Aug. 30, 1938. D. F. SPROUL 2,128,504

BOLSTER SPRING UNIT

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Fig. 1

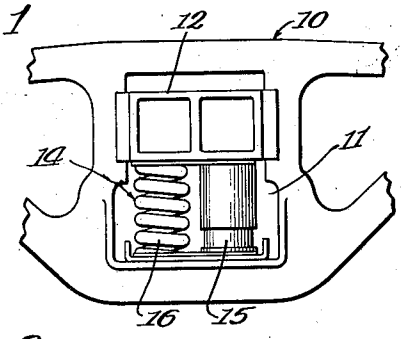


Fig. 2

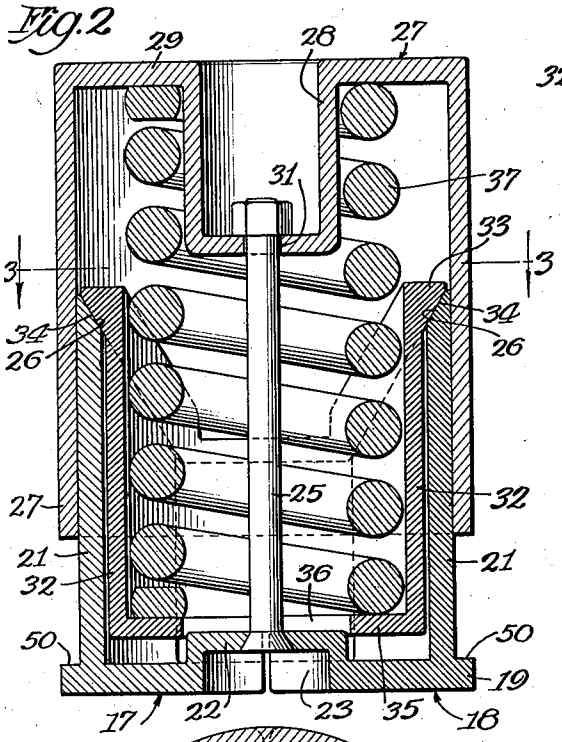
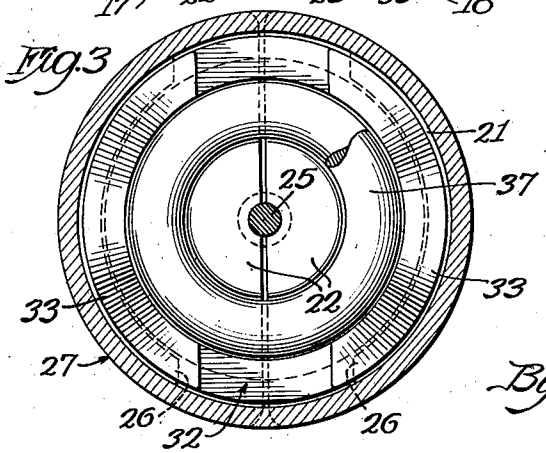


Fig. 3



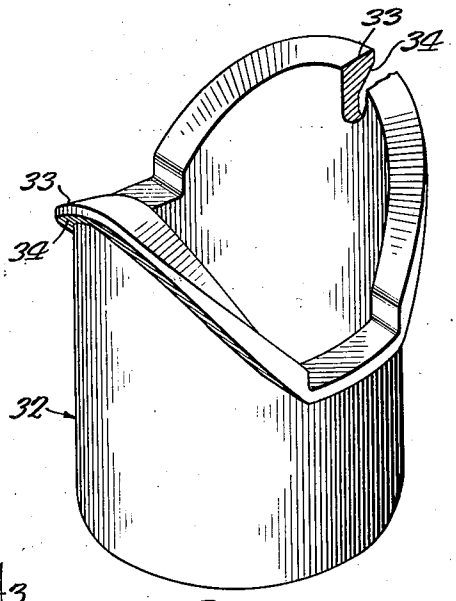


Fig. 4

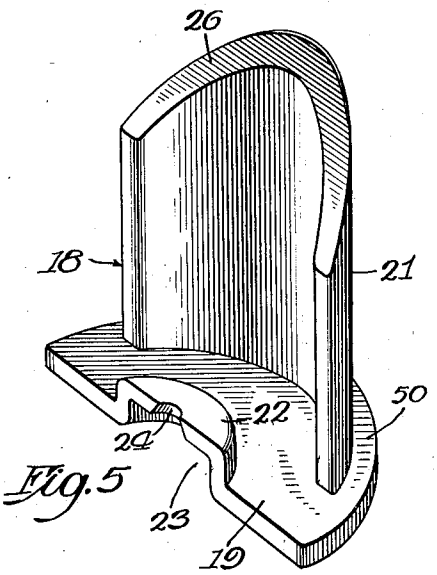


Fig. 5

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Fig. 6

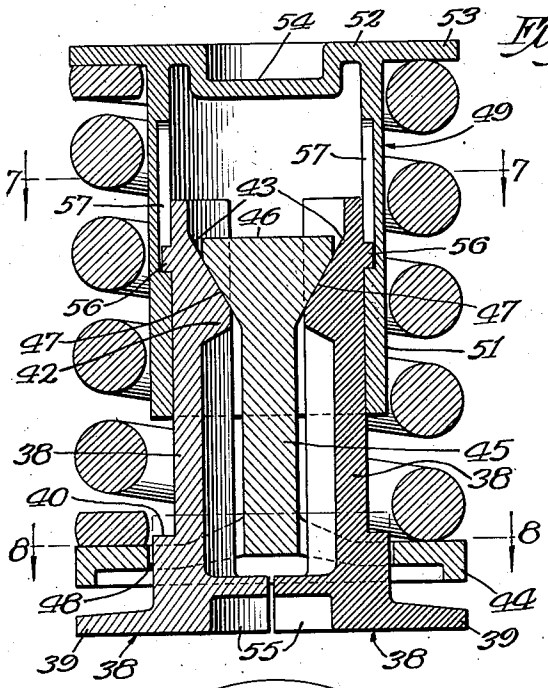


Fig. 9

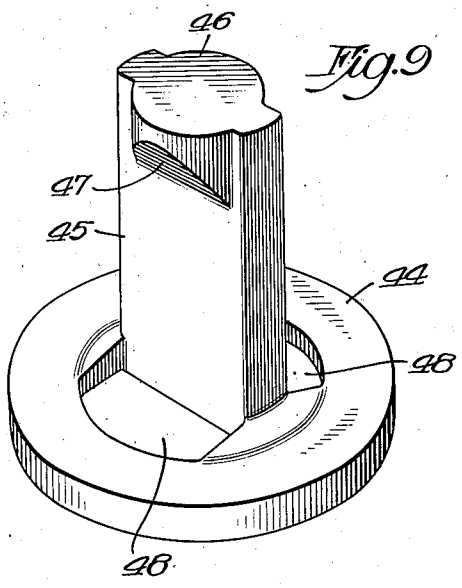


Fig. 7

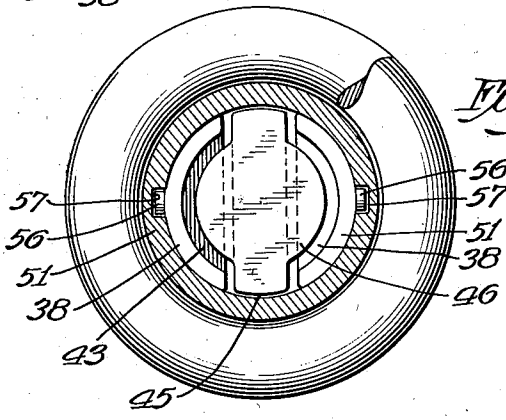


Fig. 10

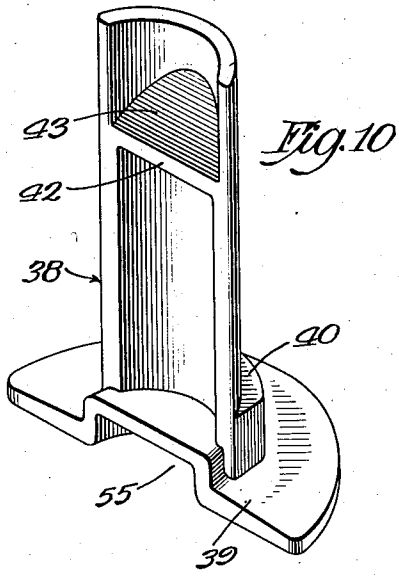
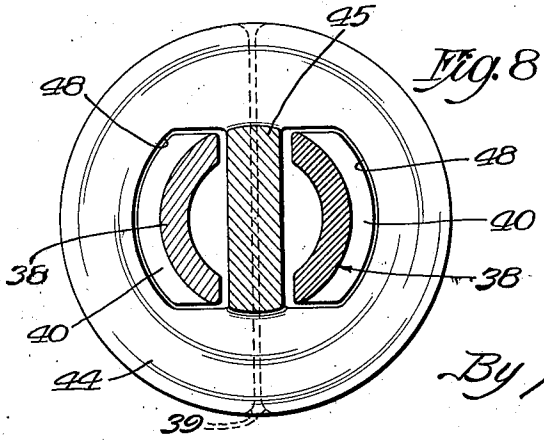


Fig. 8



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Patented Aug. 30, 1938

2,128,504

UNITED STATES PATENT OFFICE

2,128,504

BOLSTER SPRING UNIT

Donald F. Sproul, Chicago, Ill., assignor to Cardwell-Westinghouse Company, a corporation of Delaware

Application January 16, 1936, Serial No. 59,426

11 Claims. (Cl. 267—9)

This invention relates to railway car supporting units and more particularly to friction spring units for supporting the bolster of railway trucks.

One of the objects of the invention is the provision of a new and improved bolster supporting unit having novel means for resisting rebound of the bolster supporting springs after compression.

A further object of the invention is the provision of a new and improved bolster supporting spring unit having novel means for frictionally resisting both the compression and expansion of the unit.

A further object of the invention is the provision of a new and improved spring unit that is simple in construction, efficient in operation, composed of few moving parts, is easily assembled and is not likely to become broken or get out of order.

Other and further objects and advantages will appear from the following description taken in connection with the accompanying drawings in which

Fig. 1 is a side elevation of a portion of a railway truck showing the invention in position beneath the bolster of the truck;

Fig. 2 is a vertical section of the unit;

Fig. 3 is a section on the line 3—3 of Fig. 2;

Fig. 4 is a perspective view of the thrust or wedge member;

Fig. 5 is a perspective view of one of the friction shoes or intermediate members;

Fig. 6 is a vertical section of a modified form of spring bolster supporting unit;

Fig. 7 is a section on the line 7—7 of Fig. 6;

Fig. 8 is a section on the line 8—8 of Fig. 6;

Fig. 9 is a perspective view of the wedge or thrust member; and

Fig. 10 is a perspective view of one of the friction shoes or intermediate members.

Referring now to the drawings, the reference character 10 designates a vehicle truck frame having a bolster opening 11 therein, a bolster 12, slidably mounted in the opening, a spring plank 13, supported by the lower marginal wall of the opening and the bolster supporting elements 14 interposed between the bolster and the spring plank. Since the details of the truck frame and arrangement of the bolster and springs are of the conventional type, it is not thought necessary to further illustrate or describe the same.

The bolster spring friction unit 15 is adapted to be substituted for one or more conventional helical springs 16 constituting the spring assembly for supporting the bolster. Each of these units comprises a pair of base members 17 and 18, each of which is provided with a base plate 19 and an upstanding friction shoe 21.

The base plate 19 is preferably semi-circular and is provided at the central portion of its diameter with a depressed portion 22 forming a recess 23 for engaging the conventional positioning boss on the bolster or the spring plank.

The depressed portion 22, at its axis has a semi-circular opening 24 which cooperates with a similar recess in the other or cooperating base member to form a circular opening through which the assembly bolt 25 is adapted to engage.

The shoes 21 are substantially semi-circular and the upper ends thereof are cut diagonally or are so formed as to constitute a wedge member having an inclined face 26 for engaging a corresponding wedge face on a wedge or thrust member as will presently appear.

A supporting sleeve or friction member 27 in the form of an open-ended cylinder frictionally engages the outer surface of the shoes 21. This member has a central depressed portion 28 in the end wall 29. This depressed portion is provided with an axial opening 31 through which the bolt 25 extends for holding the parts in assembled relation.

A wedge or thrust member 32, having a flange 33 extending outwardly about one of its ends, is interposed between the shoes 21. This member is cylindrical with its flanged end formed roughly as a double wedge. The flange 33, at opposite sides of the thrust member, extends inwardly and downwardly to form a wedge surface and the lower surfaces 34 of these portions of the flange are adapted to engage the wedge face 26 of the shoes 21, as is clearly shown in Fig. 2 of the drawings. The thrust member 32 is hollow and is provided with what may be termed a bottom wall 35, which is provided with an opening 36 for receiving the depression 22 of the base members 17 and 18.

A helical spring 37 is interposed between the end wall 29 of the supporting sleeve or friction member 27 and the end wall 35 of the wedge or thrust member 32. The spring surrounds the depression 28 and is positioned within the sleeve or friction member by said depression.

In the operation of the device, when the spring unit is compressed, the spring 37 will be depressed against the end wall 35 and this in turn, will cause the wedging faces 34 of the sleeve 32, which engage the wedge faces 26, to move said friction shoes outwardly into frictional contact with the inner surfaces of the supporting sleeve or friction member 27, thereby frictionally re-

sisting the compression of the gear. Upon release, the spring 37 will force the supporting sleeve or friction member 27 upwardly, but the friction between the casing 27 and the shoes 21 tends to drag the shoes upwardly into wedging engagement with the wedging faces 34 while during compression the friction between the casing or friction member 27 and the shoes 21 tends to carry the shoes along with the casing 27 in a direction to release the wedging members; consequently, there is a greater frictional resistance to the expansion than to the compression of the unit.

If desired, the parts may be so constructed that the friction elements are encircled by the helical spring. Such construction is shown in Figs. 6 to 10 inclusive.

In this form of construction, the base members or friction shoes 38 are provided with base flanges 39 and substantially semi-circular upstanding friction shoe members 41. Each of the shoe members is provided, adjacent its upper end, with a web 42 forming an inclined surface 43, which is adapted to be engaged by the wedge or thrust member.

The wedge or thrust member comprises a base 44, having an upstanding thrust element 45, having adjacent its upper end, a thick end portion 46, the outer surface of which has the curvature of the shoe members 41 and is provided on its lower surface with an inwardly and downwardly wedging face 47, which is adapted to engage the incline or wedge faces 43 of the shoe members 41 as is clearly shown in Fig. 6 of the drawings.

The base 44 is provided at each side of the thrust member 45 with openings 48 through which the friction shoe members are adapted to extend.

A supporting sleeve or friction member 49 is provided, which has a depending cylindrical portion 51, which surrounds the upper portions of the friction shoe members and frictionally engages the same. The friction sleeve member 49 is provided with a closed end 52 having a flange 53 extending radially about the cylindrical or sleeve portion 51. The end wall 52 is provided with the depression 54 for engaging a positioning boss on a spring plate or bolster, and the base 39 of the friction shoes 38 is also provided with depressions 55, which, together, form a circular recess for receiving the positioning bosses or studs on the spring plate. A helical spring is inserted between the flange 53 and the base member 44 of the thrust element.

Suitable means are provided for holding the parts in assembled relation. As shown, a pin and slot connection between the friction shoe members and the supporting sleeve or friction member 49 is employed. In this form of construction, the shoes are provided with studs 56 that are adapted to engage grooves or slots 57 in the upper wall of the sleeve member 51.

In order to prevent tilting of the unit during its operation, the thrust or wedge member 45 is constructed of such width, that it extends substantially the entire diameter of the supporting sleeve or friction member 49 and has its outer edge portions engaging between the adjacent edges of the shoe members as shown more clearly in Figs. 7 and 8 of the drawings. Since the operation of this form of the device is substantially the same as that of the construction described above, it is not thought necessary to repeat the description at this point.

It will be noted that in each form of the construction, the casing or outer friction member is adapted to engage a shoulder, as the annular flange 50 in the form shown in Fig. 2, or the shoulder 40 in Fig. 6 for limiting the compression of the unit.

It is thought from the foregoing taken in connection with the accompanying drawings that the construction and operation of my device will be apparent to those skilled in the art and that changes in size, shape, proportion and details of construction may be made without departing from the spirit and scope of the appended claims.

I claim as my invention:

1. In a car bolster supporting spring unit, an upper base, a lower base consisting of two sections, extensible and compressible friction mechanism between said bases, said mechanism including means including a cylindrical member having wedging surfaces at one end only thereof for causing a greater frictional resistance to the expansion of said unit than to the compression thereof.

2. In a bolster spring unit, sectional base member comprising two sections only, each having a friction surface, a supporting member in frictional contact with said base member, a spring for resisting compression of said unit, and wedging means including a tubular member having converging wedging surfaces for causing a greater friction between said members on release than on compression.

3. In a bolster supporting spring unit, a wedge member comprising a base having substantially semi-circular openings, a thrust member extending upwardly from said base between said openings and having downwardly and outwardly facing wedge surfaces on its upper end portion.

4. In a bolster supporting spring unit, a thrust member having a curved base provided with an upstanding thrust member having wedge faces on its upper end portion, said base having openings at each side of said thrust member, friction shoes extending through said openings and having wedge faces engaging the wedge faces of said thrust member, a supporting sleeve member frictionally engaging said shoes, and a spring between said sleeve and thrust members.

5. In a bolster supporting unit, a plurality of friction shoes each having a base constituting a segment of a circle, each shoe having a curved friction surface and a wedging face at one of its ends, a friction sleeve surrounding said shoes and frictionally engaging the friction surfaces thereof, a wedge member comprising a hollow cylinder having an end wall at one end and a wedging face for each shoe at the other end, and a spring reacting between said sleeve and wedge member for restoring the parts to normal position after release.

6. In a bolster supporting unit, a plurality of friction shoes, each having a base at one end and having its upper edge formed as a segment of a curve constituting a friction surface, a friction sleeve member extending around said shoes, a wedge member engaging said surfaces for forcing said shoes outwardly against said friction sleeve, and resilient means for resisting the compression of said unit and for returning the parts to normal position after compression.

7. In combination, a wedge member having a base and a post extending upwardly therefrom, said post having downwardly and outwardly facing wedge surfaces, said base having openings at opposite sides of said post, friction shoes extending upwardly through said openings and having

wedge faces engaging said surfaces, a friction sleeve surrounding said shoes, and a spring reacting between said sleeve and wedge member for restoring the parts to normal position after compression.

8. In a car bolster supporting spring unit, an upper base, a pair of friction shoes having semi-circular bases, said semi-circular bases constituting one of the bases of said unit, a friction sleeve extending about and frictionally engaging said shoes, and having an annular flange, said shoes having oppositely arranged inclined wedging faces at their upper ends only, a wedge member engaging said faces, a spring seat on said wedge member, and a spring between said seat and flange.

9. In a car bolster spring unit, a base member having an inwardly projecting sleeve portion, friction shoes within said sleeve portion, said sleeve portion and shoes having overlapping comparatively long frictionally engaging surfaces, a wedge member, said wedge member and shoes having a single set of cooperating wedging faces, the inner portions of said wedging faces being approximately at the transverse plane through the center of said overlapping surfaces, and a spring engaging the outer end portion of said wedge member and the outer end portion of said base member for resisting the compression of said unit and for restoring the parts to normal position after compression.

10. In combination, a friction sleeve member, a unitary wedge member having an end portion extending into the sleeve member having a substantially V-shaped indentation extending from the edge of the named end portion toward the opposite end portion providing a pair of inclined surfaces lying in planes which intersect at the axis of the sleeve member, each of said pair of surfaces having a wedge face inclined toward the axis of the sleeve member and said opposite end portion of the wedge member, friction shoes engaging the sleeve member and having wedging faces engaging the wedge faces of the wedge member, and a spring reacting between the sleeve member and the wedge member for returning the parts to normal position after release.

11. In a car bolster spring unit, a base member having an inwardly projecting friction sleeve portion, a unitary wedge member having an end portion extending into the sleeve portion having a substantially V-shaped indentation extending from the edge of the named end portion toward the opposite end portion providing a pair of inclined surfaces lying in planes which intersect at the axis of the sleeve portion, each of said pair of surfaces having a wedge face inclined toward the axis of the sleeve portion and said opposite end portion of the wedge member, friction shoes engaging the sleeve portion and having wedging faces engaging the edge faces of the wedge member, and a spring engaging said opposite end portion of the wedge member and said base member for resisting compression of the unit and for causing frictional resistance between said shoes and sleeve portion when the unit is released after compression.

DONALD F. SPROUL.