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SPRING CUSHION STRUCTURE

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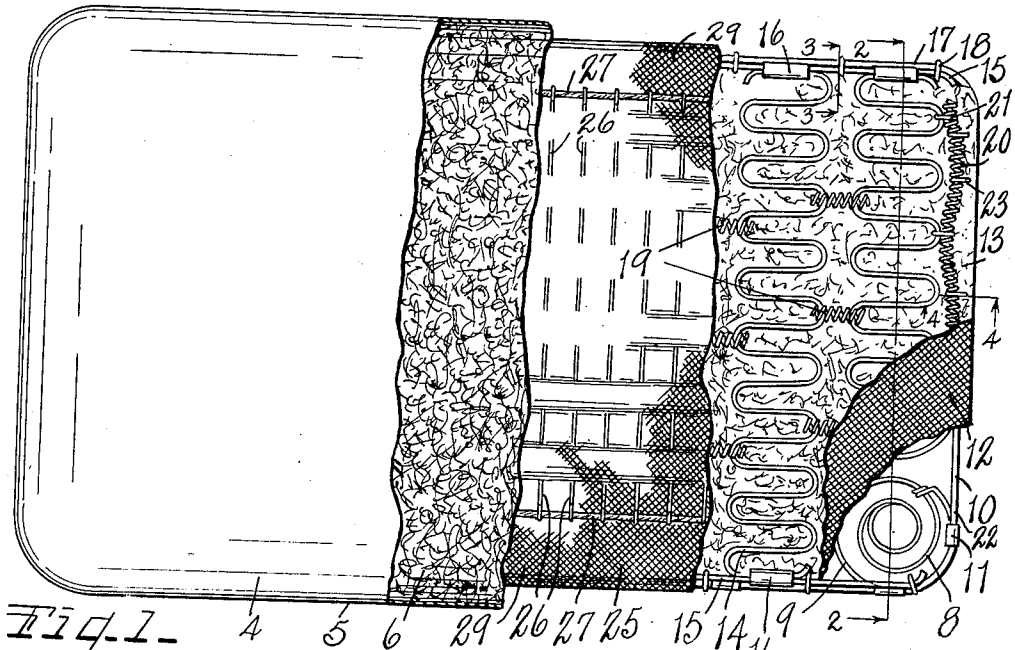

Fig. 1.

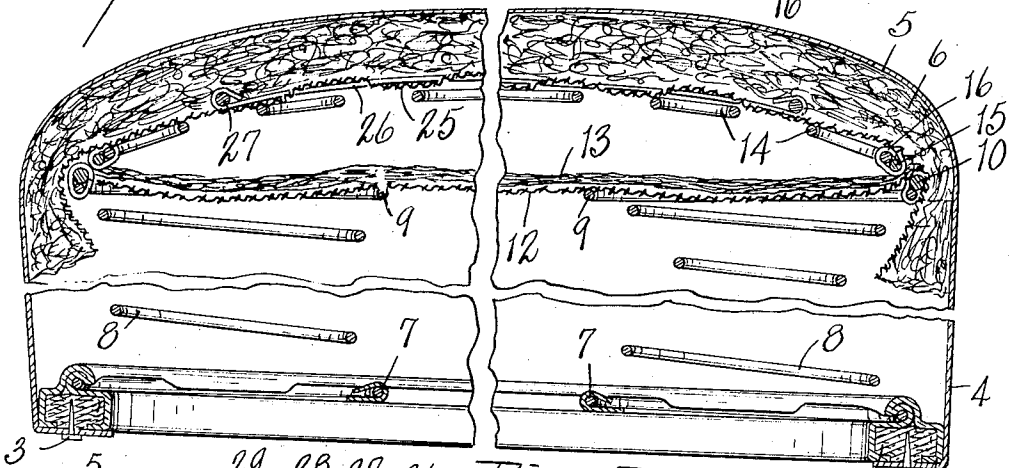

Fig. 2.

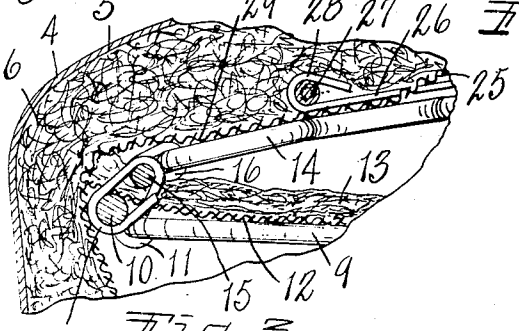

Fig. 3.

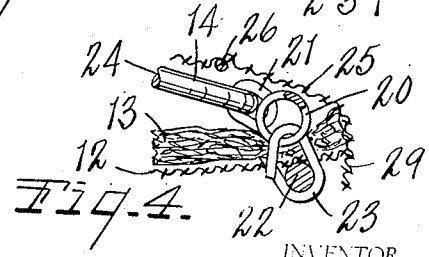

Fig. 4.

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SPRING CUSHION STRUCTURE

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Application September 1, 1939, Serial No. 293,000

11 Claims. (Cl. 155—179)

This invention relates to improvements in spring cushion structures.

The main objects of this invention are:

First, to provide an improved spring cushion structure in which the upholstery is effectively supported under yielding tension substantially throughout the surface thereof.

Second, to provide an improved spring cushion structure which is relatively yielding or soft and at the same time capable of sustaining loads without permanent distortion.

Third, to provide a structure having the advantages stated in which the spring unit may be economically produced and is one which may be easily upholstered.

Objects relating to details and economies of the invention will appear from the description to follow. The invention is defined and pointed out in the claims.

A preferred embodiment of the invention is illustrated in the accompanying drawing, in which:

Fig. 1 is a plan view of a spring cushion embodying our invention with portions broken away to illustrate various of its structural features and their relation, the base or bottom frame being omitted.

Fig. 2 is a fragmentary somewhat enlarged section on line 2—2 of Fig. 1.

Fig. 3 is an enlarged view partially in section showing further details of structure particularly in the matter of the relationship and connection of the parts.

Fig. 4 is a fragmentary view partially in section on line 4—4 of Fig. 1.

In the embodiment of our invention illustrated, the bottom border frame 1 is of the tacking insert type provided with a fibrous insert 2 adapted to receive the retaining tacks 3 for the upholstery skirt 4. The upholstery designated generally by the numeral 5 is of the padded type, the padding 6 being of cotton or other suitable material. The cross members of the base are shown at 7. The body springs 8 are of the helical type and are arranged in upright position suitably secured to the border frame and supports 7. As the details of the spring supporting base do not constitute a part of this invention they are not further illustrated or described herein.

The top coils 9 of the outer or border springs are secured to the top border frame 10 by means of suitable clips 11. This top border frame is preferably formed of suitable gauge wire and is continuous.

Superimposed on the body springs is a fabric or sheet 12 preferably having padding material 13 such as sisal or the like superimposed thereon and stitched or otherwise secured thereto. We have not attempted to illustrate the stitching or securing means.

The upholstery 5 is directly supported by upwardly bowed zigzag auxiliary springs 14. These auxiliary springs 14 are secured at their ends to the longitudinal members 15 as by means of the clips 16. The members 15 are superimposed upon the fabric 12 and secured to the side members 17 of the border frame 10 by means of clips 18 arranged through the fabric 12 so that the fabric constitutes a sound deadening means and is at the same time secured to the top border frame. This supports the springs 14 normally in their upwardly bowed position. These auxiliary springs are connected at suitable intervals by means of the helical tie members 19, these tie members being engaged with the bight portions of opposed bends of adjacent spring members.

The end auxiliary zigzag springs have helical spring connectors 20 secured to certain of their loops by means of the clips 21 while these helical connectors are connected intermediate the clips 21 to the border end members 22 of the border frame by means of the clips 23. These clips 23 are arranged through the pad or fabric 12 so that it is secured to the end members of the top border frame.

With this arrangement, at least the end auxiliary springs are secured in an outwardly inclined or canted relation as shown at 24 in Fig. 4 with the result that the ends of the cushions are suitably shaped or conformed—that is, the upholstery is supported to provide a somewhat rounded or inclined end surface.

An upholstery supporting mat is superimposed on the auxiliary spring elements, this mat comprising a sheet of fabric 25 having a plurality of reinforcing strands 26 of resilient wire preferably rove therethrough as shown in Fig. 1, the ends of the strands being clamped around the longitudinal members 27 as shown at 28, Fig. 3. This mat has unreinforced border portions 29 which overlap or overhang the top border frame 10. The spacing of these strands 26 is substantially less than the length of the reaches of the zigzag bends of the auxiliary spring elements so that they overlie these spring elements and are supported thereby and constitute effective supports for the upholstery which is superimposed on the mat, the upholstery being effectively supported throughout. The mat also serves to transmit the load effectively to the auxiliary

springs and to minimize the tendency to lateral spreading or separating of the auxiliary elements which might be expected to arise because of the resilient character of the connectors 18. This provides extreme resilience without likelihood of local collapse. In the event that the auxiliary springs should be completely collapsed vertically upon the covering 12 for the body springs, the load is transmitted to a substantial number of the springs and of course the entire top of the superstructure is carried by the body springs.

With this arrangement of parts, we secure a structure in which the upholstery is effectively supported against sagging. Tufting or piping of the upholstery may be dispensed with if desired and at the same time the upholstery is not likely to become displaced in use. The cushion presents a soft and yielding surface to normal loads but it is capable of sustaining heavy loads. The auxiliary springs maintain the upholstery under tension at all times. Another advantage is that the upholstery may be applied very quickly and by relatively unskilled labor to the spring unit.

We have illustrated and described our improvements in an embodiment which we have found very satisfactory. We have not attempted to illustrate or describe certain other embodiments or adaptations as it is believed this disclosure will enable those skilled in the art to embody or adapt our improvements as may be desired.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent, is:

1. In a spring cushion structure, the combination with a supporting base, of a plurality of helically coiled body springs mounted on said supporting base in upright position, a top border frame to which the top coils of the outer border springs are secured, a fabric covering for said body springs secured at its edges to said top border frame and having padding material thereon, a plurality of upwardly bowed zigzag auxiliary spring elements arranged in spaced parallel relation, certain of the loops of adjacent auxiliary springs being connected by helical spring tie members, side members to which the ends of said auxiliary springs are secured, said side members being secured to the correspoding portions of the top border frame, helical connectors connected to certain of the loops of the end auxiliary springs, said connectors being connected to said top border frame at points intermediate their connection to said auxiliary springs and supporting at least said end auxiliary springs in outwardly inclined relation, a mat superimposed on said auxiliary spring elements and comprising a sheet of fabric having a plurality of reinforcing strands of resilient wire rove therethrough in spaced parallel relation, the ends of said strands being connected to flexible non-resilient tie members of fibrous material, the spaces between the reinforcing strands being substantially less than the length of the reaches of the zigzag bends of said auxiliary spring elements, said mat having unreinforced border portions overhanging said top border frame, and upholstery arranged upon said mat and secured to said supporting base.

2. In a spring cushion structure, the combination of a plurality of helically coiled body springs mounted in upright position, a top border frame to which the top coils of the outer border springs are secured, a fabric covering for said body springs secured at its edges to said top border frame and having padding material thereon, a plurality of upwardly bowed zigzag spring elements arranged in spaced parallel relation, certain of the loops of adjacent auxiliary springs being connected by helical spring tie members, side members to which the ends of said auxiliary springs are secured, said side members being secured to the corresponding portions of the top border frame, helical connectors connected to certain of the loops of the end auxiliary springs, said connectors being connected to said top border frame at points intermediate their connection to said end auxiliary springs and supporting at least said end auxiliary springs in outwardly inclined relation, and a mat superimposed on said auxiliary spring elements and comprising a sheet of fabric having a plurality of reinforcing strands of resilient wire rove therethrough in spaced parallel relation, the spaces between the reinforcing strands being substantially less than the length of the reaches of the zigzag bends of said auxiliary spring elements.

3. In a spring cushion structure, the combination with a supporting base, of a plurality of helically coiled body springs mounted on said supporting base in upright position, a top border frame to which the top coils of the outer border springs are secured, a fabric covering for said body springs secured at its edges to said top border frame and having padding material thereon, resilient tie memers connecting the adjacent auxiliary spring elements to one another, a plurality of upwardly bowed zigzag spring elements arranged in spaced parallel relation, side members to which the ends of said auxiliary springs are secured, said side members being secured to the corresponding portions of the top border frame, a mat superimposed on said auxiliary spring elements and comprising a sheet of fabric having a plurality of reinforcing strands of resilient wire rove therethrough in spaced parallel relation, the ends of said strands being connected to flexible non-resilient tie members of fibrous material, the spaces between the reinforcing strands being substantially less than the length of the reaches of the zigzag bends of said auxiliary spring elements, said mat having unreinforced border portions overhanging said top border frame, and upholstery arranged upon said mat and secured to said supporting base.

4. In a spring cushion structure, the combination of a plurality of helically coiled body springs mounted in upright position, a top border frame to which the top coils of the outer border springs are secured, a fabric covering for said body springs secured at its edges to said top border frame and having padding material thereon, a plurality of upwardly bowed zigzag auxiliary spring elements arranged in spaced parallel relation, side members to which the ends of said auxiliary springs are secured, said side members being secured to the corresponding portions of the top border frame, and a mat superimposed on said auxiliary spring elements and comprising a sheet of fabric having a plurality of reinforcing strands of resilient wire rove therethrough in spaced parallel relation, the spaces between the reinforcing strands being substantially less than the length of the reaches of the zigzag bends of said auxiliary spring elements.

5. In a spring cushion structure, the combination with a supporting base, of a plurality of helically coiled body springs mounted on said supporting base in upright position, a top border frame carried by said body springs, a fabric covering for said body springs secured at its edges to said top border frame, a plurality of upwardly

bowed zigzag auxiliary spring elements arranged in spaced parallel relation and connected at their ends to the top border frame, certain of the loops of adjacent auxiliary springs being connected by resilient tie members, helical connectors connected to certain of the loops of the end auxiliary springs, said connectors being connected to said top border frame at points intermediate their connection to said end auxiliary springs and supporting at least said end auxiliary springs in outwardly inclined relation, a mat superimposed on said auxiliary spring elements and comprising a sheet of fabric having a plurality of resilient reinforcing strands secured thereto in spaced parallel relation, the ends of said strands being connected to flexible tie members, the spaces between the reinforcing strands being substantially less than the length of the reaches of the zigzag bends of said auxiliary spring elements, said mat having unreinforced border portions overhanging said top border frame, and upholstery arranged upon said mat and secured to said supporting base.

6. In a spring cushion structure, the combination of a plurality of helically coiled body springs, a top border frame carried by said body springs, a plurality of upwardly bowed zigzag auxiliary spring elements arranged in spaced parallel relation and connected at their ends to the top border frame, certain of the loops of adjacent auxiliary springs being connected by resilient tie members, helical connectors connected to certain of the loops of the end auxiliary springs, said connectors being connected to said top border frame at points intermediate their connection to said end auxiliary springs and supporting at least said end auxiliary springs in outwardly inclined relation, a mat superimposed on said auxiliary spring elements and comprising a sheet of fabric having a plurality of resilient reinforcing strands secured thereto in spaced parallel relation, the spaces between the reinforcing strands being substantially less than the length of the reaches of the zigzag bends of said auxiliary spring elements.

7. In a spring cushion structure, the combination with a supporting base, of a plurality of helically coiled body springs mounted on said supporting base in upright position, a top border frame carried by said body springs, a fabric covering for said body springs secured at its edges to said top border frame, a plurality of upwardly bowed zigzag auxiliary spring elements arranged in spaced parallel relation and connected at their ends to the top border frame, a mat superimposed on said auxiliary spring elements and comprising a sheet of fabric having a plurality of resilient reinforcing strands secured thereto in spaced parallel relation, the ends of said strands being connected to flexible tie members, the spaces between the reinforcing strands being substantially less than the length of the reaches of the zigzag bends of said auxiliary spring elements, said mat having unreinforced border portions overhanging said top border frame, and upholstery arranged upon said mat and secured to said supporting base.

8. In a spring cushion structure, the combination of a plurality of body springs, a top border frame carried by said body springs, a fabric covering for said body springs secured at its edges to said top border frame, a plurality of upwardly bowed zigzag auxiliary spring elements arranged in spaced parallel relation and connected at their ends to opposed members of said border frame, said auxiliary springs being connected intermediate their ends by resilient tie members, certain of the loops of the end auxiliary springs being resiliently connected to the end members of said border frame in an outwardly canted position, an upholstery supporting mat superimposed on said auxiliary springs and comprising a sheet of fabric having a plurality of auxiliary reinforcing strands secured thereto in spaced parallel relation, and upholstery disposed on and supported by said mat.

9. In a spring cushion structure, the combination of a plurality of body springs, a top border frame carried by said body springs, a plurality of upwardly bowed zigzag auxiliary spring elements arranged in spaced parallel relation and connected at their ends to opposed members of said border frame, said auxiliary springs being connected intermediate their ends by resilient tie members, certain of the loops of the end auxiliary springs being resiliently connected to the end members of said border frame in an outwardly canted position, an upholstery supporting mat superimposed on said auxiliary springs and comprising a sheet of fabric having a plurality of auxiliary reinforcing strands secured thereto in spaced parallel relation, and upholstery disposed on and supported by said mat.

10. A spring cushion structure comprising body springs, a top border frame carried by said body springs, a fabric covering for said body springs secured at its edges to said top border frame and having padding material thereon, a plurality of upwardly bowed zigzag auxiliary spring elements arranged in spaced parallel relation and connected at their ends to the top border frame, certain of the loops of adjacent auxiliary springs being connected by resilient tie members, and helical connectors connected to certain of the loops of the end auxiliary springs, said connectors being connected to said top border frame at points intermediate their connection to said end auxiliary springs and supporting at least said end auxiliary springs in outwardly canted relation.

11. A spring cushion structure comprising body springs, a top border frame carried by said body springs, a plurality of upwardly bowed zigzag auxiliary spring elements arranged in spaced parallel relation and connected at their ends to the top border frame, certain of the loops of adjacent auxiliary springs being connected by resilient tie members, and helical connectors connected to certain of the loops of the end auxiliary springs, said connectors being connected to said top border frame at points intermediate their connection to said end auxiliary springs and supporting at least said end auxiliary springs in outwardly canted relation.

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