May 26, 1953 D. J. McCULLOUGH 2,639,914

SPRING GROUP

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FIG. 1

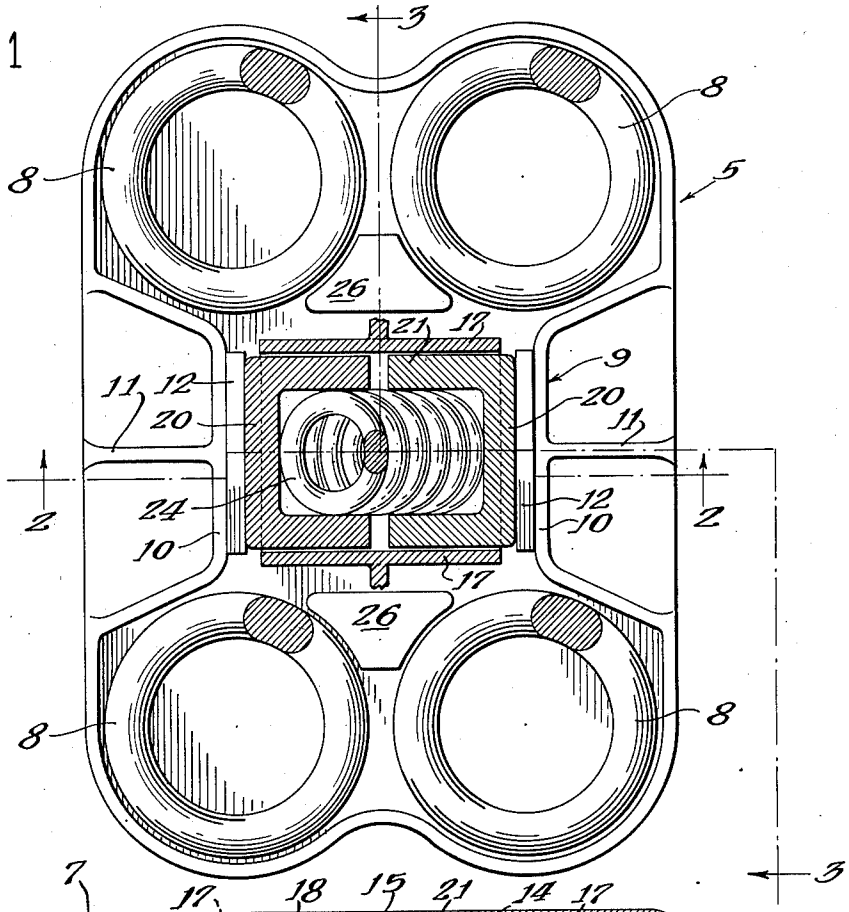
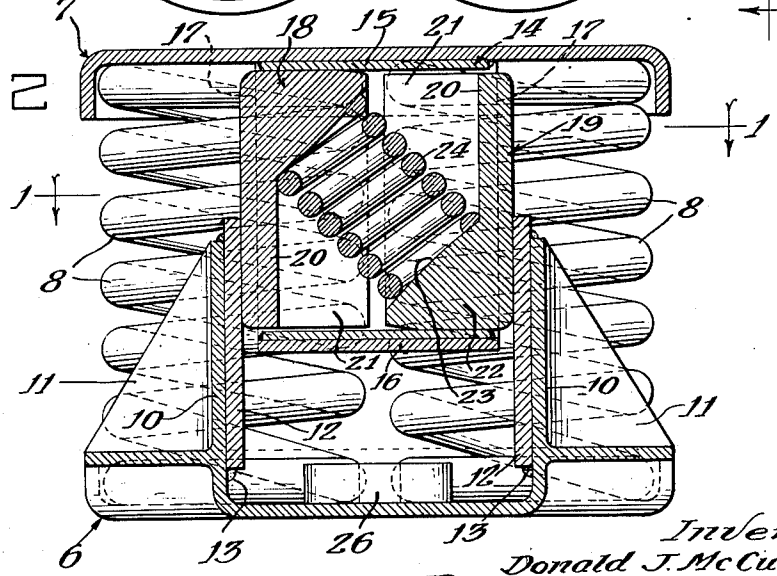


FIG. 2



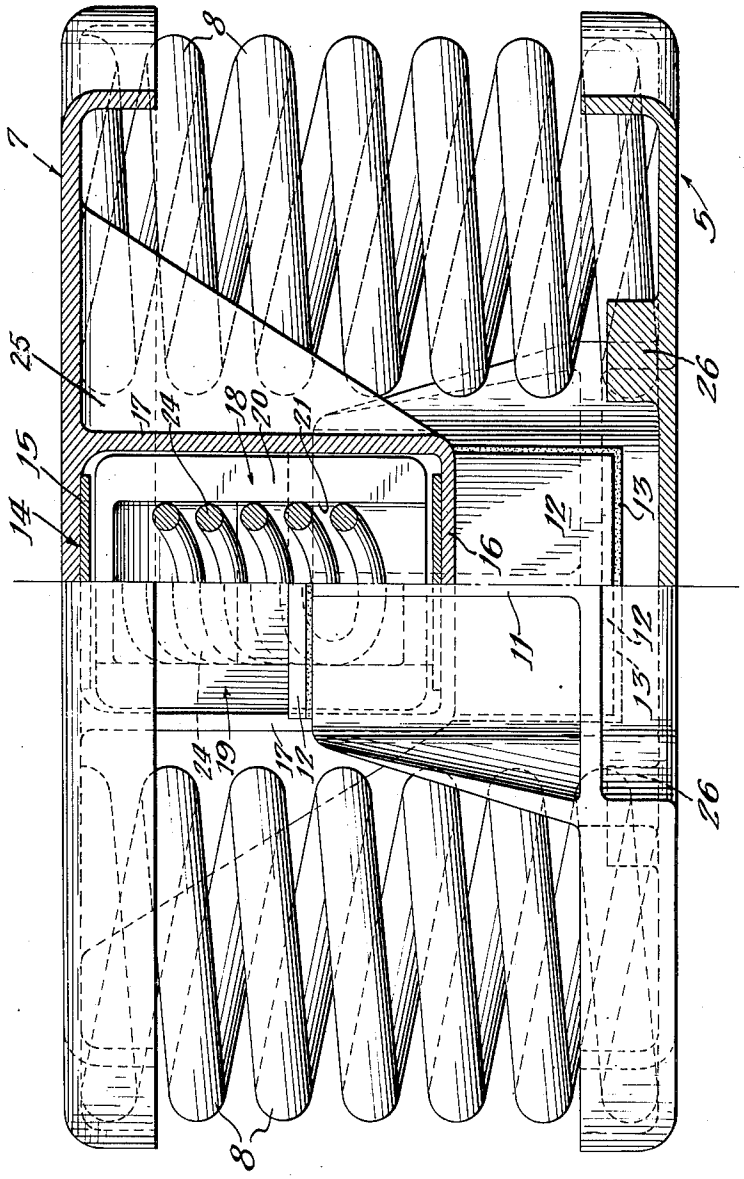
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FIG. 3



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UNITED STATES PATENT OFFICE

2,639,914

SPRING GROUP

Donald J. McCullough, Downers Grove, Ill.

Application March 2, 1950, Serial No. 147,219

6 Claims. (Cl. 267—9)

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The present invention relates to spring groups for use in railway car trucks. In particular the invention pertains to spring groups that employ coil springs in combination with friction snubbing means. Spring groups are employed in railroad freight car trucks between the truck bolster and the truck frame. The purpose of the spring group is to provide the necessary spring action between the bolster and the truck frame but this action is modified and made smoother by the friction snubbing means.

An object of the invention is to provide a spring group of this character that is relatively simple, both in its construction and in its assembly and yet it is intended that the various elements of the spring group cooperate to provide good riding qualities.

The foregoing constitute some of the principal objects and advantages of the present invention, others of which will become apparent from the following description and the drawings, in which

Fig. 1 is a horizontal sectional view taken through a spring group illustrating the present invention, the view being taken along the line 1—1 of Fig. 2;

Fig. 2 is a vertical, transverse sectional view, the view being taken along the line 2—2 of Fig. 1; and

Fig. 3 is a longitudinal sectional view shown partially in side elevation of the spring group, the view being taken along the line 3—3 of Fig. 1.

For purposes of illustration a single embodiment of the present invention will be described hereinafter though it is recognized that many modifications may be made in this particular embodiment without departing from the intended scope of the invention.

Referring to the drawings the spring group generally indicated at 5 includes a lower spring plate generally indicated at 6 and an upper spring plate generally indicated at 7. These two spring plates 6 and 7 are disposed in parallel relationship with respect to each other and in the present instance are more or less rectangular in shape as best illustrated in Fig. 1.

At each of the four corners of the rectangle there is provided a compression spring 8 that is seated at its upper and lower ends against the upper and lower spring plates 7 and 6 respectively. Upstanding lugs 26 fastened to the lower spring plate 6 serve as retainers for the compression springs 8. Mounted in the central region of the spring group 5 between the ends of the lower and upper spring plates 6 and 7 is a friction snubbing assembly generally indicated at 9.

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The bottom spring plate 6 in its central region is provided with upstanding spaced walls 10, each of which is backed up by suitable gussets 11. Mounted on the inner face of each of these walls 10 is a friction plate 12 that may be welded as at 13 to the wall 10. These friction plates 12 are disposed in parallel spaced relationship with respect to each other. Suspended from the upper spring plate 7 in the central region of the spring group is a housing generally indicated at 14 that includes a top wall 15, a bottom wall 16 and a pair of side walls 17. This housing 14 is open at both ends and may be integral with or secured to the spring plate 7 by means of welding or other suitable fastening means. Mounted in the housing 14 is a pair of spaced friction shoes 18 and 19, each of which is channel shape in cross section as indicated in Fig. 1 so as to have a web portion 20 and a pair of side flanges 21. At one end of each of the friction shoes 18 and 19 is an end wall 22 that is provided on its inner side with a diagonally disposed spring seat face 23.

As best shown in Fig. 2 these friction shoes 18 and 19 are arranged in the housing 14 so that one of the friction shoes such as shoe 18, is disposed with its end wall 22 located at the upper end of the shoe while the other friction shoe 19 is disposed with its end wall 22 located at the lower end of the shoe. Thus the diagonally disposed spring seat faces 23 are located diagonally opposite each other and in parallel relationship. A compression spring 24 is seated between the diagonally disposed spring seat faces 23, the opposite ends of the spring 24 engaging the faces 23 and urging the friction shoes 18 and 19 away from each other and into firm engagement with the spaced friction plates 12.

The spring group 5 when mounted in a car truck is disposed with the bottom spring plate 6 seated on some member of the truck frame and with the upper spring plate 7 disposed beneath some portion of the truck bolster. Thus the truck bolster exerts a downward force on the upper spring plate 7 so as to compress the four coil springs 8. When the railroad car is in motion shocks and the like are transmitted between the truck frame and the bolster through the coil springs 8 but the action of these springs is dampened by the snubbing action created between the friction shoes 18 and 19 and their respective friction plates 12. Due to the action of the compression spring 24 between the friction shoes 18 and 19, the amount of friction between these friction shoes and their respective friction plates 12 is maintained constant.

As best shown in Fig. 2 the compression spring

24 is disposed diagonally between the friction shoes 19 so as to exert forces against the friction shoes 18 and 19 having both horizontal and vertical components. The horizontal components of these forces urge the friction shoes away from each other and against the friction plates 12. The vertical components urge the friction shoes 18 and 19 in an upward and downward direction respectively against the top wall 15 and the bottom wall 16 respectively of the housing 14. As best shown in Fig. 3 the side walls 17 of the housing 14 are suitably gusseted by means of plates 25.

As shown the friction plates 12 are disposed parallel to each other so as to provide uniform friction throughout the entire vertical movement of the friction shoes 18 and 19 over the faces of the friction plates. It is recognized, of course, that the plates 12 can be disposed in converging relationship from top to bottom so as to increase the friction as the friction shoes move downwardly or they can converge from the lower ends toward the upper ends of the friction plate so as to provide increasing friction as the shoes move upwardly over the faces of the friction plates.

I claim:

1. A spring group comprising top and bottom spring plates, coil springs between the plates, and a friction snubbing device comprising spaced friction plates fixed with respect to one of the spring plates, a housing fixed to the other spring plate, spaced friction shoes mounted in said housing and movable relatively to said last mentioned spring plate and disposed between the friction plates, each friction shoe having a diagonally disposed spring seat face, and a compression spring seated between the spring seat faces and urging the friction shoes apart and into frictional engagement with the friction plates.

2. In a spring group of the type described that includes top and bottom spring plates, a friction snubbing device comprising a pair of parallel spaced apart vertical friction plates mounted on one of the spring plates, a housing fixed to the other spring plate, a pair of vertical spaced apart friction shoes mounted in said housing and disposed in parallel relationship between the friction plates, a pair of diagonally disposed spring seat surfaces on the friction shoes, one being provided on each shoe, and a compression spring mounted between the friction shoes and seated against the spring seat surfaces.

3. A spring group comprising top and bottom spring plates, coil springs between the plates, and a friction snubbing device comprising spaced friction plates fixed with respect to one of the spring plates, a housing fixed to the other spring plate and disposed between the friction plates, spaced friction shoes disposed in the housing and being laterally movable with respect to each other, and resilient means disposed diagonally between the

friction shoes urging the shoes apart into friction engagement with the friction plates and with walls of the housing.

4. A spring group comprising top and bottom spring plates, coil springs between the plates, and a friction snubbing device comprising spaced friction plates fixed with respect to one of the spring plates, a housing fixed to the other spring plate and disposed between the friction plates, spaced friction shoes disposed in the housing and being laterally movable with respect to each other, and resilient means disposed diagonally between the friction shoes exerting both horizontal and vertical force components on the shoes to urge the shoes apart into friction engagement with the friction plates and with walls of the housing.

5. A spring group comprising top and bottom spring plates, coil springs between the plates, and a friction snubbing device comprising spaced friction plates fixed with respect to one of the spring plates, a housing fixed to the other spring plate and disposed between the friction plates, spaced friction shoes disposed in said housing and movable relatively to said last mentioned plate, each friction shoe being channel shaped in cross section and having a wall at one end provided with a diagonally disposed inner face, the last mentioned wall on one friction shoe being disposed at one end of the shoe and on the other friction shoe being disposed at the other end of the shoe, and resilient means sandwiched between the friction shoes and exerting outward forces against the diagonally disposed inner faces to urge the friction shoes apart and into friction engagement with the friction plates.

6. A spring group comprising top and bottom spring plates, coil springs between the plates, and a friction snubbing device comprising upstanding parallel, spaced friction plates fixed with respect to the lower spring plate, the end spaces between the friction plates being open and unobstructed, a housing fixed to the top spring plate and disposed between the friction plates, spaced friction shoes mounted in said housing and movable relatively to said top plate and disposed between the friction plates, each friction shoe having a diagonally disposed spring seat face, and a compression spring seated between the spring seat faces and urging the friction shoes apart and into frictional engagement with the friction plates.

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