Dec. 5, 1939. N. CONTINO 2,182,069

SPRING CUSHION

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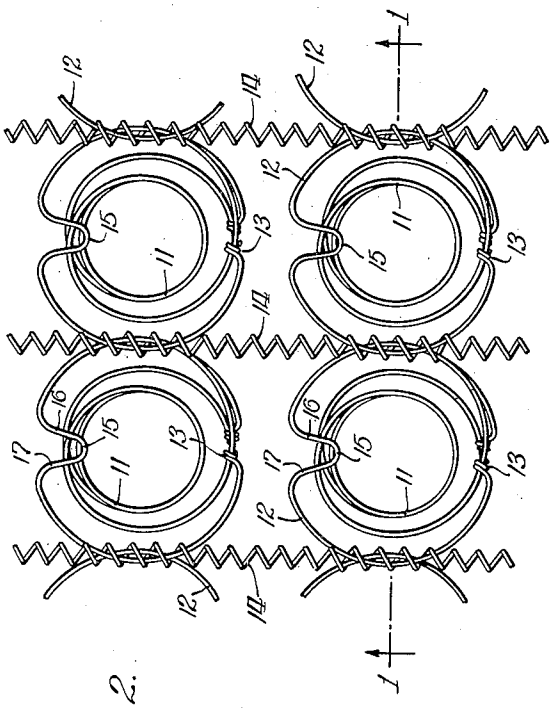


Fig. 2.

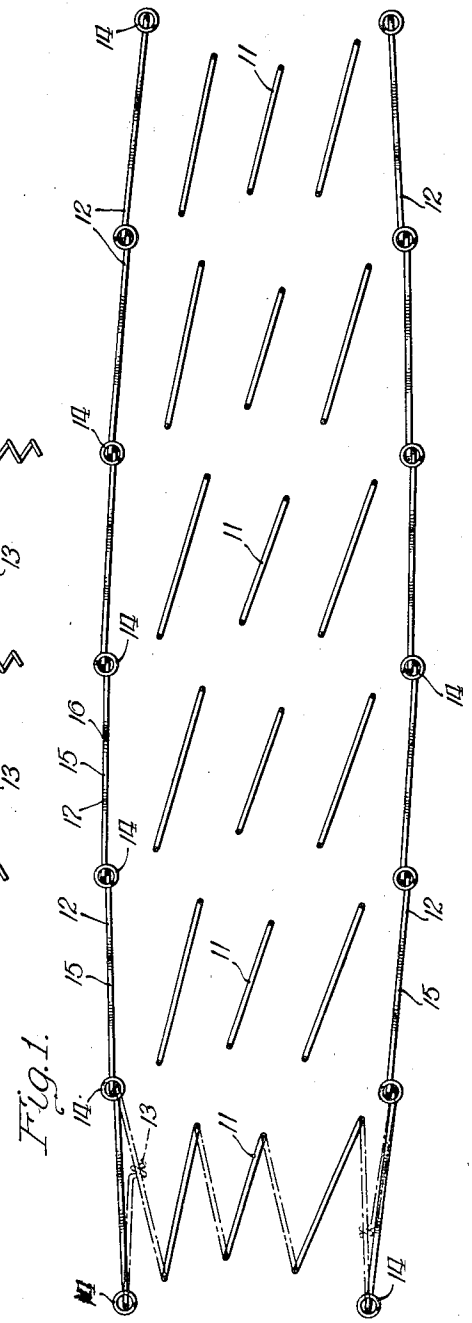


Fig. 1.

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SPRING CUSHION

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4 Claims. (Cl. 5—256)

The current invention relates to certain features and elements of betterment and improvement in coiled-wire spiral-springs and in spring-assemblies composed of such springs and such as are commonly employed in cushions, inner-spring mattresses, bedsprings, etc.

In spiral-springs of the tapered form or hour-glass design, when the cushion of which they constitute the major part is compressed under load, the spring coils of lesser diameter immediately adjacent to, or under, the end coils or terminal convolutions of the spring project or protrude through or beyond such end coils or rings causing excessive wear, distortion and breaking-down of the filling material of the cushion which covers them.

This invention has as one of its principal aims the provision of a spring construction which overcomes such and other faults.

Another purpose of the invention is to supply an improved form of spiral-spring or its equivalent which has a straight up and down action of the coils, because the means employed to preclude the projection of the smaller underlying coil through the upper larger end coil or convolution also brings about this desirable result of precluding the coils from tilting out of proper relation.

A further object of the invention is to design a type of spring of the character referred to in which the end rings or coils have more than the usual resiliency due to the presence of the means by which the other stated objects of the invention are accomplished.

An additional feature of the invention resides in the employment of the stated novel features coupled with their functioning in a manner to effect more efficient flexure of the smaller coils of the spring.

Spiral-springs, the turns or convolutions of which are of practically uniform diameter are not subject to all of the objections above stated, but they do not possess all of the favorable functional properties of tapered or hour-glass springs, and, accordingly, it is desirable to employ the latter type of springs provided that the objectionable properties can be eliminated by slightly modifying the structure of the spring and at comparatively small cost.

In order that those acquainted with this art may have a full and complete understanding of this invention, both from structural and functional standpoints, a present preferred embodiment thereof has been illustrated in the accompanying drawing, throughout the views of which like reference characters have been employed to designate the same parts.

In this drawing:

Figure 1 is a vertical section on line 1—1 of Figure 2 through a spring-assembly composed at least in part of the new type of spring; and

Figure 2 is a fragmentary plan view of a portion of the spring-cushion.

As will be readily understood, the spring-assembly, which may be of any suitable size and shape, depending upon the use to which it is to be put in service, is composed of a number of upright, tapered or hour-glass style of wire-springs, each designated as a whole 11, and each having at its top and bottom ends, terminal convolutions or rings 12, 12 formed by the end portions of the wire of which the spring is composed, with the final parts of the wire wound or knotted around the adjacent convolution at 13, these end coils or rings being secured together in any approved fashion as by means of helical-springs 14 locking and tying together the springs of adjacent rows.

In some cases, as shown in Figure 1, it is desirable or preferable to make the springs of the assembly somewhat varied in length increasing from the border to the center, although this general structural feature constitutes no specific part of the present invention.

So far as thus described, the spring-unit as a whole, and the individual springs of which it is formed are not new.

The present invention resides, in this particular embodiment of the novel features thereof, in an inward projection 15 for, and in the plane of, each terminal coil or ring of each spring 11 or of so many thereof as it is desirable and feasible to construct in this manner.

Each such inward extension 15 is made by bending the wire of the end-ring inwardly at 16 and then outwardly at 17, each approximately opposite the corresponding knot or fastening 13.

Each such inwardly projecting member is made long enough to overlie the corresponding part of the next inner or lower smaller convolution of the spring as is clearly presented in Figure 2.

Each such member 15 in a measure increases the resiliency or elasticity of its end coil or terminal ring, and when the spring is under load it engages or contacts with the next smaller spiral convolution or helical turn of the wire and prevents it from protruding through the end-ring.

The employment of such part 15 also tends to preserve the true up and down or vertical action of the spring and to eliminate any tilting or tipping of the spring when in service.

Such element 15 may be used at only one end or at both ends of the spring as occasion demands.

From what precedes, it will be clear that the new form or novel type of spring uses but little more wire than has heretofore been usual and that the improved springs may be manufactured economically and efficiently.

Those acquainted with this art will readily appreciate that the desired results may be attained by somewhat modified styles of springs and that various changes may be incorporated in the form of spring illustrated without departure from the heart and essence of the invention as defined by the appended claims, which should be interpreted as generically as the state of the prior art will permit, and without the loss or sacrifice of any of the material benefits or substantial advantages accruing from the employment of the invention.

I claim:

1. A tapered coiled-wire spiral-spring having an end-ring and a convolution of lesser diameter adjacent thereto, the terminal portion of the wire forming said end-ring being knotted about the adjacent portion of the spring, characterized in that the part of the wire constituting the end-ring substantially opposite said knot is distorted inwardly sufficiently from the normal circular curvature of, and in the plane of, said end-ring to overlap said convolution of lesser diameter, said distorted part of said end-ring being of such shape and size as to afford it sufficient resistance to deflection out of the plane of said end-ring that upon engagement of said lesser-diameter convolution with said part when the spring is compressed under load said part prevents such convolution of lesser diameter from projecting through said end-ring and thereby assists in maintaining the upright position of the spring in service.

2. A tapered coiled-wire spiral-spring having an end-ring and convolutions of different lesser diameters adjacent thereto, the terminal portion of the wire forming said end-ring being knotted about the adjacent portion of the spring, the part of the wire constituting said end-ring substantially opposite said knot being deformed from the normal curvature of said end-ring inwardly and then outwardly, substantially in the plane of said end-ring, to form an inwardly-extended projection of a length overlapping all of said different-diameter convolutions of the spring, said projection being of such shape and size as to afford it sufficient resistance to deflection out of the plane of said end-ring that upon engagement of said lesser-diameter convolutions with said projection when the spring is compressed under load said projection prevents any of said lesser-diameter convolutions from projecting through said end-ring thereby assisting in maintaining the upright position of the spring in service.

3. A spring-assembly composed at least in part of a plurality of springs each at both ends being of the construction set forth in claim 1 in combination with means securing the springs of the assembly together.

4. A spring-assembly composed at least in part of a plurality of springs each at both ends being of the construction set forth in claim 2 in combination with means securing the springs of the assembly together.

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