Dec. 29, 1942. D. M. LIGHT 2,306,394

SNUBBER

Filed March 23, 1940 2 Sheets-Sheet 1

Fig. 1.

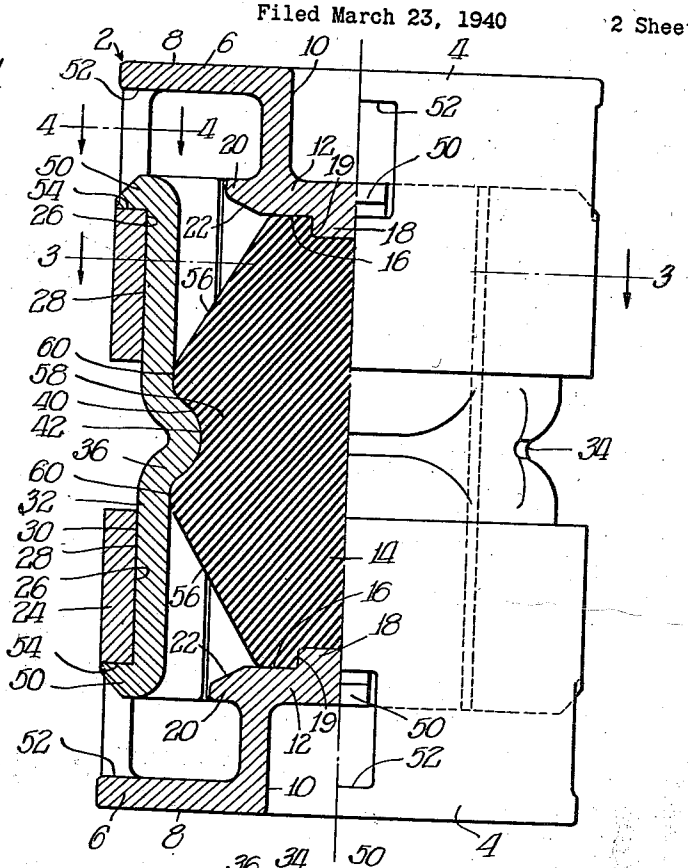
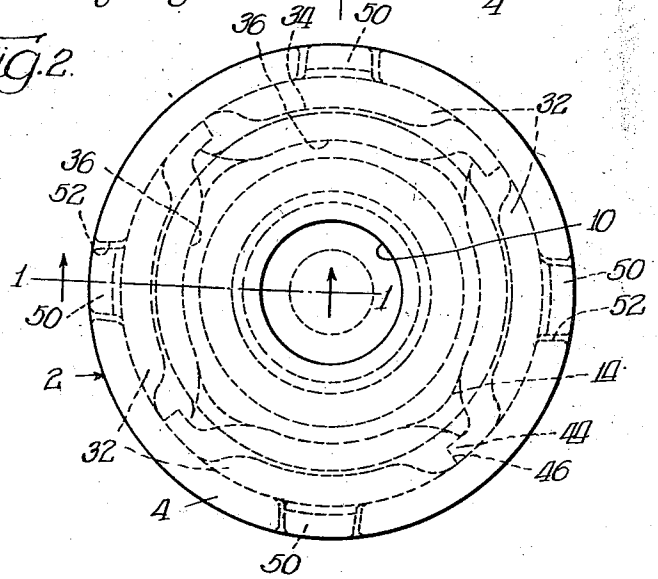


Fig. 2.



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Fig. 3.

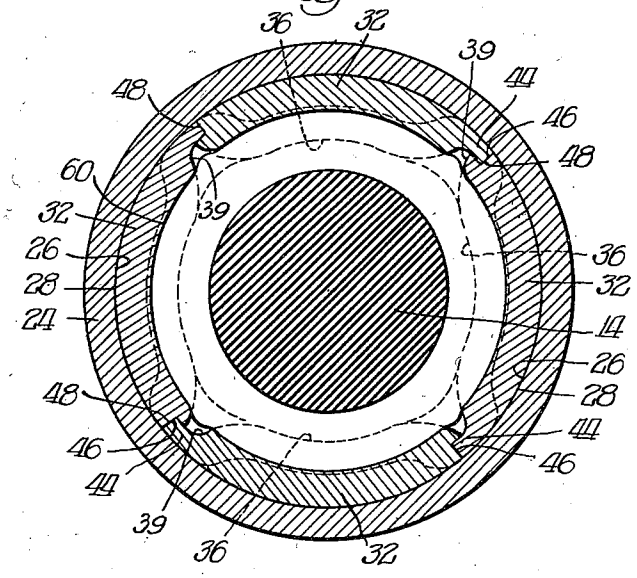


Fig. 4.

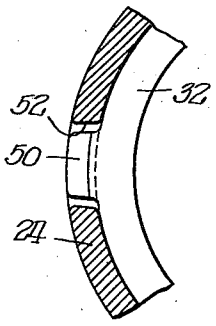


Fig. 5.

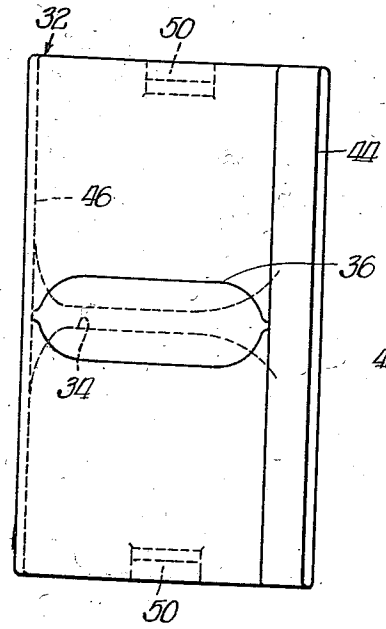


Fig. 5A.

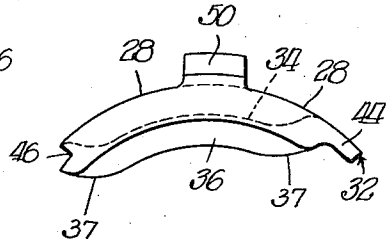
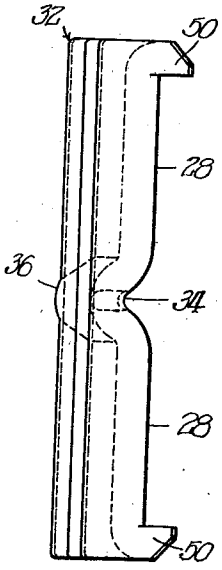


Fig. 5B.



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UNITED STATES PATENT OFFICE

2,306,394

SNUBBER

David M. Light, Chicago, Ill., assignor to American Steel Foundries, Chicago, Ill., a corporation of New Jersey

Application March 23, 1940, Serial No. 325,541

9 Claims. (Cl. 267—9)

My invention relates to friction absorbing devices and more particularly to a device which is suitable for the replacement of a compression spring in general use on railway car trucks.

My invention contemplates a friction absorbing device wherein segmental friction shoes afford substantially uninterrupted circumferential friction areas for engagement with the end followers.

An object of my invention is to provide such a snubbing device wherein interengaging means on the end followers and on the shoes maintain said device in assembled relationship.

Another object of my invention is to design such a snubbing device wherein means on the shoes and the resilient member maintain said shoes in a central position with relation to said end followers during operation.

My invention comprehends such a snubber design wherein smooth surfaces are afforded on the shoes and the followers along which the resilient member may flow without abrasion when load is applied.

My invention also contemplates an arrangement of the segmental friction shoes such as will facilitate assembly within the end followers and which will maintain them in proper arrangement during operation.

A further object of my invention is to arrange the shoes within said followers in such manner that extrusion of the resilient member between the shoes is prevented, thus substantially eliminating abrasion and pinching thereof.

Referring to the drawings,

Figure 1 is a side elevation of a structure embodying my novel invention, half in section, the section being taken substantially in the vertical plane bisecting said structure as indicated by line 1—1 of Figure 2.

Figure 2 is a top plan view of the structure shown in Figure 1.

Figure 3 is a sectional view of the structure shown in Figure 1, the section being taken substantially in the horizontal plane indicated by line 3—3 of Figure 1.

Figure 4 is a fragmentary sectional view of the device shown in Figure 1, the section being taken substantially in the plane indicated by line 4—4 of Figure 1.

Figure 5 is an elevation showing the inner face of a novel shoe used in my device. Figure 5A is a top plan view of the shoe shown in Figure 5, and Figure 5B is an edge view thereof.

Describing my invention in more detail, the snubbing device generally indicated at 2 includes opposed identical end followers 4, 4, each having a circular base 6 presenting a substantially flat outer face 8 interrupted centrally thereof by the recess 10 serving as positioning means for said device in well-known manner. Projecting outwardly from the inner surface of said base 6 may be a centrally positioned stud 12 affording a seat for the resilient member 14 as at 16. Positioning means for said resilient member may be afforded by a central boss 18 on said stud engaging a complementary recess 19 in the resilient member. Around the outer circumference of said stud may be formed an annular flange 20 which may be beveled as at 22 to afford a smooth surface along which the resilient member 14 may flow without abrasion. Integrally formed on said base 6 may be a cylindrical housing or barrel 24 presenting internal friction surfaces 26, 26 frictionally engaging the complementary arcuate friction faces 28, 28 formed on opposite end portions of the friction shoes 32, 32 as at 30.

The form of said friction shoes may be best considered from Figures 5, 5A and 5B, each shoe 32 having a generally rectangular shape as viewed from Figure 5 and having the aforedescribed outer arcuate friction faces 28, 28 on opposite ends thereof. On the smooth inner surfaces of each shoe, a transverse ridge of metal or flange 36 may be formed in any convenient manner such as by pressing the metal inwardly and thus forming a groove 34 on the outer faces of said shoes. The ridge 36 smoothly merges with the inner surfaces of said shoes and may be received as at 42 (Figure 1) in an annular slot 40 extending around the middle of the resilient member 14. It may be noted that the ridge 36 conforms generally to the arcuate shape of said shoe as viewed from Figure 5A and that the end curves 37, 37 afford smooth surfaces along which the resilient material may flow whereby abrasion of said material is prevented as it extrudes into the spaces 39, 39 (Figure 3) between said shoes in operation. The engagement of said ridge 36 and said slot 40 maintains said shoes in central relationship with respect to said end followers during operation.

Along one of the vertical edges of each shoe may be formed a vertical flange 44 engaging as at 48 a complementary vertical slot or notch 46 formed along the corresponding other edge of an adjacent shoe as best viewed in Figure 3. The engagement of each shoe with the adjacent shoe maintains said shoes in normal arrangement as they are spread radially outward during operation of the device and also affords substantially uninterrupted circumferential friction areas for

engagement with the inner faces **26**, **26** on said end followers. It should also be noted that said engagement prevents the protrusion of said resilient member between adjacent shoes and thus prevents pinching and abrasion thereof.

At opposite ends of each shoe may be formed the central lugs **50**, **50** which project outwardly into circumferentially spaced rectangular openings **52**, **52** in each end follower adjacent the juncture of said base with said housing. Said lugs have interlocking engagement with said slots as at **54**, **54** and afford means for retaining said device in assembled relationship.

The resilient member **14** is positioned between the end followers as aforedescribed and comprises a solid block of resilient material tapering from its opposite ends as at **56**, **56** to a substantially thick central portion **58** abutting said shoes as at **60**, **60** and in which is formed the aforedescribed annular groove **40**.

When my novel device is placed under load, the end followers compress therebetween the resilient member which flows along the inner surfaces of said shoes in abutment therewith and urges said shoes radially outward for frictional engagement with said end followers. When the load is released, the resilient member returns the followers to their normal position.

It is to be understood that I do not wish to be limited by the exact embodiment 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.

I claim:

1. In a friction absorbing device, end followers presenting internal cylindrical friction surfaces, interlocked friction shoes affording continuous circumferential engagement with said surfaces, resilient means compressed between said shoes and said followers, and means on the ends of said shoes interlocked with said followers.

2. A friction member formed as a segment of a cylinder and comprising outer arcuate friction surfaces, smooth arcuate inner faces, a transverse flange forming positioning means for said member with respect to an associated resilient element, the margins of said flange merging with adjacent portions of said faces along smooth radii, and complementary rabbets formed on the respective edges of said member for cooperation with similar members to form a complete cylinder.

3. In a friction absorbing device, opposed end followers having cylindrical walls presenting internal friction surfaces, interengaging arcuate friction shoes disposed in cylindrical face engagement with said surfaces, a resilient member compressed between said shoes and said followers, transverse arcuate engaging means on said shoes and said resilient member, and lugs on said shoes engaging slots in said followers to retain said device in assembled relationship.

4. A friction member formed as a segment of a cylinder and comprising an outer friction surface, and complementary shoulders formed on the respective edges of said member for cooperation with similar members to form a complete cylinder.

5. In a friction absorbing device, end followers having friction walls presenting internal cylindrical surfaces and having outwardly directed central studs, arcuate shoes disposed for continuous frictional engagement with said surfaces, and a resilient member having its opposite ends seated on said studs and centrally abutting said shoes.

6. A friction member formed as a segment of a cylinder and comprising a friction surface, and complementary shoulders formed on the respective edges of said member for cooperation with similar members to form a complete cylinder.

7. In a friction absorbing device, end followers having housings presenting internal cylindrical friction surfaces, interlocked arcuate friction shoes affording continuous circumferential engagement with said surfaces, a resilient member compressed between said shoes and said followers, and means on the ends of said shoes interlocked with said housings.

8. A friction member comprising a friction surface, and complementary shoulders formed on the respective edges of said member for cooperation with similar members forming a friction unit therewith.

9. In a friction absorbing device, spaced followers having friction surfaces, friction shoes in engagement therewith, a resilient member compressed by and between said shoes and said followers, and a rabbeted joint between adjacent shoes.

DAVID M. LIGHT.