Sept. 15, 1942. R. B. COTTRELL 2,295,554

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Fig. 1.

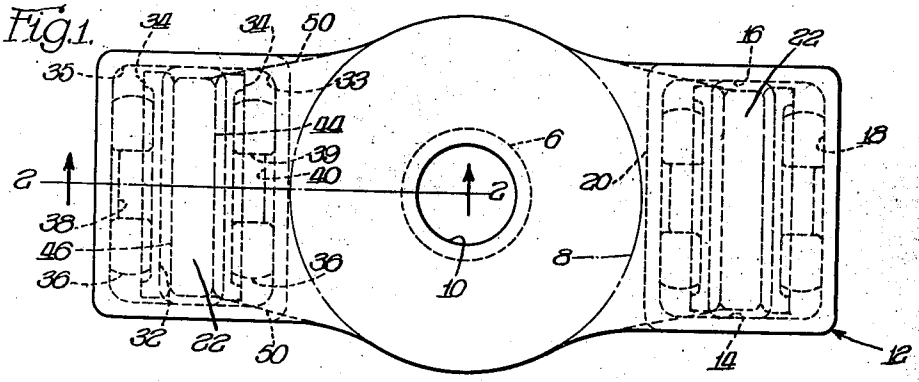


Fig. 2.

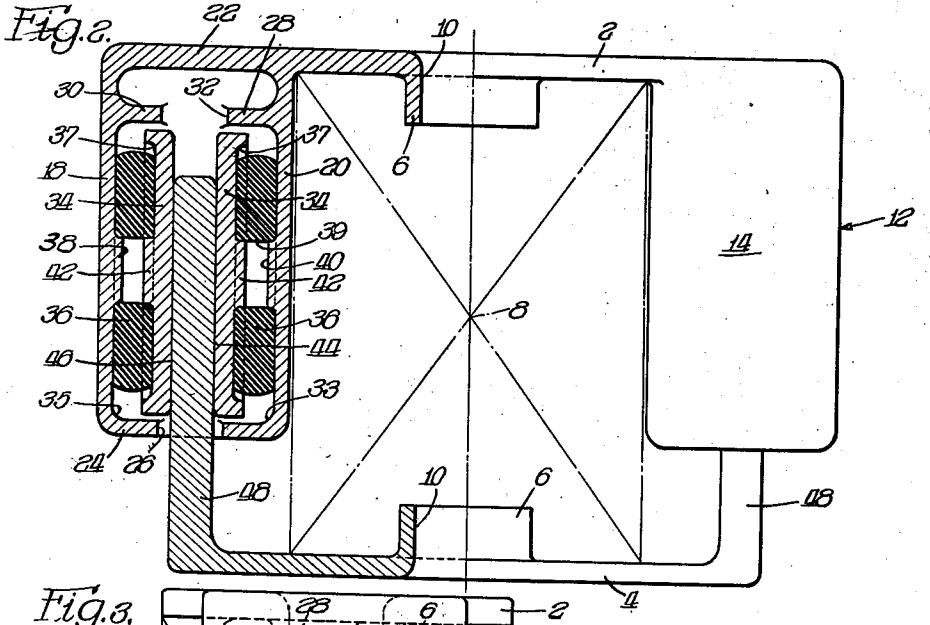
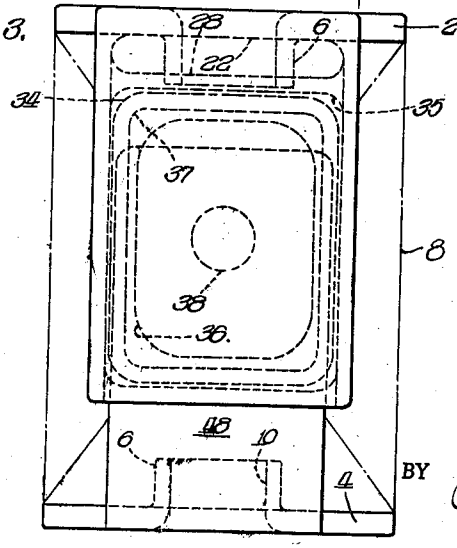


Fig. 3.



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Fig. 4.

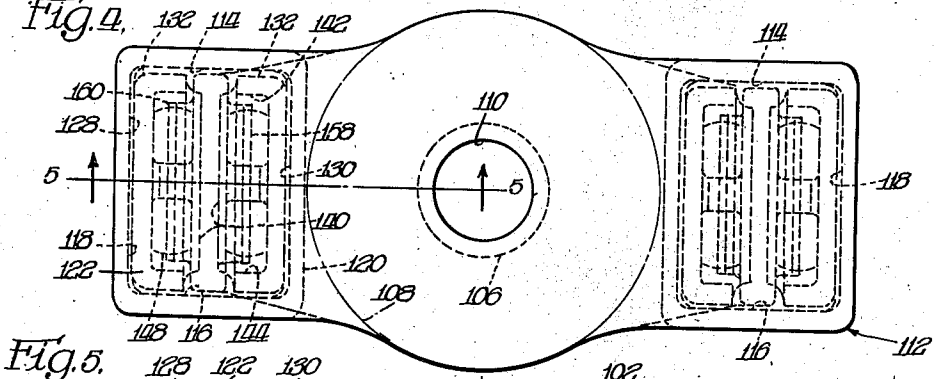


Fig. 5.

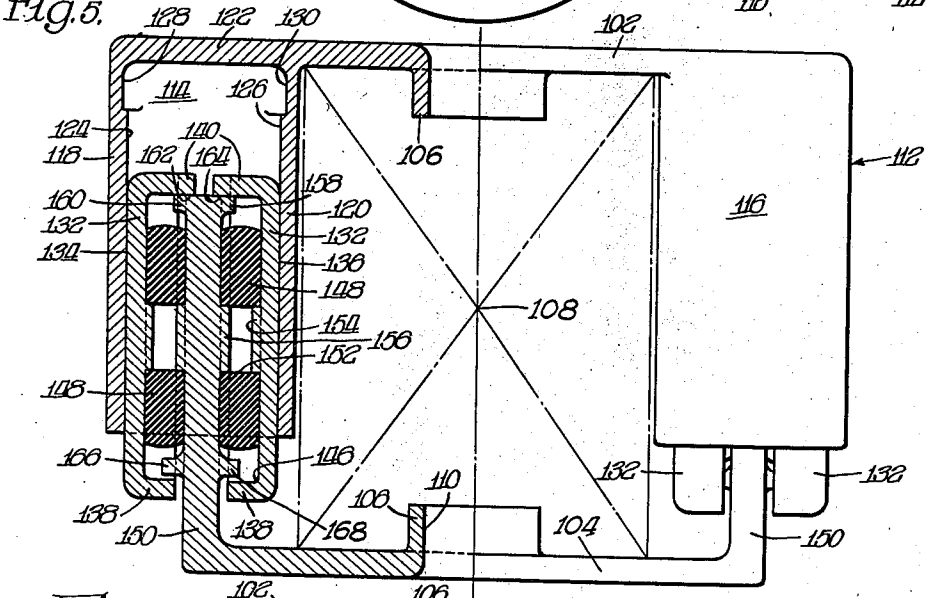
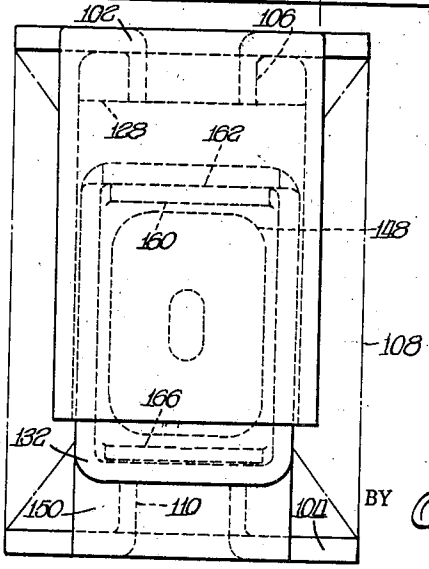


Fig. 6.



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UNITED STATES PATENT OFFICE

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Robert B. Cottrell, Chicago, Ill., assignor to American Steel Foundries, Chicago, Ill., a corporation of New Jersey

Application February 21, 1941, Serial No. 379,942

3 Claims. (Cl. 267—9)

This invention relates to a spring group and particularly an arrangement of coil springs in conjunction with a friction absorbing device suitable for application to railway car trucks.

The general object of my invention is to devise a relatively simple friction absorbing arrangement convenient for use with a single coil spring or a spring group comprising inner and outer coils utilizing top annd bottom spring plates on which may conveniently be mounted, at either side of said coils, friction absorbing devices of like structure and capacity.

A definite object of my invention is the provision of top and bottom spring plates for use with a single coil wherein one of said plates may support a friction assembly, and the other of said plates may carry actuating means for operation of said friction assembly.

Another object of my invention is to support, between the top and bottom spring plates associated with a coil spring, spaced friction absorbing devices comprising a housing connected to one of said plates and friction shoes for engagement therewith actuated from the other of said plates.

In another embodiment, my invention comprehends an arrangement wherein spaced spring plates may be utilized for coil springs therebetween, and one of said plates may have integrally formed therewith housings supporting friction shoes which may have engagement with a friction panel supported from the other of said plates.

In the drawings,

Figure 1 is a top plan view of one embodiment of my invention.

Figure 2 is a side elevation thereof, half in section, the section being taken substantially in the longitudinal vertical plane bisecting the device as indicated by the line 2—2 of Figure 1.

Figure 3 is an end elevation of the structure shown in Figures 1 and 2.

Figure 4 is a top plan view of a further embodiment of my invention.

Figure 5 is a side elevation of the structure shown in Figure 4, half in section, with the section taken in the vertical longitudinal plane indicated by the line 5—5 of Figure 4.

Figure 6 is an end elevation of the structure shown in Figures 4 and 5.

Describing in detail first the embodiment shown in Figures 1 to 3, it comprises a top spring plate 2, a bottom spring plate 4 with centrally formed positioning means 6, 6 thereon for the coil spring group diagrammatically indicated at 8. The positioning means 6 may each be in the form of an annular flange forming an inwardly projecting hollow lug defining the aligned openings 10, 10 at the top and bottom of the structure and conveniently serving as positioning means therefor in conjunction with means which may project from the frame members (not shown) between which the spring assembly may be interposed. At each end of the top spring plate may be formed an integral housing generally designated 12, each including the spaced side walls 14 and 16, the end wall 18, and the intermediate wall 20 as well as a top wall 22 and a bottom wall 24 interrupted centrally thereof by the transverse slot 26 extending across said housing. Adjacent the top wall 22 of each housing may be formed aligned integral flanges 28 and 30, said flanges extending across said housing and defining the slot 32 aligned with the before-mentioned slot 26. Thus, at opposite sides of each housing are formed pockets 33 and 35 defined in the one case by the intermediate wall 20, the side walls 14 and 16, the bottom wall 24, and the flange 28, and in the other case by the end wall 18, the side walls 14 and 16, the bottom wall 24, and the flange 30. Within each housing 12 may be confined a plurality of friction shoes 34, 34 oppositely disposed with respect to each other and extending within the before-mentioned recesses 33 and 35 with a resilient member 36 interposed between each shoe and the adjacent vertical wall. Each shoe 34 is slightly recessed as at 37 to form a convenient seat for the adjacent rubber spring 36, having the central opening 39. On the vertical walls 18 and 20 may be formed spring positioning means 38 and 40, and in alignment therewith may also be formed on each shoe, a spring positioning lug 42. On the opposite faces of the shoes 34, 34 may be formed friction faces engaging as at 44 and 46 opposite friction faces of the friction panel 48, which is a rectangular member of tongue-like form vertically projecting from the bottom plate 4 and integrally formed therewith, said panel or tongue 48 projecting upwardly from the extremities of the bottom plate 4 through the transverse slot 26 in the bottom wall of the housing and having slidable movement between the friction shoes 34, 34 as the spring 8 is compressed and released in normal usage. The friction tongue 48 may extend through the slot 32 at the top of each housing between the flanges 28 and 30 as the device is fully compressed.

The top and bottom plates 2 and 4 may have a maximum width at the transverse center line of

the structure as best seen in the plan view of Figure 1, and may taper slightly therefrom toward each end, the bottom plate having a sharper taper as seen at 50, 50 (Figure 1) in order to reduce its width somewhat, as compared to the top plate, to a convenient mergence with the tongue 48 at each end thereof.

The embodiment illustrated in Figures 4 to 6 inclusive is generally similar to the modification previously described but differs therefrom in the form and arrangement of the friction absorbing device at opposite ends of the structure. In the modification now under consideration the top spring plate 102 and the bottom spring plate 104 may each have a central inwardly directed annular flange 106 forming positioning means for the interposed coil spring group diagrammatically shown at 108, each positioning means 106 having the central opening 110 affording a convenient means of positioning the device between supporting and supported members (not shown) on which may be formed in the usual manner lugs for projection into the openings 110, 110. Each spring plate may be relatively wide at the central portion thereof as seen in the top plan view of Figure 4, and the top spring plate may taper slightly therefrom to merge with integral housings 112, 112 formed at opposite ends thereof. Each housing 112 comprises the spaced side walls 114 and 116, an end wall 118, an intermediate wall 120, and a top wall 122, the plane of which is continuous with the other portions of the top plate 102. Each housing 112 is thus formed with a downwardly directed open end and on the opposed faces of the walls 118 and 120 may be formed the friction faces 124 and 126, said walls 118 and 120 being relieved as at 128 and 130 above the friction surfaces 124 and 126 in order to prevent the wearing of shoulders thereon.

Within each housing 112 may be confined a pair of friction shoes 132, 132, each of said shoes being a cup-like structure the base wall of which may be formed with a friction surface, and said surfaces engage the walls 118 and 120 as at 134 and 136 respectively. The cup-like structure of each shoe is rectangular comprising a back or friction wall and integral flanges extending therearound and identified as the bottom flange 138, a top flange 140 of somewhat greater depth than the bottom flange 138, and side flanges 142 and 144, said flanges thus being continuous around the shoe to form said cup-like structure with the central cavity 146, within which may conveniently be received the rubber pad or spring 148, one face of which may abut the back wall of the shoe, and the opposite face of which may abut the carrier arm 150 which is integrally formed with the bottom plate 104 at the extremity thereof. Each rubber spring 148 is formed with a central opening 152 within which may be received positioning means 154 and 156, formed respectively on the inner face of the adjacent shoe and on the carrier 150. The carrier 150 is a tongue-like member generally rectangular in outline, and at the upper end thereof may be formed the lateral flanges 158 and 160 serving as abutment means for the respective shoes by engagement of the flanges 140, 140 at the top thereof as at 162 and 164. At an intermediate point adjacent the lower end of the carrier 150 may be formed the lateral flanges 166 and 168 which, in conjunction with the beforementioned top flanges 158 and 160, serve to position the shoes 138, 138 at opposite sides of the carrier with respect thereto, said lateral flanges serving as actuating means for said shoes by engagement therewith as the top and bottom spring plates have relative movement with respect to each other in normal operation. Each of the flanges 158, 160, 166 and 168 may extend only partially across the width of the carrier 150 in order to be conveniently received between the side flanges 142 and 144 of the respective shoes.

In this embodiment it will be noted that the carriers 150, 150, integrally formed with the bottom spring plate at opposite extremities thereof, serve as actuating means for the friction shoes 132 which are mounted thereon, thus distinguishing from the previous embodiment wherein the friction shoes were supported in the housings and afforded frictional engagement with friction members mounted on the opposite ends of the lower plate. In the first embodiment, the frictional engagement occurred between friction members mounted on the lower plate and friction shoes, supported in housings, from the upper plate. In the second embodiment the housings on the upper plate are formed with friction surfaces and the shoes have frictional engagement therewith while being actuated by carriers mounted on the extremities of the lower plate. In a sense, therefore, each embodiment is the reverse of the other while utilizing friction means otherwise generally similar.

It is to be understood that I do not wish to be limited by the exact embodiments of the device shown which are 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 spring group, top and bottom spring plates, a compression spring therebetween, one of said plates having at each end thereof spaced walls and the other of said plates having at each end thereof a wall intervening between the adjacent spaced walls, friction means interposed between each intervening wall and the adjacent walls, each of said friction means comprising a shoe frictionally engaging one of said walls, and a resilient member associated therewith.

2. In a spring group, spaced spring plates, a compression spring therebetween, said plates having rigid walls interleaved at opposite ends of the device, friction means between adjacent interleaved walls, each of said friction means comprising a shoe frictionally engaging one of said walls, and a resilient member compressed between each shoe and an adjacent wall.

3. In a spring group, spaced spring plates, a compression spring therebetween, said plates having rigid walls interleaved at opposite ends of the device, friction means between adjacent interleaved walls, each of said friction means comprising a shoe frictionally engaging one of said walls, a resilient member compressed between each shoe and an adjacent wall, and means on each shoe in telescoping relation with means on an adjacent wall housing the associated resilient member.

ROBERT B. COTTRELL.