Nov. 3, 1936. A. WESLEY 2,059,424

SPRING CUSHION

Filed Sept. 18, 1933 2 Sheets-Sheet 1

Fig. 2.

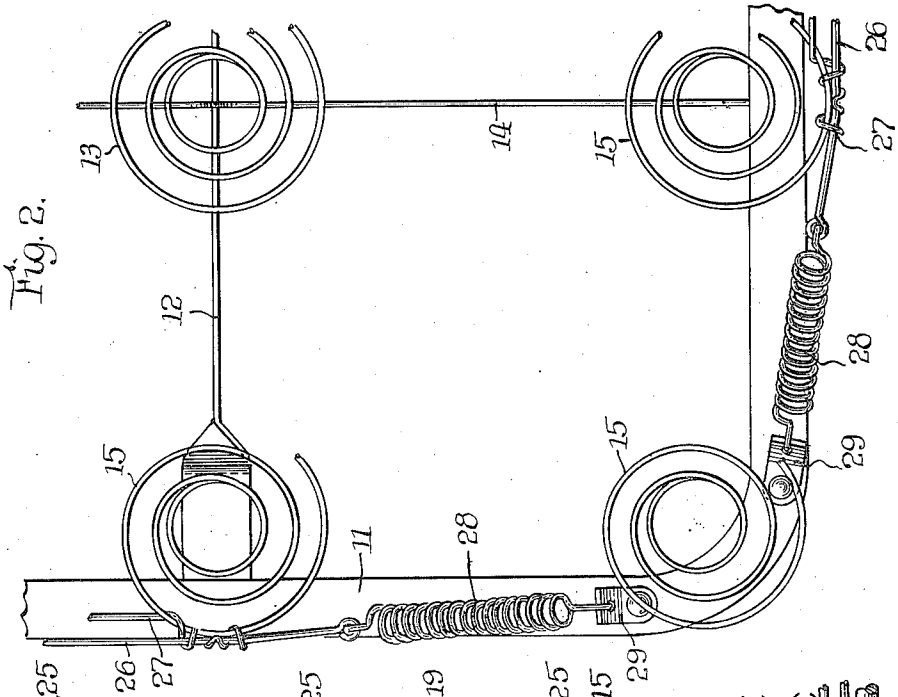
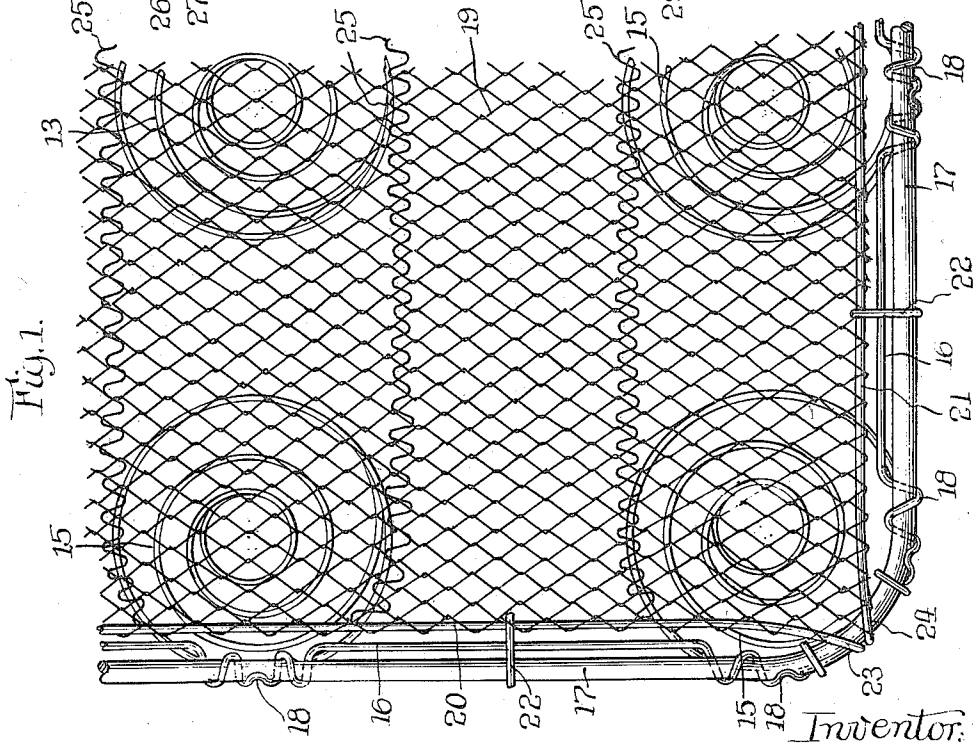


Fig. 1.



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Filed Sept. 18, 1933 2 Sheets-Sheet 2

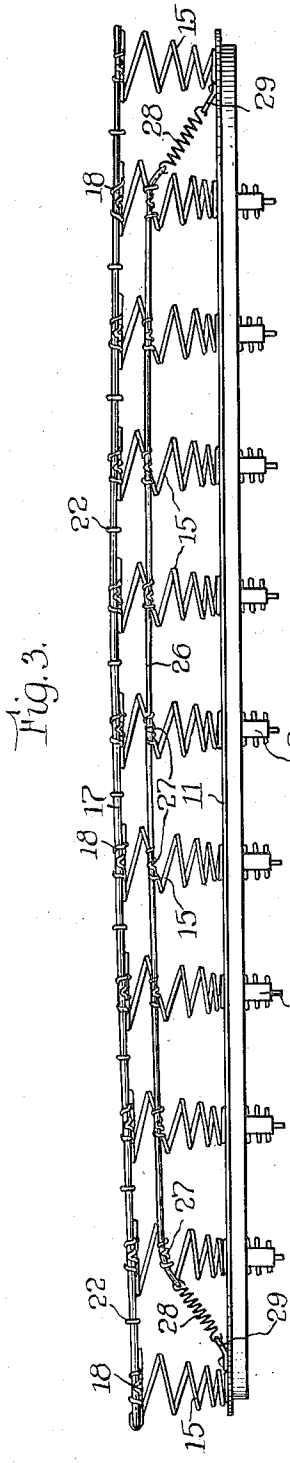


Fig. 3.

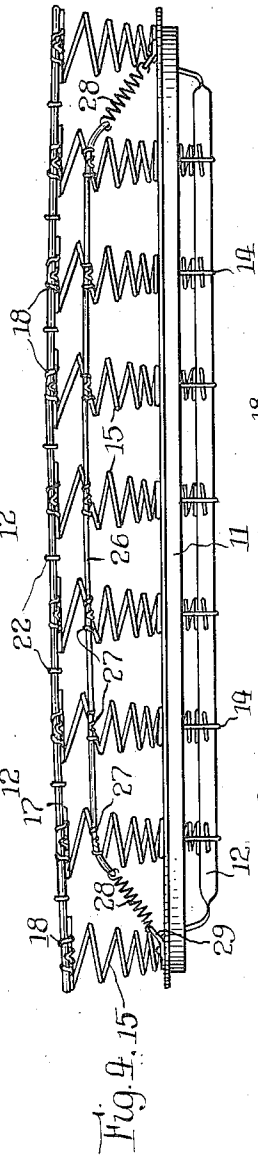


Fig. 4.

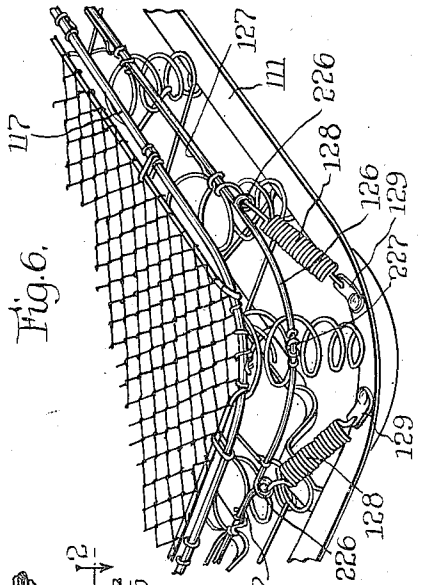


Fig. 6.

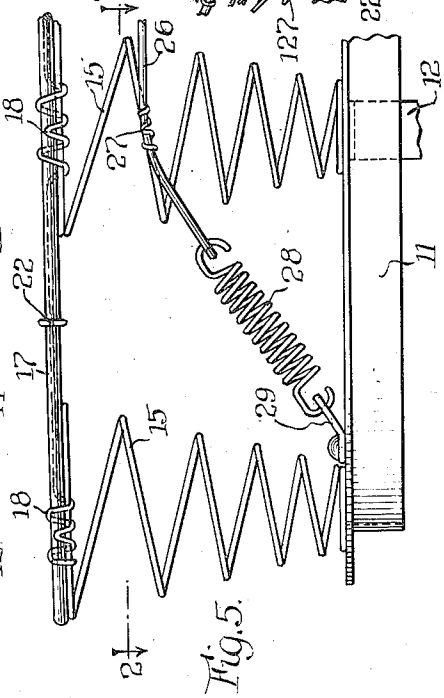


Fig. 5.

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Patented Nov. 3, 1936 2,059,424

UNITED STATES PATENT OFFICE

2,059,424

SPRING CUSHION

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Application September 18, 1933, Serial No. 689,801

12 Claims. (Cl. 5—252)

The present invention pertains to spring-cushions, bed-springs, and similar resilient or elastic structures and relates more particularly to constructions of this type embodying a number of upright spiral-springs which support the superposed load.

Bed-springs of this style when in service tend to sway or "roll" laterally owing to tilting of the springs out of correct erect positions due to the load imposed thereon, and one of the leading objects or aims of the invention is to provide simple, inexpensive, and efficient means for overcoming this fault.

Heretofore, so-called stabilizers in the form of toggles or hinged braces have been used in an endeavor to prevent the specified side sway, but these appliances have not fully met the situation in that none of them, so far as my knowledge goes, have really satisfactorily accomplished the purpose for which their use has been intended.

Structures made incorporating the principles of this invention, however, avoid the need for such stabilizers and attain the desired result in marked degree.

Those acquainted with this art will note also the accomplishment of other benefits accruing from the employment of structures embodying the features of construction comprising the essence of the invention.

To permit those skilled in this art to understand the invention and the advantages which accrue from its use, in the accompanying drawings a present, preferred embodiment of the invention has been illustrated in detail, and to assist in an understanding of the structure like reference numerals have been used throughout the several views to designate the same parts.

In these drawings:—

Figure 1 is a fragmentary plan view of the new cushion or bed-spring;

Figure 2 is a fragmentary horizontal section on line 2—2 of Figure 5;

Figure 3 is a side view of the construction;

Figure 4 is an end view of the structure;

Figure 5 is an enlarged elevation of a corner portion of the cushion; and

Figure 6 is a perspective view of one corner only of a modified structure.

Referring to these drawings, it will be readily noted that the novel and improved cushion, bed-spring, or the like, includes a lower, main, rectangular supporting-frame 11 of angle-bar cross-section, of common form, on which is mounted in the usual way a series of parallel, bent, supporting bars 12, 12 on which the lower ends of most of the upright spiral-springs 13, 13 are secured, the lower convolutions of such erect springs being anchored in place on such cross-bars by tie or locking wires 14.

The marginal spiral-springs 15, 15 of the cushion may be, and usually are, somewhat shorter than the companion springs of the structure, being fastened in any approved manner to the more elevated end portions of the cross-bars or mounted directly on the angle-bar of the main frame.

By means of tie-wires 16, 16 the outer portions of the uppermost convolutions or coils of such marginal springs 15, 15 are secured to a rectangular border-wire 17 extending continuously all the way around the cushion or bed-spring practically on a level with the tops of the springs, such tie wires being bent or crimped around the coils or convolutions of the springs and the border-wire at the points 18, 18.

As described thus far, there is nothing new in this arrangement and association of parts.

A woven-wire fabric 19 of the usual nature and of approximately the size of the top of the cushion rests on the upper ends of the upright springs 13 and 15, and such resilient cover-fabric is held and maintained in horizontally stretched condition, both lengthwise and crosswise the cushion, by means of reenforcing wires 20 and 21 in its edges which are secured at intervals by clips 22, 22 to the border-wire 17, or any other convenient and suitable means may be employed to fasten the fabric in taut and somewhat strained condition to the border-wire.

At the corners of the structure, the ends of wires 20 and 21 are bent over the border-wire 17 at the points 23 and 24, respectively.

In order to unite such fabric to the top convolutions or coils of the spiral-springs and to strengthen the fabric between such underlying springs, coiled wires or springs 25 are interwoven or interlocked with the fabric and the spring coils, as is fully shown in Figure 1.

This manner of using a woven-wire cover-fabric and of attaching it to the springs and to the border-wire constitutes the subject-matter of another pending patent application.

In order to prevent the upper portion of the bed-spring or cushion from swaying unduly sidewise and at the same time without extensively restraining its proper resiliency or elasticity, the new means about to be described have been provided.

Along each side and end of the cushion a substantially-horizontal confining or bracing wire or rod 26 is used, preferably but not necessarily

about two-thirds or three-quarters of the height of the springs, and each such wire is fixedly secured to an adjacent convolution of each marginal spring, except the corner springs, by a tie-wire 27 which is wrapped or bent around the spring coils and the rod or wire 26 in the same known manner as the wire 16 fastens the coils of the border springs to the wire 17.

The two ends of each such bracing element 26 are connected by helical-springs 28, 28, downwardly sloping in opposite directions, to clips or fasteners 29, 29 riveted or otherwise mounted on the tops of the corresponding portions of the frame 11.

Thus each corner of the bed-spring or cushion has two such bracing springs 28, 28 in planes at substantially a right-angle to one another, as shown clearly in Figure 2.

The erect spiral-springs of cushions and bed-springs tend to become somewhat set or shortened after continued use and such slight lessening of their height ordinarily occurs more prominently in the middle portion of the bed-spring or other cushion.

To compensate for this, it is desirable to crown or arch the top surface of the bed-spring both longitudinally and transversely.

Furthermore, the strain imposed on the border-wire 17 by the tense, wire-fabric cover 19 tends to curl up or raise the top edges or border-wire of the cushion to which it is fastened.

Therefore, to produce the desired arch or crown of the upper surface of the cushion and to counteract or neutralize the tendency of the border-wire and its connected parts to curl up out of proper place, the springs 28, 28 are made strong enough to pull down the edges of the cushion somewhat by contraction of the spiral-springs in varying degree progressively inwardly from the sides and ends of the cushion, thus giving to the top surface of the structure the slight crown or curvature both lengthwise and crosswise.

The wires 26 also follow this same general curvature because the pulls by the springs 28, 28 on the upright spiral-springs are slightly stronger at the ends of the wires than at their middle sections.

Such crowning or arching therefore accomplishes the fulfilment of the double desirable purpose indicated.

Use of the confining or bracing wires 26, 26 does not materially modify the vertical resiliency of the cushion, but their correlated springs 28, 28 prevent in substantial and satisfactory measure any swaying or improper lateral shifting of the upper portion of the cushion.

From an understanding of the resilient construction illustrated and described, it will be appreciated that the helical springs 28, 28 at the sides of the structure preclude excessive shifting of the upper part of the resilient cushion lengthwise of the latter, and in a measure they tend to restrict sidewise displacement of the cushion, and, in similar manner, the corresponding springs at the ends of the bed-spring or cushion impede or hinder crosswise movement of the upper section of the cushion and perhaps in lesser measure similar motion of such elastic part of the structure lengthwise the cushion.

If the restraining, bracing or truss wires 26, 26 are directly above the corresponding rails or angle-bar portions of the main, rigid, underlying frame, then the springs 28, 28 will be located accordingly above the parts of the frame, but, in some cases, it may be desirable to so construct the cushion that the wires 26, 26 are located outwardly beyond the frame 11, and, in such instances, the springs 28, 28 may be slightly obliquely arranged in minor degree as well as downwardly sloping, as presented in Figure 2.

Under such circumstances, each helical-spring 28 acts somewhat more fully to restrain shifting of the body of the cushion in two directions at right angles to one another.

I am aware of the fact that heretofore it has been proposed to connect the ends of independent, longitudinal border-wires at the opposite sides of the top of a spring-bottom for beds by helical-springs to elevated end portions of the main frame to which other tie-wires for the upright spiral-springs are directly connected.

Again, it is old to use braces of channel shape in cross-section extending along the sides and ends of a spring-cushion and clamped around coils of the upright, marginal springs about midway their height and connected to all of the other erect springs of the cushion by wires interlocking with corresponding intermediate convolutions thereof.

Also, it has been suggested to provide a complete, rigid, iron frame surrounding all of the upright spiral-springs of a cushion at about the middle of their height and secured thereto by intermediate loops in helical-springs, the upper and lower ends of such helical-springs being joined to the ends of brace rods at the top and bottom of the cushion, the latter having no rigid frame other than that referred to and having no top border-wire and no woven-wire fabric-cover.

In addition, it has been advised that in a bed-spring having upright spiral-springs the latter be braced by zigzag securing wires having their ends fastened to the side rails and their intermediate portions passed through convolutions of the spiral-springs, the parts of such wires between each two adjacent springs being connected to side-rails by spring links which have their lower ends secured to the side-rails and their upper ends engaging the securing wires.

None of these suggested constructions incorporate the structural features of the present invention, nor are they so built as to perform the useful functions accomplished by bedsprings embodying the present invention.

From what precedes, it will be apparent that the brace or truss rods or wires attached to the spiral-springs need not necessarily be independent elements for the sides and ends of the cushion and that they may be formed as a single wire or frame extending all the way around the structure, and, accordingly, such a modified arrangement of parts is illustrated in Figure 6.

This construction is substantially the same as that presented in the other figures of the drawings, except that in this instance a single, practically-rectangular brace or truss rod or wire 126 passes entirely around the cushion below the border-wire 117 and at an appropriate distance above the frame 111.

It is attached to the adjacent coils or turns of the spiral-springs by securing wires 127, and it may also be fastened to each corner spiral-spring by any approved means 227.

In this case, since such rod, wire or frame has no end, the helical-springs 128 are connected to clips 129 on the frame and to loops or eyes 226 formed in the wire or rod 126 by bending the latter in suitable manner to provide such attachment means.

This form and style of cushion or bed-spring functions practically in the same way as does that previously described.

This invention as defined by the following claims is susceptible of a variety of satisfactory embodiments and therefore it is not necessarily limited or restricted to the precise and exact details of construction shown and described, the bed-spring or cushion detailed hereinabove being by way of example only.

I claim:

1. In a spring-cushion, the combination of a rigid lower supporting-frame, upright spiral-springs fixedly mounted at their lower ends on and supported by said frame and having their top coils in substantially the same plane, means connecting the top portions of said springs together, a border-frame around said springs substantially in the plane of their top coils and fastened to the top coils of the marginal ones of said springs, substantially non-extensible brace-wire means extending along the sides and ends of the cushion part way up the height of said springs, means fixedly fastening said brace-wire means directly to the outer portions of the adjacent intermediate convolutions of the corresponding marginal springs, and a pair of opposed helical-springs under tension connected to said brace-wire means at points spaced apart and anchoring each side and end section of said brace-wire means to said rigid supporting-frame, whereby said brace-wire means and their said associated helical-springs yieldingly tend to prevent lateral shifting of the top portion of the spring-cushion with relation to said supporting-frame.

2. In a spring-cushion, the combination of a rigid lower supporting-frame, upright spiral-springs fixedly mounted at their lower ends on and supported by said frame and having their top coils in substantially the same plane, means connecting the top portions of said springs together, a border-frame around said springs substantially in the plane of their top coils and fastened to the top coils of the marginal ones of said springs, substantially non-extensible brace-wire means extending along the sides and ends of the cushion part way up the height of said springs, means fixedly fastening said brace-wire means directly to the outer portions of the adjacent intermediate convolutions of the corresponding marginal springs, and a pair of oppositely downwardly outwardly inclined helical-springs under tension connected to said brace-wire means at points spaced apart and anchoring each side and end section of said brace-wire means to said rigid supporting-frame, whereby said brace-wire means and their said associated helical-springs yieldingly tend to prevent lateral shifting of the top portion of the spring-cushion with relation to said supporting-frame.

3. The structure presented in claim 1 in which the location of said brace-wire means is at an elevation above the centers of said upright spiral-springs.

4. The structure presented in claim 2 in which the location of said brace-wire means is at an elevation above the centers of said upright spiral-springs.

5. The structure presented in claim 1 in which said anchoring helical-springs are located near the corners of the rigid supporting-frame.

6. The structure presented in claim 2 in which said anchoring helical-springs are located near the corners of the rigid supporting-frame.

7. The structure presented in claim 1 in which said brace-wire means comprise independent wires each along one side or end of the cushion and in which the opposite ends of each of said wires are anchored to the rigid supporting-frame by said helical-springs.

8. The structure presented in claim 2 in which said brace-wire means comprise independent wires each along one side or end of the cushion and in which the opposite ends of each of said wires are anchored to the rigid supporting-frame by said helical-springs.

9. The structure presented in claim 1 in which said brace-wire means comprise independent wires each along one side or end of the cushion and at an elevation above the centers of said upright spiral-springs and in which the ends of each of said wires are anchored to the rigid supporting-frame by said helical-springs.

10. The structure presented in claim 2 in which said brace-wire means comprise independent wires each along one side or end of the cushion and at an elevation above the centers of said upright spiral-springs and in which the ends of each of said wires are anchored to the rigid supporting-frame by said helical-springs.

11. In a spring-cushion, the combination of a rigid lower supporting-frame, upright spiral-springs fixedly mounted at their lower ends on and supported by said frame and having their top coils in substantially the same plane, means connecting the top portions of said springs together, a border-frame around said springs substantially in the plane of their top coils and fastened to the top coils of the marginal ones of said springs, substantially non-extensible brace-wire means extending along the sides and ends of the cushion part way up the height of said springs, means fixedly fastening said brace-wire means directly to the outer portions of the adjacent intermediate convolutions of the corresponding marginal springs, and opposed counter-acting means connected to said brace-wire means at points spaced apart and anchoring said brace-wire means to said rigid supporting-frame, whereby said brace-wire means and said anchoring means tend to prevent lateral shifting of the top portion of the spring-cushion in each of two opposite directions with relation to said supporting-frame.

12. The structure set forth in claim 11 in which said opposed brace-wire anchoring means are arranged to resist shifting of the top portion of the spring-cushion in two directions at right-angles to one another.

ARTHUR WESLEY.