substantially counterpart interlocked shoes, substantially aligned vertical surfaces on said shoes arranged to engage a truck member, vertical surfaces on said shoes arranged at an oblique angle to said first named surfaces and arranged to engage another truck member, horizontal legs on said shoes arranged to overlap one another, and spring means urging said shoes apart.

8. In a snubbing means for use in a railway truck, the combination of, substantially counterpart interlocked shoes, substantially aligned vertical surfaces on said shoes arranged to engage a truck member, vertical surfaces on said shoes arranged at an oblique angle to said first named surfaces and arranged to engage another truck member, vertically spaced legs on one of said shoes arranged to overlap correspondingly disposed legs on another of said shoes, and spring means between said legs for urging said shoes apart.

9. In a snubbing means for use in a railway truck, the combination of, substantially counterpart interlocked shoes, substantially aligned vertical surfaces on said shoes arranged to engage a truck member, vertical surfaces on said shoes arranged at an oblique angle to said first named surfaces and arranged to engage another truck member, vertically spaced legs on one of said shoes arranged at an angle to said aligned vertical surfaces, said legs overlapping correspondingly disposed legs on another of said shoes, and spring means acting against said shoes for urging them apart.

10. In a snubbing means for use in a railway truck, the combination of, substantially counterpart interlocked shoes, substantially aligned vertical surfaces on said shoes arranged to engage a truck member, vertical surfaces on said shoes arranged at an oblique angle to said first named surfaces and arranged to engage another truck member, vertically spaced horizontally disposed angle shaped legs on one of said shoes arranged to overlap vertically spaced horizontally disposed angle shaped legs on another of said shoes, and spring means urging said shoes apart.

11. In a snubbing means for use in a railway truck, the combination of, substantially counterpart interlocked shoes, substantially aligned vertical surfaces on said shoes arranged to engage a truck member, vertical surfaces on said shoes arranged at an oblique angle to said first named

surfaces and arranged to engage another truck member, vertically spaced horizontally disposed angle shaped legs on one of said shoes arranged to overlap vertically spaced horizontally disposed angle shaped legs on another of said shoes, and spring means having an axis disposed at an angle to a horizontal plane for urging said shoes apart.

12. In a snubbing means for use in a railway truck, the combination of, substantially counterpart interlocked shoes, substantially aligned vertical surfaces on said shoes arranged to engage a truck member, vertical surfaces on said shoes arranged at an oblique angle to said first named surfaces and arranged to engage another truck member, vertically spaced horizontally disposed legs on one of said shoes arranged at an angle to said first named vertical surfaces, said legs overlapping vertically spaced horizontally disposed correspondingly arranged legs on another of said shoes, and coil spring means within the limits of said shoes for urging the latter apart.

13. In a snubbing means for use in a railway truck, the combination of, substantially counterpart interlocked shoes, substantially aligned vertical surfaces on said shoes arranged to engage a truck member, vertical surfaces on said shoes arranged at an oblique angle to said first named surfaces and arranged to engage another truck member, vertically spaced horizontally disposed angle shaped legs on one of said shoes arranged to overlap vertically spaced horizontally disposed angle shaped legs on another of said shoes, and coil spring means having an axis disposed parallel to said first named surfaces and at an oblique angle relative to said second named surfaces for urging said shoes apart.

14. In a snubbing means for use in a railway truck, the combination of, substantially counterpart interlocked shoes, substantially aligned vertical surfaces on said shoes arranged to engage a truck member, vertical surfaces on said shoes arranged at an oblique angle to said first named surfaces and arranged to engage another truck member, legs of different horizontal length formed on said shoes and disposed in overlapping relation, and spring means for urging said shoes apart.

15. In a snubbing means for use in a railway truck, the combination of, substantially counterpart interlocked shoes, substantially aligned vertical surfaces on said shoes arranged to engage a truck member, vertical surfaces on said shoes arranged at an oblique angle to said first named surfaces and arranged to engage another truck member, legs of different horizontal extent formed on said shoes and disposed in overlapping relation, and coil spring means wholly within the limits of said shoes for urging them apart.

16. In a snubbing means for use in a railway truck, the combination of, substantially counterpart interlocked shoes, substantially aligned vertical surfaces on said shoes arranged to engage a truck member, vertical surfaces on said shoes arranged at an oblique angle to said first named surfaces and arranged to engage another truck member, a long leg and a short leg formed on each shoe, said long leg of one shoe overlapping a short leg of a companion shoe, and spring means between said legs for urging said shoes apart.

17. In a snubbing means for use in a railway truck, the combination of, substantially counterpart interlocked shoes, substantially aligned vertical surfaces on said shoes arranged to engage a truck member, vertical surfaces on said shoes arranged at an oblique angle to said first named surfaces and arranged to engage another truck member, a long leg and a short leg formed on each shoe, said long leg of one shoe overlapping a short leg of a companion shoe, and spring means having an axis disposed at an angle to said legs for urging said shoes apart.

18. In a snubbing means for use in a railway truck, the combination of, substantially counterpart interlocked shoes, substantially aligned vertical surfaces on said shoes arranged to engage a truck member, vertical surfaces on said shoes arranged at an oblique angle to said first named surfaces and arranged to engage another truck member, a long leg and a short leg formed on each shoe, said long leg of one shoe overlapping a short leg of a companion shoe, said long leg of each shoe having a crowned outer surface, and spring means acting in a direction toward said second named surfaces for urging said shoes apart.

19. In a snubbing means for use in a railway truck, the combination of, substantially counterpart interlocked shoes, substantially aligned vertical surfaces on said shoes arranged to engage a truck member, vertical surfaces on said shoes arranged at an oblique angle to said first named surfaces and arranged to engage another truck member, a long leg and a short leg formed on each shoe, said long leg on one shoe overlapping a short leg of a companion shoe, spring means having an axis disposed at an angle to said legs for urging said shoes apart, and said legs carrying surfaces normal to said spring means axis.

20. In a snubbing means for use in a railway truck, the combination of, substantially counterpart interlocked shoes, substantially aligned vertical surfaces on said shoes arranged to engage a truck member, vertical surfaces on said shoes arranged at an oblique angle to said first named surfaces and arranged to engage another truck member, a long leg and a short leg formed on each shoe, said long leg of one shoe overlapping a short leg of a companion shoe, said long leg of each shoe having an outwardly exposed crowned surface for engagement by a truck part, spring means acting in a direction toward said second named surfaces, and faces on said shoe legs disposed at an angle to an axis of said spring means.

DONALD S. BARROWS.

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The following references are of record in the file of this patent:

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