Aug. 17, 1948. W. L. SCHLEGEL, JR., ET AL. 2,447,368

SNUBBER

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Fig. 1

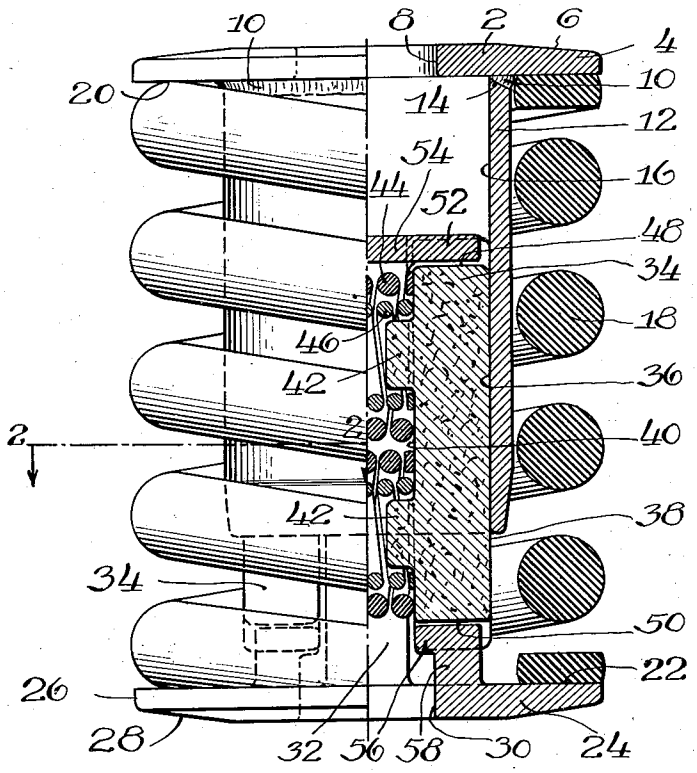
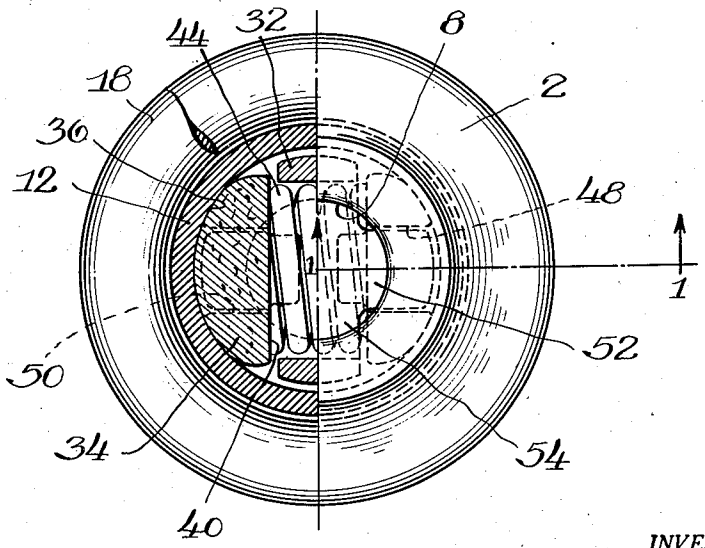


Fig. 2



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16 Claims. (Cl. 267—9)

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Our invention relates to a friction device or a snubber of the type commonly used in railway equipment in association with other spring supporting means and is of a type suitable for application within a railway spring group in substitution of any standard spring. Our device, however, may be used in any suitable application where it is desired to have a spring support with snubbing means or friction absorbing means in association therewith. Our snubber combines a spring support and friction means therewithin.

The general object of our invention is to devise such an arrangement as that described, wherein an arrangement eminently suitable for the use of composition friction shoes may be devised and comprises a top follower having a friction barrel and a bottom follower having yoke means supporting composition friction shoes within said barrel for frictional engagement therewith and resilient means under compression between the shoes at opposite sides of the device.

A different object of our invention is to devise such a snubber wherein a pair of friction shoes may be supported from one follower within a friction barrel carried on an opposite follower with coil springs compressed between the shoes at opposite sides of the device, and the shoe supporting follower comprising a yoke with shoe carrying means arranged in a plane approximately at right angles to the plane of the yoke.

In the drawing,

Figure 1 is a side elevation of our novel friction device, half in section, the section being taken in the vertical plane bisecting the device approximately as indicated by the line 1—1 of Figure 2.

Figure 2 is a top plan view of the structure shown in Figure 1, half in section, the section being taken approximately in the horizontal plane indicated by the line 2—2 of Figure 1.

Describing the structure in detail, our top follower 2 is illustrated as a built-up member comprising a base plate 4, chamfered about its perimeter as at 6 to accommodate rocking thereof where desirable, and centrally perforated as at 8 to afford positioning means for one end of the device. To the base plate 4 may be integrally secured, as by welding at 10, the friction barrel 12, the upper end of said barrel having a chamfered extremity as seen at 14 to accommodate said welding 10 about the perimeter thereof. The friction barrel 12 may have a continuous friction surface 16 therewithin and said barrel may project within the compression spring 18, one end of which may seat as at 20 against the base 4 of the top follower and the opposite end of which may seat as

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at 22 against the base 24 of the bottom follower, said base 24 of the bottom follower, generally designated 26, being chamfered about its outer perimeter as at 28, similarly to the top follower, and cored out to form the central opening 30 affording positioning means therefor where desirable.

It will be understood that under railway service conditions, a snubber is frequently inactive for considerable periods of time and under weather conditions which cause rusting and corrosion of ordinary metallic parts. For this reason the barrel 12 may be composed of stainless steel which will not rust or corrode inasmuch as it is desirable that the surface 16 be at all times in relatively smooth condition in order to prevent excessive wear and abrasion of the composition shoes which are contemplated in our novel design.

The bottom follower 26 may have an integral yoke 32 projecting upwardly therefrom and extending within the barrel 12 of the top follower to support therewithin a pair of diametrically opposed friction shoes 34, 34 in frictional engagement as at 36 with the barrel 12, said barrel 12 having a cylindrical inner friction face and each of the shoes 34 being formed with a friction surface 38 complementary thereto. Each friction shoe 34 may have on its flat inner face 40 a plurality of outstanding lugs 42, 42, each affording positioning means for a plurality of outer and inner auxiliary springs, respectively designated 44 and 46, said springs bearing at their opposite ends against the respective shoes at opposite sides of the device and acting to urge said shoes into engagement with the friction barrel 12. Each friction shoe 34 may be formed with a transverse slot 48 at the top thereof and a corresponding slot 50 at the bottom thereof, said top slot 48 accommodating the lug 52 projecting from the top portion 54 of the yoke 32, said lug 52 being arranged approximately at right angles to the plane of said yoke.

The slot 50 at the bottom of each shoe 34 may receive the rectangular top portion 56 of the lug 58, said top portion 56 conveniently affording a seat for the bottom of the shoe and the lugs 58, 58 being integrally formed with the bottom follower 24 and positioned in a plane approximately at right angles to the plane defined by the yoke 32.

It will thus be seen that the bottom follower assembly comprises the follower base 24, the yoke 32, and shoe support studs 58, 58 at opposite sides of said yoke in a plane approximately at right angles to the plane of the yoke, said studs afford-

ing support means for friction shoes at opposite sides of the device, each shoe being confined between one stud and a lug **52** at the top of the yoke and each shoe having positioning means for auxiliary springs carried within said yoke between said shoes. This whole bottom follower assembly may be handled as a unit for application within the friction barrel of the top follower around which may be carried the main compression spring **18**. It will thus be observed that we have provided a compact novel arrangement particularly suitable for the purpose intended and conveniently arranged for the use of friction shoes of composition material comparable to that normally used in automotive brake linings comprising a matrix interspersed with particles producing a scouring action on an associated braking surface, the structure and arrangement of the parts being such that said shoes are subjected to compression only, whether it be as a result of the auxiliary springs urging said shoes into engagement with the friction barrel or as a result of compression and release of the device proper when the shoes are actuated or carried along between the lugs at the top of the yoke on the bottom follower and their respective support studs. It may also be noted that this bottom follower assembly is such that the rotation thereof within the top follower is permitted and the rotation of one part, such as a friction shoe, will carry with it the entire bottom follower assembly so that misalignment of the parts of said bottom follower assembly is prevented.

It is to be understood that we do not wish to be limited by the exact modification of the device shown which is merely by way of illustration and not limitation as various and other forms of the device will, of course, be apparent to those skilled in the art without departing from the spirit of the invention or the scope of the claims.

We claim:

1. In a friction absorbing device, a top follower comprising a base plate and a friction barrel depending therefrom, said barrel comprising an internal friction surface, a bottom follower comprising a base and a yoke projecting upwardly therefrom, lugs on opposite sides of said yoke at the upper extremity thereof, each of said lugs presenting a substantially horizontal shoe abutment surface, studs projecting upwardly from said base at opposite sides of said yoke and spaced therefrom, each of said studs having at its upper extremity a horizontal shoe abutment face in alignment with the adjacent abutment surface, a pair of spaced friction shoes engaging said friction surface, resilient means under compression between said shoes, each of said shoes having a recess at its upper extremity receiving one of said lugs and a recess at its lower extremity receiving one of said studs, said shoes having substantially horizontal bearing surfaces engageable with respective abutment surfaces and abutment faces, and a spring sleeved over said barrel and seated against said base plate and said base.

2. In a friction absorbing device, a top follower comprising a base plate and a stainless steel friction barrel depending therefrom and welded thereto, said barrel comprising an internal friction surface, a bottom follower comprising a base and a yoke projecting upwardly therefrom, lugs on opposite sides of said yoke at the upper extremity thereof, each of said lugs presenting a substantially horizontal flat shoe abutment surface, studs projecting from said base at opposite sides of said yoke, each of said studs having at its upper extremity a substantially horizontal flat shoe abutment face, a pair of spaced composition friction shoes engaging said friction surface, resilient means under compression between said shoes, each of said shoes having a recess at its upper end receiving the adjacent lug for interlocking engagement therewith and having a recess at its lower extremity receiving the adjacent stud for interlocking engagement therewith, and a spring sleeved over said barrel, said spring being seated at opposite ends thereof against said base plate and said base respectively.

3. A friction absorbing device comprising a base plate, a friction barrel of noncorrosive metal connected to said plate, said barrel comprising an internal friction surface, spaced composition friction shoes engaging said surface, a plurality of springs under compression between said shoes and spaced axially of said barrel, a follower comprising shoe carrying means including spaced bearing surfaces cooperating with the inner and outer extremities of each shoe, and spring means sleeved over said barrel and reacting against said plate and said follower for yieldingly resisting compression of the device.

4. A device, according to claim 3, wherein the shoes and the bearing surfaces are in tongue and groove engagement to prevent rotation of said shoes in said barrel relative to said follower.

5. A friction absorbing device comprising a base plate, a friction barrel connected thereto, a follower including a base and a yoke extending from said base into said barrel, said yoke comprising lugs at its inner end, studs on said base aligned with respective lugs, friction shoes confined between said lugs and studs, spring means within said yoke for urging said shoes into frictional engagement with said barrel, and spring means sleeved over said barrel and reacting between said plate and said base for yieldingly resisting compression of the device.

6. In a friction absorbing device, a follower comprising a base plate and a friction barrel of noncorrosive metal connected thereto, said barrel comprising an internal friction surface, spaced composition friction shoes engaging said surface, resilient means under compression between said shoes, another follower comprising shoe carrying means, said shoe carrying means including spaced bearing surfaces cooperating with the top and bottom extremities of each shoe, and a substantially vertical spring sleeved over said barrel and bearing against said plate and against abutment means on said second-mentioned follower.

7. A snubber comprising a top follower having a cylindrical friction barrel of stainless steel, a compression spring, and a reciprocating assembly comprising a bottom follower having a slotted yoke extending within said barrel, shoe actuating means at the upper end of said yoke projecting at right angles from the plane thereof, shoe supporting studs on said bottom follower in the plane of said lugs, composition friction shoes supported between said studs and lugs and interlocked therewith, said studs and lugs having vertically aligned parallel bearing surfaces cooperating with the top and bottom extremities of respective shoes, and auxiliary springs compressed between said shoes within said yoke, the composition shoes being formed of a matrix interspersed with particles capable of producing a scouring action on an engaged surface of said barrel.

8. A friction device comprising a base plate, a friction barrel of noncorrosive metal connected to said plate, said barrel having an internal fric-

tion surface, spaced composition friction shoes engaging said surface, resilient means under compression between said shoes for urging the same against said surface, a follower comprising shoe carrying means including spaced bearing surfaces cooperating with the inner and outer extremities of each shoe, and spring means sleeved over said barrel and reacting against said plate and said follower for yieldingly resisting compression of the device.

9. A friction device comprising a base plate, a friction barrel connected thereto, a follower including a base and a yoke extending from said base into said barrel, said yoke comprising lugs within the barrel, studs on the base aligned with respective lugs, a plurality of friction shoes each confined between and engageable with one of said lugs and one of said studs, a plurality of spring means within said yoke spaced axially of said barrel and compressed between said shoes for urging the latter into frictional engagement with said barrel, and spring means sleeved over said barrel and reacting between said plate and said base for yieldingly resisting compression of the device.

10. In a friction absorbing device, a follower comprising a base plate and a friction barrel of noncorrosive metal welded thereto, said barrel comprising an internal friction surface, spaced composition friction shoes engaging said surface, resilient means under compression between said shoes, another follower comprising shoe-carrying means, said shoe-carrying means including spaced bearing surfaces cooperating with the top and bottom extremities of each shoe, and a substantially vertical spring sleeved over said barrel and bearing against said plate and against abutment means on said second-mentioned follower, said shoe-carrying means including a hollow yoke confining said resilient means.

11. In a friction absorbing device, a follower comprising a base plate and a friction barrel of noncorrosive metal welded thereto, said barrel comprising an internal friction surface, spaced composition friction shoes engaging said surface, resilient means under compression between said shoes, another follower comprising shoe-carrying means, said shoe-carrying means including spaced bearing surfaces cooperating with the top and bottom extremities of each shoe, and a substantially vertical spring sleeved over said barrel and bearing against said plate and against abutment means on said second-mentioned follower, said shoe-carrying means comprising a hollow yoke and said resilient means being substantially housed within said yoke between said shoes.

12. In a friction absorbing device, a follower comprising a base plate and a friction barrel of noncorrosive metal welded thereto, said barrel comprising an internal friction surface, spaced composition friction shoes engaging said surface, resilient means under compression between said shoes, another follower comprising shoe-carrying means, said shoe-carrying means comprising spaced vertically aligned horizontal bearing surfaces cooperating with the top and bottom extremities of each shoe, and a substantially vertical spring sleeved over said barrel and bearing against said plate and against abutment means on said second-mentioned follower.

13. In a friction absorbing device, a follower comprising a base plate and a friction barrel of noncorrosive metal welded thereto, said barrel comprising an internal friction surface, spaced composition friction shoes engaging said surface,

resilient means under compression between said shoes, another follower comprising shoe-carrying means, said shoe-carrying means including a hollow yoke with spaced parallel bearing surfaces cooperating with the upper extremities of said shoes and spaced members with horizontal bearing surfaces cooperating with the bottom extremities of said shoes, and a substantially vertical spring sleeved over said barrel and bearing against said plate and against abutment means on said second-mentioned follower.

14. In a friction absorbing device, a follower comprising a base plate and a friction barrel of noncorrosive metal welded thereto, said barrel comprising an internal friction surface, spaced composition friction shoes engaging said surface, resilient means under compression between said shoes, another follower comprising shoe-carrying means, said shoe-carrying means including a hollow yoke with spaced parallel bearing surfaces cooperating with the upper extremities of said shoes and spaced members with horizontal bearing surfaces cooperating with the bottom extremities of said shoes, and a substantially vertical spring sleeved over said barrel and bearing against said plate and against abutment means on said second-mentioned follower, said resilient means being substantially housed in said yoke between said shoes.

15. In a friction absorbing device, a top follower comprising a base plate and a friction barrel depending therefrom, said barrel comprising an internal friction surface, a bottom follower comprising a base and a yoke projecting upwardly therefrom, lugs on opposite sides of said yoke at the upper extremity thereof, each of said lugs presenting a substantially horizontal shoe abutment surface, studs projecting upwardly from said base at opposite sides of said yoke and spaced therefrom, each of said studs having at its upper extremity a horizontal shoe abutment face in alignment with the adjacent abutment surface, a pair of spaced friction shoes engaging said friction surface, resilient means under compression between said shoes, each of said shoes having a recess at its upper extremity receiving one of said lugs and a recess at its lower extremity receiving one of said studs, said shoes having substantially horizontal bearing surfaces engageable with respective abutment surfaces and abutment faces, and a spring sleeved over said barrel and seated against said base plate and said base, said resilient means being substantially housed within said yoke between said shoes.

16. In a friction absorbing device, a top follower comprising a base plate and a stainless steel friction barrel depending therefrom and welded thereto, said barrel comprising an internal friction surface, a bottom follower comprising a base and a yoke projecting upwardly therefrom, lugs on opposite sides of said yoke at the upper extremity thereof, each of said lugs presenting a substantially horizontal flat shoe abutment surface, studs projecting from said base at opposite sides of said yoke, each of said studs having at its upper extremity a substantially horizontal flat shoe abutment face, a pair of spaced composition friction shoes engaging said friction surface, resilient means under compression between said shoes, each of said shoes having a recess at its upper end receiving the adjacent lug for interlocking engagement therewith and having a recess at its lower extremity receiving the adjacent stud for interlocking engagement therewith, and a spring sleeved over said barrel,

said spring being seated at opposite ends thereof against said base plate and said base respectively, said resilient means being substantially housed within said yoke between said shoes.

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