March 31, 1931. F. KARR 1,798,885

SPRING CUSHION

Filed June 1, 1925

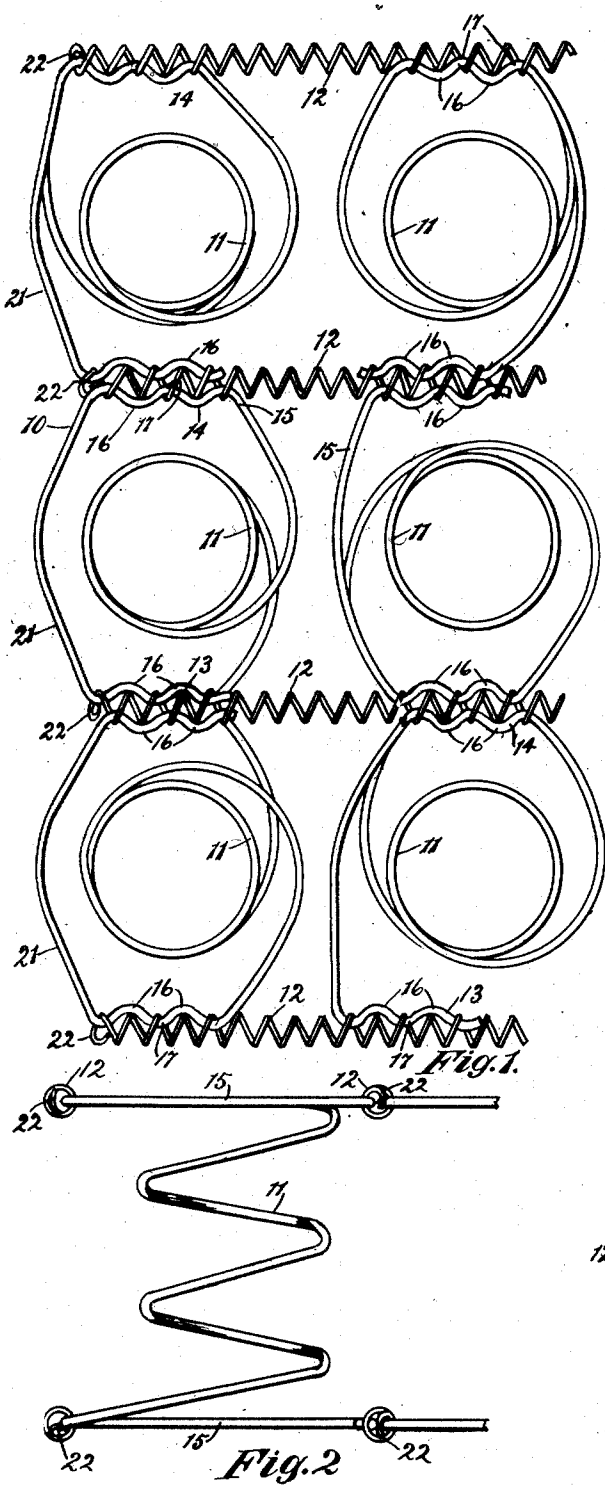


Fig. 1.

Fig. 2

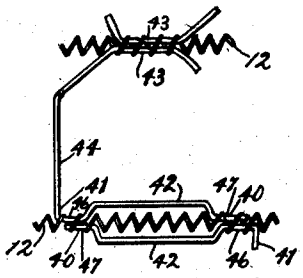


Fig. 5.

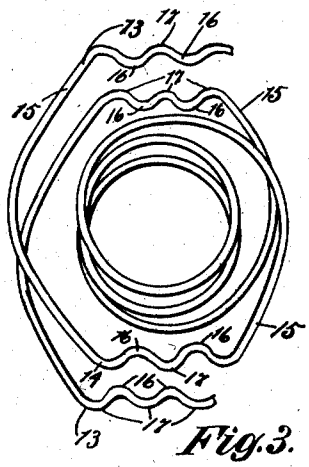


Fig. 3.

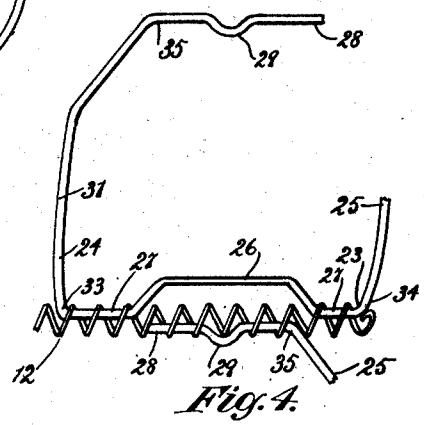


Fig. 4.

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SPRING CUSHION

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This invention relates to a spring assembly for use in beds, mattresses, cushions and the like in which helical springs are employed.

One of the objects of the invention is the provision of new and improved means for connecting the adjacent portions of the coil springs constituting the spring assembly in such a manner that they will be held in proper spaced relation under all conditions of service.

Another object of the invention is the provision of new and improved means for connecting the terminal coils of adjacent rows of helical springs in a spring assembly in such a manner as to provide a double hinged connection between the rows and insure a uniformity in freedom of movement of the spring units constituting the assembly.

A still further object of the invention is the provision of a new and improved spring assembly for beds, mattresses, cushions and the like that is cheap to manufacture, simple in construction, easily assembled, comfortable to the user, noiseless, and one that is not likely to become broken or get out of order.

Other and further objects and advantages of the invention will appear from the following description taken in connection with the accompanying drawings, in which

Fig. 1 is a plan view of a portion of a seat cushion assembly;

Fig. 2 is a side elevation thereof, with parts broken away;

Fig. 3 is a plan view of one of the helical springs;

Fig. 4 is a plan view of a modified form of cushion assembly, with parts broken away; and

Fig. 5 is a similar view showing a still further modified form of the device.

On the drawings, the reference character 10 designates a portion of a spring assembly which is adapted to be employed in a mattress, bed, cushion or the like, but which for convenience will be termed a cushion assembly. The assembly 10 comprises a group of coil springs 11 which are preferably arranged in rows, both longitudinally and transversely of the cushion. They are held in assembled relation by suitable means as the connecting helical coils 12 for forming a double hinge between adjacent rows of the springs.

The springs 11 may be arranged so that the connecting coils 12 will extend either longitudinally of or transversely to the cushion assembly, but for convenience of description they will be considered as extending transversely thereto.

In the preferred form of the device, as shown in Figs. 1, 2 and 3, each coil spring 11 terminates at each end in an enlarged coil which is provided at opposite sides of the spring with shouldered or distorted portions which are adapted to be engaged by the connecting helical coil 12 for preventing relative lateral and rotative movement of the terminal coils. These shouldered portions are so arranged that when the springs 11 are assembled they will be substantially parallel, will lie in the same plane, and the shouldered portions of one spring will be contiguous to the shouldered portions of adjacent springs. These shouldered portions are adapted to be engaged by the connecting coils 12 for holding the springs 11 from rotating or moving laterally relatively to each other. In the form of the device selected to illustrate one embodiment of the invention the shouldered portions are formed by providing one or more offsets in each end and at an intermediate portion in the terminal coils 15 of each spring 11. Preferably the ends and parts of the terminal coils opposite to the ends are formed into sinuous portions 13 and 14 that are substantially parallel, whereby when the springs are assembled the corresponding sinuous portions of the springs in the transverse row of the cushion assembly will lie alongside of and be contiguous to those in the adjoining rows for engaging the connecting coils 12. The inwardly extending offset portions 16 and the outwardly extending offset portions 17 forming the sinuous portions of the terminal coils 15 form shoulders for engaging the coils of the spring 12 for preventing relative rotation or lateral movement of the helical springs 11, as clearly shown in Fig. 3 of the drawings.

The shouldered or sinuous portions 13 and 14 of each spring extend in the same general

direction a substantial distance, whereby when the springs are assembled as shown in Fig. 1 the outer sinuous portions 13 and 14 of the outer row of springs at each end of the cushion will form comparatively straight edges for the ends of the cushion assembly. The portion of the terminal coil 15 between the sinuous portions may be straight or only slightly curved as shown at 21 in Fig. 1 in order that when the springs are assembled the side edges of the cushion assembly formed by the portions 21 of the springs 11 will be substantially straight, as shown at the left in Fig. 1. By means of this arrangement the spring assembly is substantially rectangular.

In assembling the springs as shown in Fig. 1, they are placed in rows transversely with the sinuous portion of the springs of one row alongside those of the adjacent row, after which the connecting helical coils 12 are threaded onto the sinuous portions by rotating said coils. The diameter of the connecting helical coils 12 is such as to extend about the contiguous outwardly extending offsets 17 and between the opposed inwardly extending offsets 16 of the adjacent rows of springs, whereby the adjacent rows are connected together by a double hinge that is, the opposed springs of adjacent rows are connected together by the helical and are each hinged thereto independently of the other, which permits a free hinge movement between the rows and results in a remarkable flexibility of the spring assembly. The shoulders formed by the bends in the spring will prevent rotation and relative lateral movement of the helical springs 11 and will prevent accidental disengagement of the interlocked parts.

After the parts are assembled, the ends of the connecting helical coils 12 are properly bent as at 22 to prevent accidental removal of the coils.

By providing each of the coil springs with bent or distorted portions at opposite sides of the terminal coil at each end of the spring, the springs 11 may be assembled without regard to rights or lefts, top or bottom. In other words, the springs are interchangeable and reversible. This is an important feature of the invention since it facilitates assembly and simplifies replacement.

In practice, the spring assembly is preferably composed of springs having right and left turns in order to prevent warping or objectionable distortion of the assembly as is usual in such construction, but this is immaterial so far as the act of assembling the springs is concerned.

In the modified form of the device shown in Fig. 4 the offset portions at the intermediate part of the terminal coil are much more extended than in the form previously described. As shown in Fig. 4, the intermediate portion 23 of the terminal coil 24 of the spring 25 is provided with an inwardly extending offset 26 and with alined outwardly extending offsets 27 at each side of the offset 26. Each free end 28 of the terminal coil 24 extends substantially parallel with the portion 26 and is shown as being of substantially the same length although this is not necessary. The end 28 is provided with an inwardly extending offset 29. A portion 31 of the terminal coil between the offsets 26 and 29 is substantially straight or slightly curved for forming a marginal straight edge when the springs are assembled.

In assembling the springs, the portions containing the offsets 26 and 29 are placed alongside each other and the connecting helical coils 12 threaded thereon as in the device previously described. In this form of the device, while the offset 29 will accommodate only a single coil, the offsets 26 and 27 are large enough to accommodate several coils. When the parts are assembled, the connecting coils 12 will engage the shoulders formed by the offsets 26, 27 and 29 and by the bends at 33, 34 and 35, and prevent undesirable lateral movement of one coil relatively to another, but at the same time permitting a hinge movement between the adjacent rows of coils along the spring 12.

The form of the device shown in Fig. 5 differs from that shown in Fig. 3 in that the end 40 of the terminal coil 41 is provided with a single offset portion 42 and the intermediate portion of the coil opposite the offset portion 42 is provided with a comparatively short straight portion 43. The portions 42 and 43 are substantially parallel and the side 44 of the terminal coil is substantially straight whereby the marginal edge of a cushion assembly will be substantially straight.

In assembling this type of spring the offsets 42 of adjacent springs are placed opposite each other and the connecting coil 12 is threaded about the straight portions 46 and 47 and extends across the space between the offsets 42. The straight portions 43 of one transverse row will necessarily lie contiguous to the straight portions 43 of the springs of the next adjacent transverse row. The shoulders formed by the angular bends in the spring will function as shoulders to prevent relative rotative and lateral movement of the helical springs and at the same time form a double hinge between adjacent transverse rows of springs as in the constructions previously described.

In all forms of the device, a double hinge between transverse rows is formed and the shoulders or bends in the spring engage the coils of the connecting coil 12 and prevent unnecessary movement of the springs 11.

This arrangement results in a spring assembly that has flexibility of movement, is noiseless, and that is capable of forming a

cushion, mattress and the like which is substantially rectangular in form.

While the connecting coils 12 are shown as extending transversely to the spring assembly, it is understood they may extend otherwise. It being such an obvious departure from the construction shown it is not thought necessary to illustrate and describe the same.

It is thought from the foregoing taken in connection with the accompanying drawings that the construction and operation of my device will be apparent to those skilled in the art, and that various changes in size, shape, proportion and details of construction may be made without departing from the spirit and scope of the appended claims.

I claim as my invention:

1. In a spring assembly, a plurality of rows of coil springs, each spring being provided with a terminal coil having a single inwardly extending offset, the offsets of one row of coils being arranged opposite the offsets of an adjacent row of springs, and a connecting coil extending parallel with said rows and threaded on said terminal coil at each side of said offsets to form a double hinge, said connecting coil extending across the space formed by said offsets and between the same, said connecting coil connecting a plurality of springs of one row with a plurality of springs of an adjacent row.

2. In a spring assembly, a plurality of rows of coil springs, each spring being provided with a terminal coil having a sinuous portion at opposite sides thereof, the sinuous portion of one coil being arranged opposite that of the adjacent coil of an adjacent row and a connecting coil extending parallel with said rows and threaded on the sinuous portions of adjacent coils to form a double hinge, said connecting coil extending across the space formed by the sinuous portions and between the same, said connecting coil connecting a plurality of springs of one row with a plurality of springs of an adjacent row.

3. A cushion spring assembly comprising a plurality of rows of coil springs, the terminal coil of each spring being provided with distorted portions, the distorted portions of the springs of one row being arranged opposite the distorted portions of adjacent springs of an adjacent row, and means engaging about and between said distorted portions for forming a double hinge between adjacent rows of said springs and for preventing rotation of said coil springs.

4. In a spring assembly, a plurality of rows of coil springs, the springs of adjacent rows having portions provided with shoulders, said portions of adjacent rows being arranged opposite each other, and a helical arranged parallel with said rows and connecting a plurality of springs in each of said rows, extending about and between the portions of adjacent springs of adjacent rows for connecting said rows of springs together and for preventing rotation of the individual springs.

5. In a spring assembly, rows of coiled springs, each spring being provided with a terminal coil having distorted portions at opposite sides thereof, each of said distorted portions comprising an offset extending inwardly, and a plurality of offsets extending outwardly, relative to said coil, the adjacent distorted portions of the coils of adjacent rows of said springs being arranged in pairs and spaced apart transversely of said rows, and helicals each extending parallel with said rows and extending about the outwardly extending offsets of adjacent rows and between the inwardly extending offsets of each pair of distorted portions of two adjacent rows of springs for hingedly connecting the springs of each pair together.

6. In a spring assembly, a plurality of rows of coil springs, each spring being provided with a terminal coil having a plurality of offset portions at opposite sides of said coil, said offset portions extending inwardly and outwardly relative to said coil, the offset portions of adjacent springs of adjacent rows being spaced transversely of said rows, and helicals for connecting the adjacent springs of adjacent rows together, each of said helicals extending about the outwardly extending offset portions of adjacent springs of adjacent rows and between the inwardly extending offset portions thereof for hingedly connecting said last-named springs together.

7. In a spring assembly, a plurality of rows of spiral springs, the springs at the ends of the rows being arranged in rows transversely to said first-named rows, and each spring having its terminal coil at one side thereof provided with a plurality of distorted portions, the distorted portions of the springs in said second-named rows being arranged in pairs, the adjacent distorted portions in each pair being arranged alongside each other, and helicals parallel with said first-named rows, each extending about and between a plurality of distorted portions of a pair of distorted portions of said second-named rows.

8. In a spring assembly, a plurality of rows of spiral springs, the springs at the ends of said rows being arranged in rows extending transversely to said first-named rows, the terminal coils of the second-named rows of spirals being provided with distorted portions forming shoulders spaced apart, said distorted portions being arranged in pairs, each pair comprising adjacent distorted portions of adjacent springs in said second-named rows, and helicals extending parallel with said first-named rows and extending about and between the distorted portions of said pairs and engaging said shoulders, the portion of each helical between the shoulders

of each spring being at least substantially a complete turn of the corresponding helical.

9. In a spring assembly, rows of coiled springs having offset portions, certain of said offset portions being arranged in pairs alongside each other and a helical parallel with said rows extending about the members of each pair of said offset portions for connecting them together, each of said offset portions having shoulders in engagement with said helical, one of the turns of said helical between the shoulders of the offset portion of one spring being interposed between the adjacent springs for holding the same separated.

10. In a spring assembly, spiral springs arranged in rows, certain of said springs being arranged oposite each other in pairs, one spring of each pair having a distorted portion provided with shoulders, a helical extending longitudinally of said rows and about said distorted portion and the terminal coil of the other spring for connecting the springs of one pair together, said helical adapted to engage said shoulders for preventing rotation of the corresponding spring, a turn of said helical between said shoulders being interposed between said springs for holding them apart.

In testimony whereof I affix my signature.

FRANCIS KARR.