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C. J. HOLLAND

2,183,100

SPRING DAMPENER

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Fig. 2

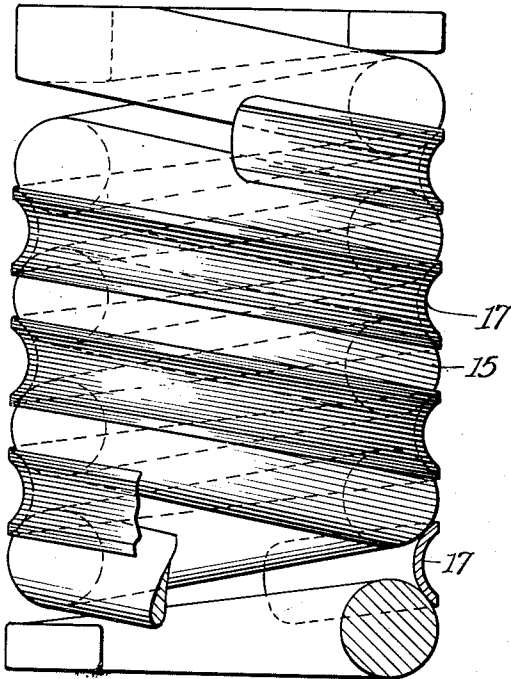


Fig. 1

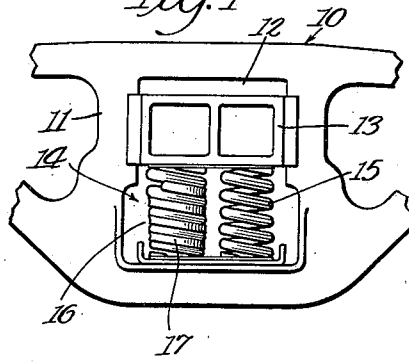


Fig. 4

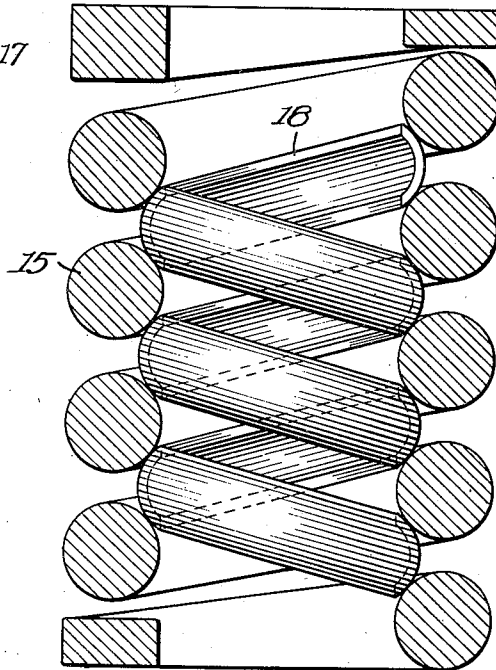
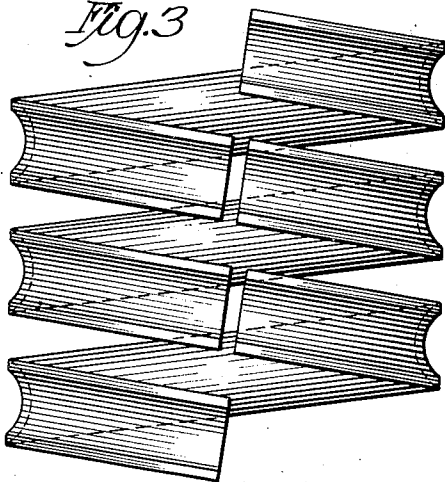


Fig. 3



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SPRING DAMPENER

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2 Claims. (Cl. 267—9)

This invention relates to spring units for use in load supporting spring assemblies for railway cars.

One of the objects of the invention is the provision of a new and improved spring unit having novel mechanism associated therewith for resisting the free movement of the unit.

Another object of the invention is the provision of a new and improved spring dampener member that may be easily and readily assembled on a helical spring for dampening the free movement of said spring.

A further object of the invention is the provision of a new and improved spring dampening device or element that is inexpensive to manufacture, efficient in operation, and that may easily be placed in position on a helical spring and when in position will not become accidentally detached during handling or shipment or while in use.

Other and further objects and advantages of the invention will be apparent from the following description taken in connection with the accompanying drawing in which—

Fig. 1 is a side elevation of a portion of a railway truck showing the invention in position therein, with parts broken away;

Fig. 2 is a vertical section of the spring unit;

Fig. 3 is a side elevation of a modified form of the wedging device; and

Fig. 4 is a vertical section of a conventional bolster spring showing the invention in position therein and is a modified form of spring unit.

It is common practice to employ free acting helical springs in the bolsters supporting spring assemblies of railway trucks, but unless means be provided for preventing harmonic action of this assembly under certain conditions, this action may build up to such an extent or assume such proportions as is likely to result in injury to the running gear, body and lading of the vehicle, or to the springs themselves by going solid. This harmonic action may be caused by flat wheels, rail joints, low places in the track, and the like, that during the travel of the car cause vertical vibrations which, if they harmonize with the natural vibration period of the springs, may build up to such an extent as to cause the springs to solid with probable breakage or at least injury to the side frames, parts of the vehicle and its lading.

The present invention seeks to prevent harmonic action of these springs by providing means for dampening the vibrations of the spring assemblies.

Referring now to the drawing, the reference

character 10 designates a railway truck having a side frame 11 provided with a bolster opening 12 through which the end of the bolster 13 extends, as is usual in such constructions.

The bolster end 13 is supported by a spring assembly 14 comprising a plurality of bolster supporting helical springs 15 of the usual or any suitable form of construction and one or more spring units 16. The spring unit 16 comprises a helical spring 15, a duplicate of the remaining springs of the spring assembly and a helical dampening device or dampening member 17. The dampening member 17 is a very light steel resilient member concavo-convex in cross-section and wound to helical form, as shown in Figs. 1 and 2. It is too light to function as a load supporting spring.

In the form of the construction shown in Figs. 1 and 2, the dampening member 17 is on the outer surface of the spring 15 and the convex side of the dampening member engages the adjacent surfaces of the turns of the spring 15. The pitch of the dampening member is the same as that of the spring so that the turns of the dampening member will be so spaced apart that they will coincide with the spaces between the turns of the helical spring 15 with which they engage and may be slightly under tension. The dampening member is adapted to be applied to the spring by turning the same relative to the spring in the manner that a nut is threaded on a bolt.

When the parts are in operative position, as shown in Fig. 2, the convex surface of the dampening member is in engagement with the adjacent convex surfaces of the turns of the spring so that when the spring is compressed, the turns of the dampening member 17 are forced radially outwardly or in a direction to increase the diameter of this member. When the helical spring is released or extended, the helical dampening member shortens in length and thus there is a longitudinal frictional movement of the dampening member on the turns of the helical spring. This shortening and lengthening of the dampening member as a helical will cause a relative longitudinal movement between the turns of the dampening member and those of the spring and although the dampening member is very light, the friction resulting from this relative movement, together with the resistance offered by the several turns of the dampening member to the shortening and lengthening of that member as a helical will cooperate in preventing harmonic action of the spring unit and the spring assembly.

Fig. 3 differs from the construction just de-

scribed in that the dampening member is composed of a plurality of sections, each section comprising a single turn. In this form of construction, each turn of the dampening device
5 operates independently of the remaining turns.

The construction shown in Fig. 4 differs from that shown in Fig. 2 in that the dampening device 18 is so constructed that it is applied to the inner surface of the spring 15. In this form of construction, the dampening member is helical as in
10 the previous construction and is also concavo-convex in cross-section but in this construction, the convex surface is on the outer side of the dampening member. This convex surface is adapted to engage the inner convex sides of the turns of the spring 15 and is located in the space between said turns so that when the spring is compressed, the turns of the dampening member 18 will be forced inwardly thereby causing the
15 helical dampening member to increase in length. Likewise, when the spring is released, the length of the helical dampening member will contract. The extending and shortening of the helical dampening member with reference to the turns
20 of the spring, even though this member be light and resilient, will cause a relative longitudinal frictional movement of the turns of the spring and the dampening device and this friction, together with the reaction of the spring on the dampening member, that is, the resistance to the
25 elongation and contraction of the helical dampening member, will dampen the vibration of the spring unit and this in turn will dampen the vibration of the spring assembly as in the previous construction.
30

In all forms of the device, the dampening member engages only the intermediate turns of the helical and since the same is light and highly resilient, it will readily lengthen and shorten as
40 the helicals of the spring assembly are compressed or released. Positioning devices for positioning the dampening members on the helicals may be employed, if desired.

If desired, a dampening member may be employed on the outside of the spring and one on
45 the inner side. This may be desirable when a

more sluggish movement is desired, or where stronger springs are employed, without the necessity of increasing the thickness of the material of the dampening member with its attendant rigidity.
5

It is thought from the foregoing, taken in connection with the accompanying drawing, 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.
10

I claim as my invention:

1. In combination, truck side frame having a
15 bolster opening therein, a bolster in said opening, a spring assembly for supporting said bolster, said assembly comprising a plurality of load supporting helical springs, a helical dampening member concavo-convex in cross-section threaded
20 on the intermediate portion only of one of said springs, said member being of light material concavo-convex in cross-section, the convex surface of each turn of said member being nested between the adjacent turns of said helical spring
25 and in engagement with the exterior surfaces of two adjacent turns of said helical whereby when said helical vibrates vertically it will cause a change in the overall length of said dampening member.
30

2. A spring unit for use in a load supporting spring assembly, comprising a load supporting helical spring, a dampening member engaging the exterior surfaces of the intermediate turns of said spring, and a dampening member engaging the
35 interior surfaces of the intermediate turns of said spring, each of said dampening devices comprising a helical load supporting resilient member concavo-convex in cross-section and of light material wound to the form of a helical in the
40 same direction as said helical spring and with the convex surfaces of each turn continuously engaging adjacent turns of the intermediate portion only of said helical.
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