July 5, 1938. S. W. MILLWARD 2,122,531

SPRING ASSEMBLY FOR SEATING AND THE LIKE

Filed Dec. 11, 1936

Fig. 1.

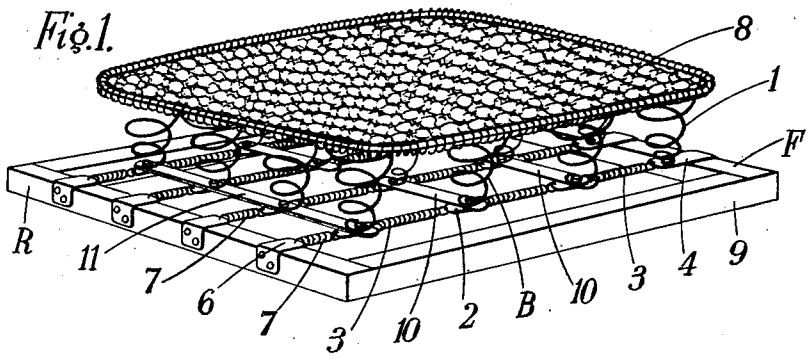
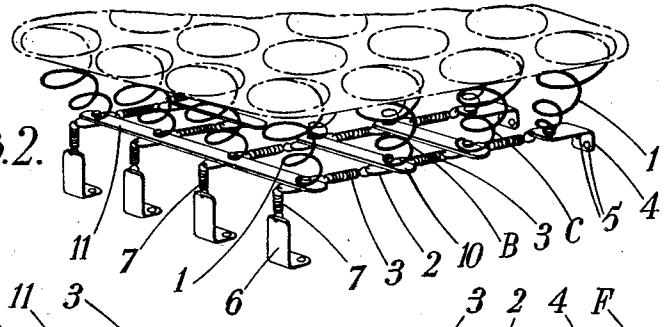


Fig. 2.



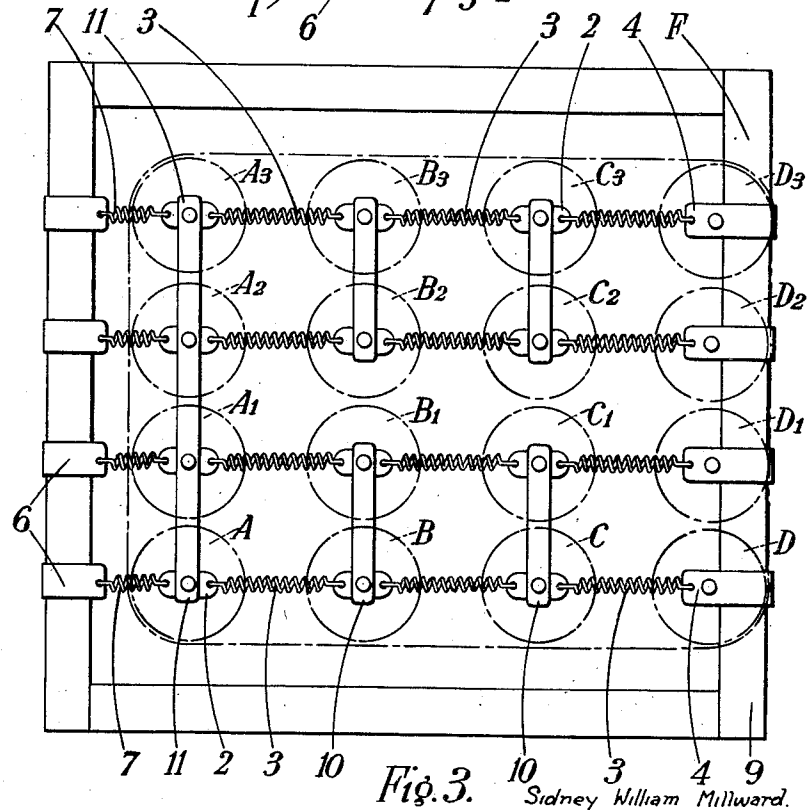


Fig. 3.

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SPRING ASSEMBLY FOR SEATING AND THE LIKE

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1 Claim. (Cl. 155—179)

This invention relates to improvements in spring assemblies for seating and the like and particularly to that type of assembly embodying a number of coiled compression springs connected together with their axes substantially parallel. The object of the present invention is to provide an assembly which possesses exceptional resilience, provides a particularly comfortable seating or bearing surface and is capable of withstanding heavy and lengthy use without becoming warped or distorted.

In accordance with one aspect of the present invention there is provided a spring assembly comprising a series of coiled compression springs arranged with their axes substantially parallel in which tension springs connect the lower end of the compression springs located at one or both extremities of the assembly to a frame and/or single tension springs are connected in one direction of the assembly between the lower ends of individual ones of at least one half and preferably the majority (including the whole) of the compression springs which at their upper ends are connected to each other by means other than tension springs.

From another aspect of the present invention there is provided a spring surface for motor car or other seats, mattresses and the like, comprising a number of coiled compression springs arranged in rows with their axes substantially parallel, the springs of each row having coiled tension springs there-between at their lower ends and having their upper ends connected to the under surface of a wire mesh, of any known or approved type which is preferably surrounded by a frame, the tension springs when the spring assembly is mounted in a rigid framework being adapted to be under tension.

An embodiment of my present invention will be described by way of example with reference to the accompanying drawing of which

Figure 1 shows a perspective view of the spring assembly when mounted on a supporting rigid framework.

Figure 2 shows a perspective view of the spring assembly before it is mounted on a rigid framework, and

Figure 3 is a plan view of the assembly when mounted on the framework with the wire mesh shown in Fig. 1 seen in phantom.

Referring to the drawing, wherein like references refer to like parts, the coiled compression springs 1 in the present example are arranged in rows with their axes substantially parallel and perpendicular to the general plane of the assembly. The lower ends of these springs are mounted on link members 2 individual to each spring.

Instead of being arranged in longitudinal and transverse rows as shown in the drawing, the compression springs may be arranged in any other suitable order, such as concentric circles, or an arrangement similar to that illustrated but having one or more compression springs in one row than in another. Nor need the compression springs be of necessity arranged in any definite geometrical pattern but if desired and found more convenient may be arranged in accordance with any suitable arbitrary pattern.

In the example as illustrated coiled tension springs 3 are provided there being one of such springs connected between each pair of compression springs of a row by means of the link members 2.

Although the tension springs 3 have been shown extending in one direction only, they might equally well extend between compression springs in other directions; for example in addition to the tension springs shown, tension springs might be also provided between compression springs A to D and A^1 to D^1 in place of the members 10 and 11 to be referred to later; or tension springs might be provided between A and B^1 and so forth.

The last link member at one end of each row has means integral therewith for anchoring it to one member of a rigid framework as will be explained later.

In the present example the aforesaid anchoring means comprises an angle piece 4 having a pair of screw holes 5. Instead of angle pieces 4 hooks or any other suitable rigid or flexible connecting means might equally well be employed. At the other end of each row the last link member is connected to an anchoring member 6 by means of a tension spring 7, but both ends of the assembly could be connected to the frame directly instead of through tension spring 7 or alternatively both ends could be connected to the frame through springs 7.

The upper ends of the compression springs 1 are in the present example connected to the under surface of a wire mesh 8 of any known or approved type which may be surrounded by a frame or otherwise as desired.

Although a wire mesh has been shown in Fig. 1 any other known connecting means may be used, such as for example lengths of curled wire threaded through the upper turn of two or more adjacent springs and anchored at each end to a suitable frame. Alternatively the upper parts of the compression springs may be interconnected

by means of rigid or articulated clips. The spring assembly in the present embodiment is mounted on a rigid rectangular framework **9** having two parallel sides. The springs **3** and **7** it will be noted are continually under tension. We have found that tension springs $\frac{13}{32}$'' in diameter of 14 gauge wire are suitable for this purpose and further that satisfactory results are obtained when the springs are stretched $\frac{1}{7}$ of their length when under tension.

If the compression springs are comparatively tall it is advisable to provide spacing members **10** comprising metal slats or other equivalent means for preventing the lower ends of the compression springs from separating or spreading. These spacing members may be secured between some of the rows as is clearly seen in Fig. 3, or across all of the rows as at **11** in Fig. 3. The spacing members **10** need not be provided between every pair of compression springs of two rows as shown in the drawing, since satisfactory results can be obtained by the provision of members between only some of the pairs. For example instead of the arrangement shown in Fig. 3 spacing members might be provided between compression springs A—A^1, C—C^1 and B^1—B^2, A^2—A^3, C^2—C^3. A variety of other arrangements of the members may also be made and still result in satisfactory operation as regards prevention of separation or spreading of the compression springs.

As shown in Fig. 3 the last springs D at one end of the rows may be arranged to be substantially above one of the members F of the rigid framework **9**, or the upper coil or coils of the compression springs may even overlap or project beyond the member F. With this arrangement it is possible to tilt the spring assembly as in the case of motor car seats so that the front edge F will be higher than the rear edge R whilst still maintaining a sprung seat edge.

A further modification could be effected by the provision of spacing members between some of the compression springs and tension springs between others in the same assembly. Or tension springs could be provided only at the ends of the assembly whilst the remainder of the compression springs are mounted on slats or like members.

While one embodiment of the invention has been described it will be obvious to all skilled in the art that the invention permits of many modifications without departing from the nature thereof.

I claim:—

A spring assembly including in combination a rigid framework having two substantially parallel sides, a plurality of parallel chains extending across said framework from one of said parallel sides to the other, said chains comprising alternate extensible and substantially non-extensible link members, means for anchoring said chains at one end thereof to one of said parallel sides and at the other end thereof to the other of said sides whereby the links are maintained under tension, flexible slats connecting certain of the non-extensible link members of the chains, a plurality of helicoidal compression springs each connected at its lower end to a non-extensible link member individual thereto, a plurality of helicoidal compression springs each connected at their lower ends to the anchoring means at one end and means uniting all of the compression springs at their upper ends.

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