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P. KLOPPMAN

2,149,350

CUSHION CONSTRUCTION

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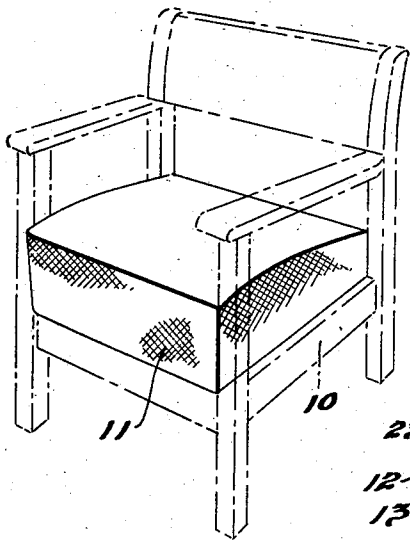


FIG. 1.

FIG. 2.

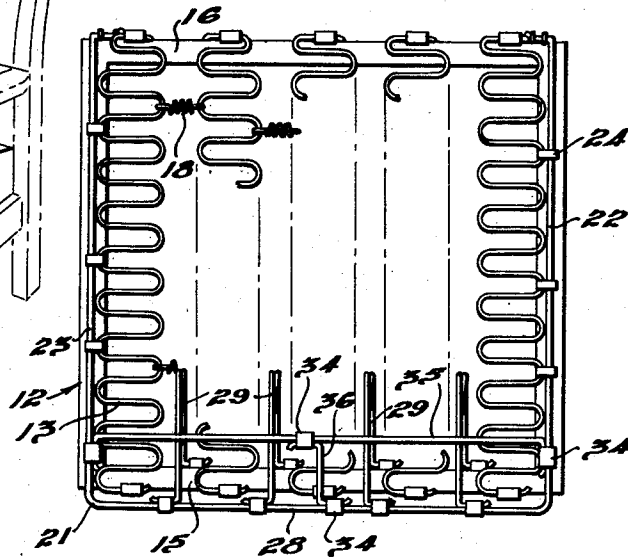


FIG. 3.

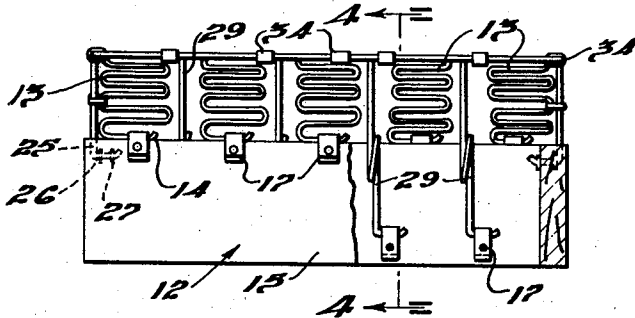


FIG. 4.

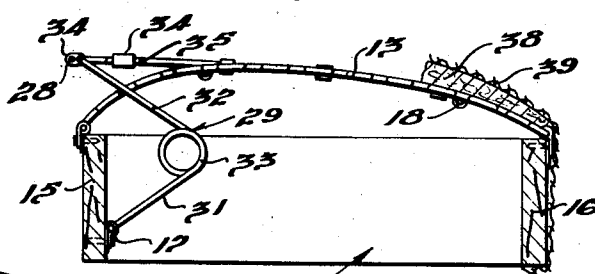
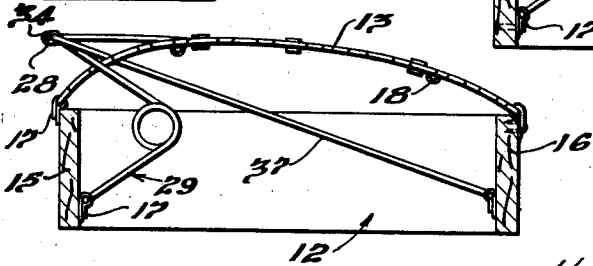


FIG. 5.



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CUSHION CONSTRUCTION

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Application April 18, 1936, Serial No. 75,059

8 Claims. (Cl. 155-179)

My invention relates to method and means for forming spring surfaces, and particularly to a method and means for providing a resilient edge to a spring seat, back cushion or the like.

Reference hereinafter will be made to a spring edge for a spring seat and it is to be understood that the word "seat" is not to be interpreted as applying only to the horizontal resilient portion of a chair, davenport or the like, but also to the spring portion of the back, to separate spring cushions and like spring units.

In the Karl Kaden Patent No. 2,002,399, issued May 21, 1935, under which the assignee of the present application is an exclusive licensee, a sinuous arcuately formed spring is illustrated, described and claimed which is unique in having an inherent tendency to resist movement from set position on an arc of small radius. To form a resilient surface, a plurality of the springs are disposed in an arcuate plane by extending the ends and securing the ends to spaced supporting elements. An extremely thin, resilient cushion is provided in this manner and, since the set in the spring elements is on a curvature having a radius less than the curvature of the arc on which they are employed, any deflection of the elements between their ends will be increasingly resisted by the tension in the elements so that an applied load will be supported with a resulting deflection substantially proportional to the weight of the load. After the load is removed, the elements will assume the bolster or arcuate shape which they originally had when secured to the seat frame.

The elements, when employed as taught in the Karl Kaden patent, had limited application because no spring edge is provided when one end of the elements terminated at the front edge of the frame. In upholstered furniture having deep seats it is not only desirable, but necessary, to provide a soft spring edge to the spring structure. This, I have accomplished, by providing a separate resilient frame which is employed with the resilient frame made up of a plurality of elements disclosed in the above mentioned Kaden patent. The front edge of the resilient frame is supported on a plurality of "jack" springs embodying a pair of arms projecting from a central coiled portion. The sides of the resilient frame extend along the sides of the spring elements and are secured thereto and to the rear portion of the frame. A resilient seat construction is provided where the sinuous resilient elements support the main load with a spring edge provided by the auxiliary wire framing which projects upwardly and forwardly from the sinuous springs. An extremely

soft and comfortable, as well as durable, spring cushion construction is provided in this manner.

Accordingly, the main objects of my invention are: to provide a spring structure for a seat comprising cooperating spring assemblies which provide a resilient surface having a front spring edge; to provide a seat with load receiving spring elements having, in combination therewith, a spring portion providing a resilient edge to the construction; to provide a plurality of sinuous spring strips for spanning a frame and having in cooperation therewith a resilient frame which projects above at least one edge of the spring strips; to secure, in combination with a spring surface, a resiliently supported frame which extends above the front end of spring surface to be capable of being deflected with and independently thereof; and, in general, to provide a resilient edge for a spring surface to form a cushion which is durable, simple in construction and economical of manufacture.

Other objects and features of novelty of my invention will be either specifically pointed out or will become apparent when referring, for a better understanding of my invention, to the following description taken in conjunction with the accompanying drawing, wherein:—

Figure 1 is a perspective view of a seat for a chair, embodying features of my invention;

Fig. 2 is a top plan view, with parts broken away, of a seat frame employed with the cushion illustrated in the chair of Fig. 1;

Fig. 3 is a view in elevation, with parts broken away, of the seat frame illustrated in Fig. 2;

Fig. 4 is a broken, sectional view of structure illustrated in Fig. 3, taken on the line 4—4 thereof; and

Fig. 5 is a view of structure, similar to that illustrated in Fig. 4, showing a modified form thereof.

In Fig. 1, I have illustrated a chair 10 having a cushion 11 thereon which embodies a spring frame structure employing features of my invention.

The framing for the seat 11 is illustrated in Figs. 2, 3 and 4 as embodying a base frame 12 which is herein illustrated as being made of wood. It is to be understood that various types of frame elements, known in the art to be suitable, may be employed in place of the frame herein illustrated. A plurality of sinuous springs 13 of the type illustrated in the above mentioned Kaden patent, have their ends 14 extended and secured to the front and rear portions 15 and 16, respectively, of the base frame 12. The ends 14 of the springs may be secured in any manner and are herein

illustrated as being attached by a plurality of clips 17 of metal or other suitable material, which are nailed, screwed or otherwise secured to the frame. The spring elements 13 are in this manner disposed on an arc, on the bolster which is desired for the seat.

The spring elements 13 may be interconnected by small coil springs 18 to provide lateral continuity to the spring surface construction. As pointed out hereinabove, the natural tendency of the spring elements 13 is to return to the shape of an arc of much smaller radius than that of the bolster due to its initial set on an arc of much smaller radius and a material resistance is thereby offered by the elements to downward displacement. The portion of the spring cushion construction formed by the spring elements 13 and 18 is utilized for supporting the main portion of the load to which the seat is subjected.

To provide a front spring edge to the seat, which is desirable in various constructions, such as upholstered chairs, davenports, seat backs, cushions and the like, I have provided a secondary spring assembly embodying a frame wire 21 of U-shape, the side portions 22 and 23 of which are secured to the side spring elements 13 by suitable clips 24 known in the upholstery art as "hog rings". Such clips or rings are herein illustrated as being made from strap material and are looped over the frame wire 21 and the end of one of the convolutions of an element 13 to draw them into intimate relation when the clip or ring 24 is closed upon itself. The rear ends of the side portions 22 and 23 may be bent downwardly at 25 and laterally at 26 and are secured to the frame element 16 by suitable staples 27. Other means, such as clips 17, could be utilized for securing the ends of the side portions 22 and 23 to the base frame.

The laterally extending front portion 28 of the spring frame 21 is supported on a plurality of "jack" springs or similar resilient elements 29. The springs herein shown embody projecting arms 31 and 32 which extend from a coil portion 33. The ends of the arms 31 and 32 are herein illustrated as being bent laterally, the end of the arm 31 being secured to the inner surface of the border element 15 by a clip 17. The end of the arm 32 is secured to the spring portion 28 by a suitable clip 34. The springs 29 are disposed between the elements 13 out of contact therewith so that no noise will result from the movement of the various spring elements.

The portion 28 is reinforced by a bracing wire 35 which is spaced inwardly from the portion 28 and connected to the side portions 22 and 23 by clips 34 which secure the ends of the bracing wire 35 thereto. Additional braces, such as the element 36, may be employed to interconnect the portion 28 of the border wire 21 with the bracing wire 35. The wire 36 is of Z-shape and is secured by clips 34. The bracing wire 35 provides depth to the front edge 28 of the spring for supporting padding material which extends over the elements 13.

The seating surface of the cushion, instead of following the arc of the elements 13, will be disposed only on the rear portion of such arc and will project outwardly following the form of the auxiliary spring framing assumed by the edge 28 and the cross brace 35. This construction provides a durable and resilient load supporting spring surface having, in combination therewith, a rugged spring edge construction which, in combination, provides a very soft and comfortable

seat. The weight of an occupant is directly carried by the elements 13 while a support is provided for the under portion of the limbs of the occupant adjacent to the knees.

In Fig. 5, I have illustrated an additional bracing element 37 which may be utilized when the elements 28 and 35 are of material length, such as when employed in large chairs or davenports, to prevent the portion 28 from being deflected toward the rear of the seat structure. The brace 37 is herein illustrated as being a wire which is connected by the element 34 to the portion of the border wire 28 and by clips 17 to the portion 16 of the frame.

It is to be understood that the structure herein illustrated may be materially changed by utilizing various types of base frames 12, those made of wood having different shapes from the one shown, or made from metal, having tacking strips embodied therein. Different types of springs 29 may be utilized to provide resiliency to the secondary frame, such as "jack" springs with more than one coil portion 33, and, in some instances, coil springs alone may be utilized. In spring constructions, such as seat backs or cushions where reduced depth is desired, coil springs may be employed to interconnect the edge 28 directly to the spring elements 13. It is to be understood that padding material 38 and cover material 39, conventionally employed in the art, may be utilized to cover the frame structure herein disclosed.

While I have described and illustrated but a single embodiment of my invention, it will be apparent to those skilled in the art that various changes, additions, omissions and substitutions may be made therein without departing from the spirit and scope of my invention, as set forth in the accompanying claims.

I claim as my invention:

1. A cushion having a spring surface, and a resilient frame mounted for independent movement relative to the major portion of said spring surface and disposed above and over at least one edge of said surface.

2. A cushion made from a plurality of spring elements disposed to support the main load supporting surface, and a resilient assembly mounted for independent movement relative to the major portion of said main load supporting surface and disposed above and over at least one edge of said surface and spaced therefrom.

3. A cushion including, in combination, a frame, a plurality of longitudinally extending spring elements spanning opposite sides of said frame, and an auxiliary resilient frame mounted for independent movement relative to the major portion of said elements above one supported edge of said spring elements.

4. A cushion including, in combination, a frame, a plurality of spring elements spanning opposite sides of said frame, and a second frame supported by said spring elements and said first frame mounted for independent movement relative to the major portion of said elements and projecting above at least one edge thereof.

5. A cushion including, in combination, a frame, a plurality of spring elements spanning opposite sides of said frame, and a second frame secured to said spring elements so as to have one edge projecting above the supported ends of said spring elements and mounted for independent movement relative to the major portion of said elements, and resilient means supporting said projected edge.

6. A cushion for a chair seat or back having a frame including, in combination, a border element, a plurality of spring strips supported on opposite sides of said border element and spanning the space therebetween to provide a resilient surface, and a second spring assembly disposed above one side of the border element to which the spring elements are secured, mounted for independent movement relative to the major portion of said spring elements and forming with said spring elements a spring surface having a resilient edge.

7. A cushion including, in combination, a frame, a plurality of spring elements spanning opposite sides of said frame; a second frame secured to said spring elements so as to have one

edge projecting above the supported ends of said spring element and mounted for independent movement relative to the major portion of said elements, and a jack spring having one end mounted to said first named frame and its other end supporting said projected edge.

8. A cushion including, in combination, a frame, a plurality of spring elements spanning opposite sides of said frame, a U-shaped frame pivotally secured adjacent its open ends to said first named frame with its base edge projecting above and being free of the supported ends of said spring element, and resilient means supporting said projected edge.

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