March 9, 1937. J. A. SHAFER 2,073,075

CAR TRUCK

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Fig. 1.

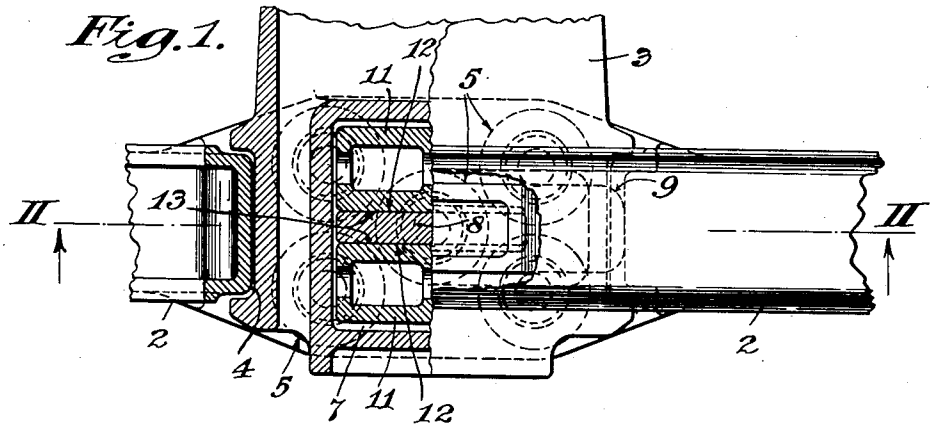
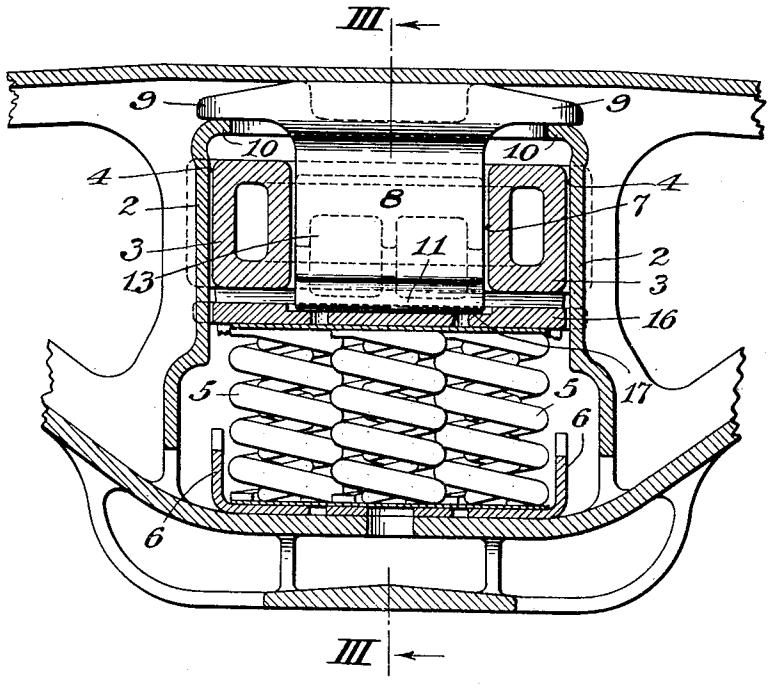


Fig. 2.



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Fig. 3.

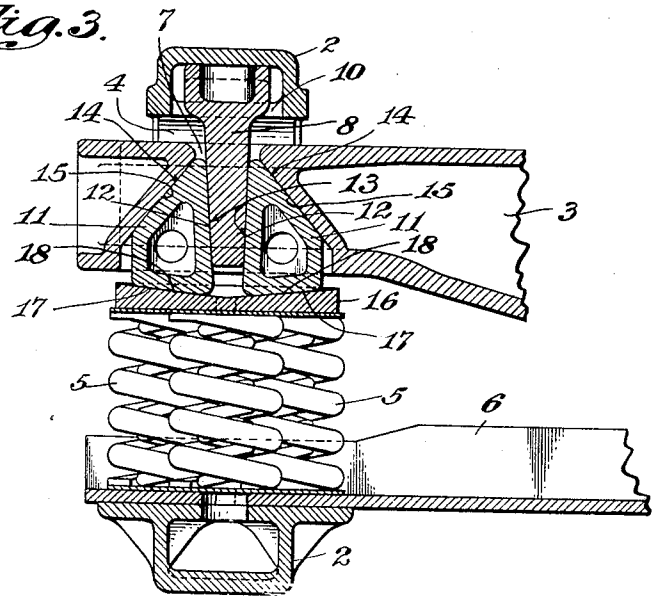
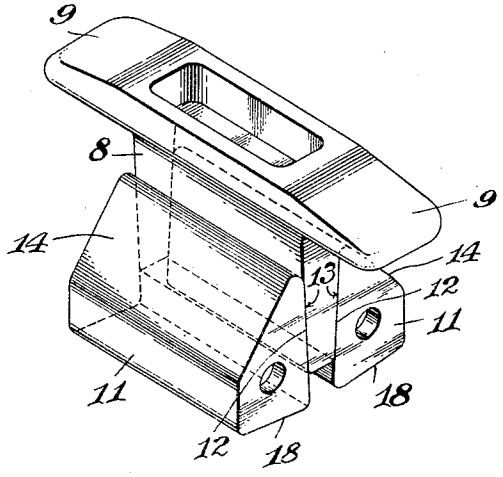


Fig. 4.



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CAR TRUCK

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Application July 1, 1930, Serial No. 465,094

15 Claims. (Cl. 105—197)

This invention relates to car trucks and is particularly concerned with the prevention of undue oscillation of the springs which support the bolster. The oscillations set up in the bolster-supporting springs during train operation have long presented a serious problem. Under certain conditions as to load and speed the oscillations of the springs become particularly pronounced and may cause serious results; such as the occurrence of crystallization in the springs with eventual breakage thereof, or driving solid and breaking of the springs. Frequently, as the result of such oscillations the lading is damaged, and, in the case of open top cars, may even be thrown off the car. In addition, the oscillations may become sufficiently violent to derail the car. An object of my invention is the provision of means, simple in construction and highly effective in operation, for preventing undue oscillations of the bolster supporting springs. A further object is to provide means which not only effectively snubs the recoil of said springs, but which furthermore accomplishes this result with a minimum of change in the construction of the car truck. My invention further provides a friction shock absorbing means which augments the capacity of the springs to resist downward movement of the bolster. Other features of the invention will be hereinafter described and claimed.

In the accompanying drawings:

Fig. 1 is a view partly in plan and partly in horizontal section of a portion of a car truck embodying my invention.

Fig. 2 is a longitudinal vertical section on line II—II of Fig. 1.

Fig. 3 is a transverse vertical section on line III—III of Fig. 2.

Fig. 4 is a perspective view showing certain parts of the dampening or snubbing mechanism.

Referring to the drawings there is shown at **2** a portion of a car truck side frame, which side frame may be of standard A. R. A. (American Railway Association) construction. A bolster **3** extends into the usual opening **4** in said side frame. It will of course be understood that the opposite end of the bolster is received in a similar side frame, but for the purposes of the present invention it is sufficient to consider but one end portion of the bolster and the associated side frame portion. The side frame carries springs **5** for supporting the bolster, said springs being shown mounted on the customary spring plank **6** which extends from one side frame of the truck to the other. While five bolster-supporting springs are shown in the embodiment here disclosed the particular number of said springs is immaterial to my invention and any desired number of springs may be employed.

Mounted in the top portion of the side frame and extending downwardly into a recessed portion **7** of the bolster is a friction member **8**. Said friction member is provided at its upper end with outwardly extending projections **9, 9**, which engage inwardly extending flanges **10, 10**, near the top of the side frame, whereby said friction member is retained in operative position. If desired, the friction member **8** may be cast integral with the side frame. Within the recessed portion **7** of the bolster are also positioned a pair of friction shoes **11, 11**, having friction surfaces **12, 12** engaging surfaces **13, 13** on the friction member **8**. Said friction shoes also have wedge surfaces **14, 14** which are engaged by corresponding wedge surfaces **15, 15** in the recessed portion **7** of the bolster. The amount of friction between the wedge surfaces **14, 14** and the surfaces **15, 15** of the shoes is less than that between the friction surfaces **13, 13** of said shoes and the surfaces **12, 12** of the friction member. At their lower ends the shoes **11, 11** rest upon a cap **16** mounted on the upper ends of the spring **5**.

In operation, as the bolster moves downwardly the wedge surfaces **15, 15** of the bolster cooperate with the surfaces **14, 14** of the shoes **11, 11** to force said shoes into firm frictional engagement with the friction member **8**; and the resultant friction between said shoes and friction member augments the capacity of the springs **5** for resisting downward movement of the bolster. When downward movement of the bolster ceases and the springs recoil, the wedge surfaces **15, 15**, and **14, 14** aforesaid again maintain the shoes in firm engagement with the friction member **8**; and the friction produced between said shoes and friction member absorbs energy from said springs so that the recoil thereof is effectively snubbed and expansion of said springs to a height substantially above their normal or neutral position is prevented. The friction member **8** is shown tapered inwardly from top to bottom so that the frictional capacity of the shoes **11, 11** and member **8** is greatest during upward movement of the bolster.

It will be apparent that upon upward movement of the parts the springs will tend to move the spring cap **16** and the shoes **11** faster than the bolster. The actuating force for the upward movement is supplied by the springs and the weight of the car resting on the bolster retards movement of the latter. It follows therefore that

the taper on member 8 will cause the shoes to be forced into closer engagement with the friction member as the parts move upwardly; the farther the movement the firmer being the engagement between the parts.

The spring cap 16 may be provided with inwardly sloping surfaces 17, 17, engaging corresponding surfaces 18, 18 on the shoes 11, 11, and cooperating in maintaining said shoes in firm contact with said friction member 8.

It will be apparent from the foregoing description that my invention provides for the effective dampening of oscillations of the bolster supporting springs and for the prevention of undue oscillation thereof.

To apply the foregoing spring dampening mechanism to a standard car truck, only the bolster need be replaced. The other parts of the truck can be used without change. It will be furthermore seen that my invention provides for increasing the spring capacity of standard trucks without the necessity of providing costly increased spring capacity arrangements.

The terms and expressions which I have employed are used as terms of description and not of limitation, and I have no intention, in the use of such terms and expressions, of excluding any equivalents of the features shown and described or portions thereof, but recognize that various modifications are possible within the scope of the invention claimed.

What I claim is:

1. In a car truck, a side frame, a bolster, springs on said side frame for supporting said bolster, a friction member extending substantially through the top wall of the bolster, friction shoes cooperating with said member, and wedging means operable upon relative movement between said bolster and side frame for forcing said shoes against said member to dampen vibrations of said springs.

2. In a car truck, a side frame, a bolster, springs on said side frame for supporting said bolster, a friction member mounted on said side frame above said bolster, friction shoes engageable with said member, and means on said bolster for wedging said shoes against said member to dampen vibrations of said springs.

3. In a car truck, a side frame, springs on said side frame, a tapered friction member carried by said side frame, friction shoes having tapered surfaces cooperating with said friction member, said shoes being supported by said springs, and a bolster supported by said springs through the medium of said shoes, said bolster having wedging surfaces cooperating with said shoes.

4. In a car truck, a side frame, springs on said side frame, a cap for said springs, a tapered friction member carried by said side frame, friction shoes mounted on said cap and having tapered surfaces cooperating with said friction member, and a bolster supported by said cap through the medium of said shoes and having wedging surfaces cooperating with said shoes, said spring cap having sloping surfaces cooperating with said shoes.

5. In a car truck, a side frame, springs on said side frame, a cap for said springs, a friction member depending from said side frame, friction shoes mounted on said cap, said cap having inclined surfaces tending to force said shoes into engagement with said member, and a bolster supported by said springs through the medium of said shoes and having wedging surfaces for forcing said shoes into engagement with said member.

6. In a car truck, a side frame, a bolster, a friction member having outward projections at its upper end, flange means on said side frame cooperating with said member for supporting the latter, friction shoes interposed between said member and said bolster, and bolster supporting springs cooperating with said shoes.

7. In a car truck, a side frame, a bolster, springs on said side frame for supporting said bolster, and means above said springs and within the confines of the side frame for increasing the capacity of said springs, said means comprising a friction member depending from said side frame and friction shoes relatively movable in frictional engagement upon downward movement of said bolster with respect to said side frame.

8. In a car truck, a side frame having columns providing a bolster receiving opening therebetween, a bolster extending into said opening, springs on said side frame for supporting said bolster, and means within the confines of the side frame for increasing the capacity of said springs, said means comprising friction shoes and a friction member integral with the side frame and extending between said columns, and wedging means on said bolster for causing relative movement between said shoes and member in frictional engagement with each other upon downward movement of said bolster with respect to said side frame.

9. In a car truck, a side frame having columns providing a bolster receiving opening therebetween, a bolster extending into said opening, springs for supporting said bolster, and friction means brought into action upon downward movement of said bolster with respect to said side frame for increasing the capacity of said springs, said means being above said springs and within the confines of the side frame and having a part thereof integral with the side frame, said part extending between said columns.

10. In a car truck, a side frame, a bolster, springs for supporting said bolster, and means for snubbing the recoil of said springs, said means comprising a friction member and friction shoes so constructed and arranged that the friction member offers greater resistance to the shoes upon upward movement of said bolster with respect to said side frame than upon downward movement of said bolster relative to said side frame.

11. In a car truck, a side frame, a bolster, spring for supporting said bolster and friction means brought into action upon upward movement of said bolster with respect to said side frame for snubbing the recoil of said springs, said means comprising a friction shoe and a friction element cooperating therewith and tapered in such direction as to offer greater opposition to movement of said shoe during recoil of said springs than during compression thereof.

12. In a car truck, a side frame, a bolster, springs on said side frame for supporting said bolster, and means for snubbing the recoil of said springs, said means comprising a friction member depending from the side frame and friction shoes movable with respect thereto, said friction member being tapered downwardly and inwardly for offering greater opposition to movement of said shoes during recoil of said springs than during compression thereof, and wedging

means for maintaining said shoes and member in frictional engagement during movement of the bolster with respect to the side frame.

13. In a car truck, a side frame, a bolster, a friction member carried by said side frame above said bolster, wedging means on said bolster, friction shoes between said wedging means and said friction member, and springs on said side frame beneath the bolster for supporting said bolster through said shoes.

14. In a railway truck, in combination, a side frame having a bolster opening, a bolster with an end received therein, resilient means supporting said bolster from said frame, and friction cushioning means acting between said bolster and that part of the frame thereabove.

15. In a railway truck, in combination, a side frame having a bolster opening, a bolster with an end received therein, a cushioning device comprising a wedge element anchored to said side frame for transmitting forces therefrom to snub upward movement of said bolster, friction means normally engaging a portion of said bolster, and resilient means associated with said wedge element and friction means for urging the latter into engagement with the wedge element and bolster.

JAMES A. SHAFER.