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H. L. BENDA

2,512,007

CUSHION

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FIG. 2

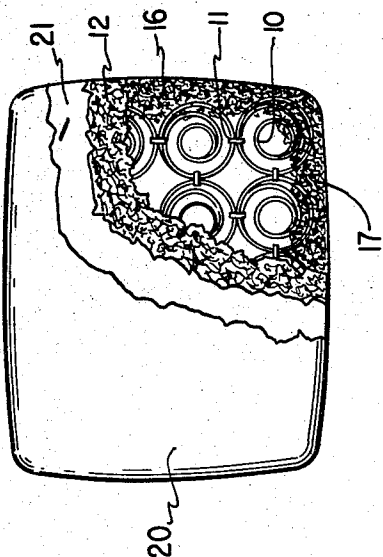


FIG. 1

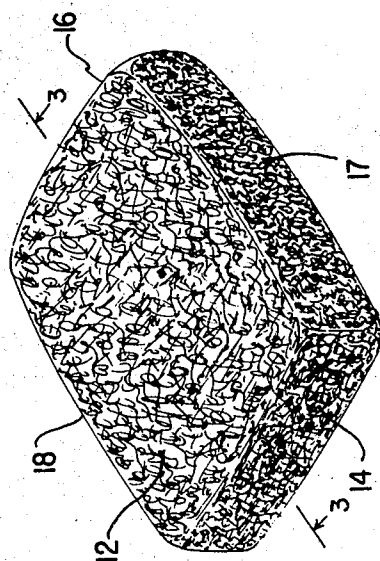
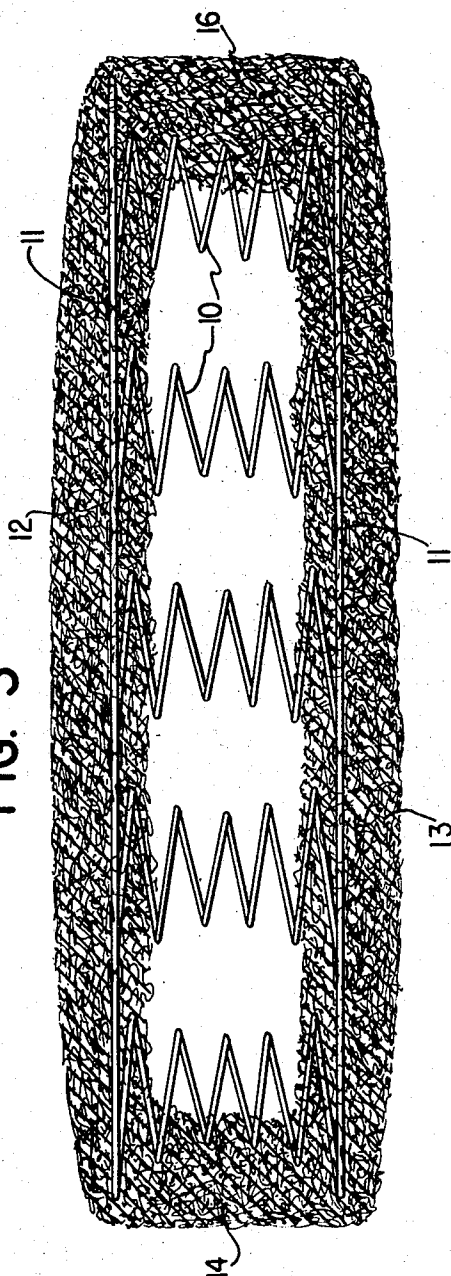


FIG. 3



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CUSHION

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This invention relates to inner spring cushions or pads in the upholstery art and more particularly to an inner spring pad or cushion that is covered with a latex-sprayed hair or fiber padding and which padding is adhesively secured to the upper coils and the lower coils of the respective inner springs and to the sides of the coils of outside springs of the assembly, without requiring the use of stitching, tufting or other securing means.

Heretofore, rubberized hair mattresses and cushions in combination with a plurality of inner coil springs have been devised and used commercially, but such mattresses or cushions possessed certain inherent disadvantages rendering them unacceptable. In some of such cushions the springs were inserted into annular cavities cut into the mass of rubberized hair and the springs were adapted to be compressed in those cavities. However, the spaces between and within the coils of such springs were entirely filled with the mass of rubberized hair, with the result that the advantages of the inner spring construction were somewhat nullified. It was necessary to compress the rubberized hair material between and within the coils of the springs as well as the springs themselves, and hence a somewhat hard pad or cushion resulted. Such a construction was also found to be relatively expensive thereby raising the cost of production and the consequent sales price.

In another of such constructions a mass of curled or crimped threads of a thermoplastic material has been utilized. In cushions using such material and employing inner springs, the lower threads of the pads were fused to the exposed or outer, top and bottom surfaces of the very top and bottom coils of the springs, and the sides of the unit were closed by vertical side pads fused by heat to the edges of the top and bottom pads. Such a construction was not only expensive but at the same time it was found that the bond between the top and bottom surfaces of the coil springs and the top and bottom pads of the thermoplastic material was insufficient to retain the pads in place. Likewise, the bond between the vertical side pads and the edges of the top and bottom pads was relatively insecure and incapable of resisting normal handling without the added reinforcement of an outer covering. It was also found necessary to bind the individual coil springs together by means of a frame which tended toward a more rigid construction and reduced individual spring action and flexibility.

It is, therefore, one of the objects of the present invention to provide an improved upholstery

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pad or cushion that may be inexpensively produced and which will afford greater comfort and be capable of a longer useful life.

Another object of the invention is to provide an improved upholstery pad or cushion comprising a plurality of inner coil springs that they may be loosely bonded together without the assistance of a frame, and which may be covered by a rubberized fiber padding on all its sides, or at least the top side thereof, the top and bottom covering pads being adhesively secured in enveloping relation to the surfaces of the top coils and the bottom coils, respectively, of each of the springs, and the side coverings of the rubberized material being adhesively secured in enveloping relation to the surfaces of the outer portions of the coils of the springs that are positioned at the outer edges of the spring assembly.

Still another object of the invention is to provide an inner spring pad or cushion that is covered by a rubberized hair or fibrous padding which is adhesively secured to the springs without the assistance of stitching or tufting and is capable of resisting inadvertent separation therefrom without the assistance of an additional covering.

A further object of the invention is to provide an improved upholstery cushion comprising a plurality of inner springs to which is adhesively secured about their top, bottom and sides a covering of rubberized hair or fibrous material, the fibers of said pads being adhesively secured to each other and also adhesively secured to the surfaces of the upper coils and the lower coils of the springs and to the surfaces of the outer portions of the coils of those springs positioned at the outer edges of the spring assembly.

A further object of the invention is to provide an improved process for covering a plurality of inner springs with a rubberized or latex-sprayed hair material, and adhesively securing said material as a covering to said springs without the use of stitching, tufting or other securing means.

A still further object of the invention is to provide an inexpensive process for readily covering inner springs with hair or fibrous padding.

Other objects and advantages of the present invention will become apparent as this description progresses, reference being had to the accompanying drawing in which:

Fig. 1 is a perspective view of the improved upholstery cushion comprising the present invention;

Fig. 2 is a top plan view of the improved cushion with the outer fabric covering and a portion of the upper padding broken away; and

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Fig. 3 is an enlarged vertical sectional view of the cushion taken on the line 3—3 in Fig. 1.

The improved inner spring cushion shown in the drawing comprises generally an inner spring assembly having adhesively secured about its top, bottom and sides a rubberized hair or fibrous material. The spring assembly comprises a plurality of coil springs 10 of conventional form, which are secured together, when in alignment and in juxtaposition, by means of clips 11 extending around and over the adjacent portions of the upper and lower spring loops of adjacent springs. The clips 11 permit slight relative movement between the springs 10. The number of coil springs 10 may, of course, be varied in accordance with the size of the cushion desired, and they may be of the usual type having coils of larger size at their tops and bottoms than in their centers. These springs 10 may, if desired, be secured together by additional frame means (not shown) but such frame means has been found to be unnecessary and undesirable in a cushion following the teachings of the present invention. The coil springs, pivotally joined together by the clips 11 serve to support each other, and they are further supported by the rubberized hair padding which entirely encloses the spring assembly. By elimination of the supporting frame, the cushion possesses greater flexibility resulting from individual spring action since the movement of a frame when pressure is applied thereto causes compression of a greater number of springs over a wider area. By the present construction only those springs in the area where pressure is applied are directly affected.

As shown more particularly in Figs. 2 and 3 of the drawing, the rubberized or latex-sprayed hair padding entirely envelopes the spring unit and has sufficient body or thickness to prevent the springs from projecting therethrough or from being noticed when the cushion is used. The inner body portions of the rubberized hair pads extend inwardly within and between certain coils, or portions thereof, of the respective springs 10 to which the pad is adhesively secured. As shown in Fig. 3, the top and bottom pads 12 and 13 extend downwardly and upwardly within and between the two upper coils and the two lower coils of the springs 10 so as to substantially envelop said coils and the individual fibers of the inner body portions of these pads 12 and 13 are adhesively secured to the outer surfaces of these several coils. Similarly the vertical side pads 14, 16, 17 and 18 also comprised of the rubberized hair extend inwardly a sufficient distance, as shown in Figs. 2 and 3, so as to be adhesively secured in substantially enveloping relation to the surfaces of the outer side portions of the coils of those springs positioned at the outer edges of the spring assembly. Thus the rubberized hair pads 12 and 13 are adhesively secured, not only to the top and bottom surfaces of the upper and lower coils of the springs 10, but they are also secured to all surfaces of the upper two coils and to all surfaces of the lower two coils of each spring, and the side pads 14, 16, 17 and 18 similarly are secured to the side portions of the coils of the outer springs, the individual fibers of the pads 12, 13, 14, 16, 17 and 18 being adhesively secured to themselves and also to those portions of the springs 10 above mentioned.

As shown more particularly in Fig. 3 the cushion is provided with a large central air space in which the springs operate, the rubberized hair material extending downwardly, upwardly

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and inwardly in the coils of the springs only a distance sufficient to securely anchor the outer pads to the springs. By maintaining an open central air space the spring action of the coil springs 10 is not interfered with in any way since it is not necessary to also compress the rubberized hair material as well as the springs 10.

The above-described inner spring cushion may be readily and inexpensively produced by the following process: With the coil springs 10 arranged in aligned juxtaposition and secured together by the clips 11, the entire surfaces of the two upper coils and the two lower coils of each of the springs 10 and the entire surfaces of the outer side portions of all the coils of the springs adjacent the edges of the spring assembly, may be sprayed with a primer coat of a latex cement or other suitable material having adhesive qualities. The inner or under surfaces of the upper and lower coils become coated with the adhesive spray as well as the outer surfaces, since the material, when sprayed, carries on through the entire spring unit. The springs are sprayed with the spring assembly turned first on one side and then on the other.

After the portions of the springs have been sprayed with a sufficient amount of adhesive material, bunches of hair or other fibrous material may then be placed down within and between the upper coils of the springs 10 and that material may be worked down and around the upper coils so as to cause it to adhere all around the surfaces thereof. The hair is further worked down so that it will extend between and under the coils and under the spring clips 11 so that a substantially continuous unified layer of the hair material entirely envelopes and engages all surfaces of the upper coils of the springs 10. After the initial bunches of material have been worked down with the fingers on all sides of the upper coils, additional hair is added so as to build up a sufficient thickness over the springs as above described and as shown in the drawings.

When the top pad has been completed, quantities of the hair may be inserted between, over and around the outer side portions of the coils of the springs that are positioned at the outer edges of the spring assembly, so that the hair or fibers become bonded to the inner and outer surfaces of those portions of the springs. The operator may then add additional quantities of hair so as to build up the side pads 14, 16, 17 and 18, to the extent shown in Fig. 3. However the pads 14, 16, 17 and 18 are built up only half way down the sides of the springs 10, thereby leaving ready access to the interior of the springs and the pads for further operations to be presently described.

After the top pad 12 has been so formed and the side pads 14, 16, 17 and 18 partially formed, the outer surfaces of these portions may be sprayed with an elastic adhesive, such as a latex solution, which will penetrate through the outer surfaces of these pads and thoroughly coat the individual hairs of the inner portions as well so as to bond them firmly together. Upon completion of this spraying operation, the partially completed unit is then permitted to dry with the bottom coils of the springs 10 resting upon a work table. The partially completed cushion is not turned over until the sprayed latex solution has dried because the coated hairs would dry in matted down condition under the weight of the coil springs.

After the latex solution has dried, the partially

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completed unit is then turned over with the bottoms of the coil springs 10 in up position. In order to thoroughly coat the inner fibers of the pad 12 and the inner surfaces of the partially formed pads 14, 16, 17 and 18, the latex solution may be sprayed against these inner surfaces from the open ends of the springs 10 and the solution will penetrate and thoroughly coat the inner body portions of the pads and also the upper coils and the side portions of the coils of the outside springs. Having done this, a thin padding of hair of a sufficient quantity to entirely cover the bottom surfaces of the springs and to extend up the sides so as to complete the side pads 14, 16, 17 and 18, may be performed on the work table after which the entire exposed or upper surface of the preformed pads may be sprayed with the latex solution. Then while the latex solution is still wet, the preformed pads may be placed down over the bottom coils of the springs 10 and against the uncovered side portions of the side springs 10. Similar to the padding 12 the inner body portion of this preformed hair material is then worked down and around the two lower coils of each of the springs so that the hair material will be sufficiently bonded to those lower coils. Likewise, the hair may be worked in over and around the lower side portions of the coils of the side springs so as to become firmly united with those portions of the springs and complete the side pads. After the hair material has been worked in and around these coils and portions thereof, additional hair may be added to round out and complete the pads 13, 14, 16, 17 and 18 to their proper thickness. Thereupon, the entire outer surfaces of the bottom pad 13 of the lower portions of the side pads 14, 16, 17 and 18 may be sprayed with the latex solution which will also penetrate to and coat the interior hairs.

After the unit has been completely assembled and sprayed, the bottom pad 13 and the lower portions of the side pads 14, 16, 17 and 18, may be allowed to dry, after which the entire unit is placed in a mould and passed through a heating zone to vulcanize the rubber solution that has been coated on the fibers and on the two upper and the two lower coils of each spring and on the outer side portions of the coils of the outer springs.

Upon completion, the unit is entirely self-contained and may be handled, sold and shipped as shown in Fig. 3 without the addition of an outer covering 20 or a layer of cotton felt 21 shown in Fig. 2. The layer of felt 21 may be placed upon the unit by the user of the cushion in order to prevent any of the rubberized hairs from sticking through the outer or finished covering 20 of the chair. The rubberized hair covering comprising the pads 12, 13, 14, 16, 17 and 18, serve to support the springs 10 and maintain them in the assembled relation shown in Fig. 3, and the pads are securely adhered to the springs at their inner body portions without the possibility of being inadvertently disengaged therefrom. At the same time the rubberized hair material does not extend down into contact with the inner coils of the springs 10, thereby providing an open space within the cushion for free spring action. The entire rubberized hair envelope further serves as a spring frame, but possesses none of the stiffness of such a frame, since only those springs in the area where pressure is applied are directly affected.

Although there has been described above and illustrated in the accompanying drawing, a pre-

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ferred embodiment of the present invention, it is to be understood that changes in structural details and operation may be made without departing from the spirit and scope of the appended claims.

I claim:

1. The method of making an inner spring cushion unit which comprises coating an adhesive material to the surfaces of the upper coils and the lower coils of the respective coil springs of an inner spring assembly and to the surfaces of the outer side portions of the coils of the springs positioned at the sides of the spring assembly, applying a padding of fibrous material to the spring assembly to form a covering thereover, working the fibers of the inner body portion of the fibrous padding between and around said adhesively coated coils and coil portions in enveloping relation so that the fibers of said padding may become adhesively secured to the surfaces thereof, and then applying an elastic adhesive material to the fibers of said padding to secure the fibers thereof to adjacent fibers.

2. The method of making an inner spring cushion unit which comprises coating an adhesive material to a coil spring assembly on the surfaces of the upper coils and the lower coils of the respective coil springs and on the surfaces of the outer side portions of the coils of the springs positioned at the sides of the spring assembly, applying a padding of fibrous material to the upper and side surfaces of said spring assembly, working the fibers of the inner body portion of the fibrous material between and around said adhesively coated upper coils and side coil portions in enveloping relation so that the fibers of said padding may become adhesively secured to the surfaces thereof, then applying a liquid elastic adhesive material to the fibers of padding from the outer sides thereof, drying said adhesive material and said elastic adhesive material, then inverting said partially completed unit so that the bottom coils of the springs are uppermost, applying a further quantity of said liquid elastic adhesive material to the fibers of the top and side padding from the inner sides thereof, forming the padding for the bottom of said spring assembly, applying a liquid elastic adhesive material to the fibers of the padding from one side thereof, placing said bottom padding with the adhesive coated side in contact with said springs, working the fibers of the inner portion of the bottom fibrous padding between and around the lower coils of each said respective springs in enveloping relation so that the fibers of said padding may become adhesively secured to the surfaces thereof, and then applying a further quantity of liquid adhesive material to the fibers of the bottom padding from the outer side thereof to bond said fibers thereof together and to the fibers of the side padding, and then drying said elastic adhesive material.

3. The method of making an inner spring cushion unit which comprises applying a padding of fibrous material to the spring assembly to form a covering thereover, working the fibers of the inner body portion of the fibrous padding between and around the upper and lower coils of the respective coil springs and between and around the outer side portions of the coils of the springs positioned at the side of the spring assembly and then applying an elastic adhesive material to the fibers of said padding to secure the fibers thereof to adjacent fibers and to the portions of the springs which they envelop.

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4. The method of making a cushion unit which comprises applying a padding of fibrous material to a side of a spring assembly comprising a plurality of springs to form a covering thereover, working the fibers of the inner body portion of the fibrous padding between and around the adjacent spring portions at the side of the assembly, and then applying an elastic adhesive to the fibers of said padding to secure the fibers thereof to adjacent fibers and to the adjacent portions of the spring which they envelop.

5. A cushion unit comprising an assembly of a plurality of coil springs and a padding of fibrous material secured together as a unit by an elastic adhesive and comprising top, bottom and side pads enveloping the spring assembly, the fibers of the inner body portions of the top and bottom pads enveloping and extending between the upper coils and also the lower coils and the said adhesive serving to adhesively secure the said fibers to said upper and lower coils, and the fibers of the inner body portions of the side pads enveloping and extending between the outer side portions of the coils of the spring positioned at the sides of the spring assembly and said adhesive serving to adhesively secure the said fibers to the outer side portions of said coils, and the interior space of said spring unit defined by the inner surfaces of said pads being free of said fibrous material and permitting free spring action.

6. A cushion unit comprising an assembly of a plurality of coil springs and a padding of fibrous material secured together as a unit by an elastic adhesive and comprising top and side pads secured to the top and sides of said spring assembly by said adhesive, the fibers of the inner body portions of top pad enveloping and extending between the upper coils and the said adhesive serving to adhesively secure the said fibers to said upper coils and the fibers of the inner body portions of the side pads enveloping and extending between the outer side portions of the coils of the springs positioned at the sides of the spring assembly and said adhesive serving to adhesively

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secure said fibers to the outer side portions of said coils, and the interior of said spring unit defined by the inner surfaces of said pads being free of said fibrous material and permitting free spring action.

7. A cushion unit comprising an assembly of a plurality of coil springs and a pad of fibrous material secured together as a unit and to the top of said spring assembly by an elastic adhesive, the fibers of the body portion of the pad adjacent the spring assembly enveloping and extending between the upper coils of the spring assembly and said adhesive serving to adhesively secure said fibers to said upper coils, and the portions of the spring assembly below said pad being free of said fibrous material and permitting free spring action.

8. A cushion unit comprising an assembly of a plurality of springs and a pad of fibrous material secured together as a unit and to a side of said spring assembly by an elastic adhesive, the fibers of the body portion of the pad adjacent the spring assembly enveloping and extending between the adjacent spring portions of the assembly and said adhesive serving to adhesively secure said fibers to said adjacent spring portions, and the other portions of the spring assembly being free of said fibrous material enabling free spring action.

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