Oct. 14, 1952 A. MOUW 2,613,733

SPRING CONSTRUCTION

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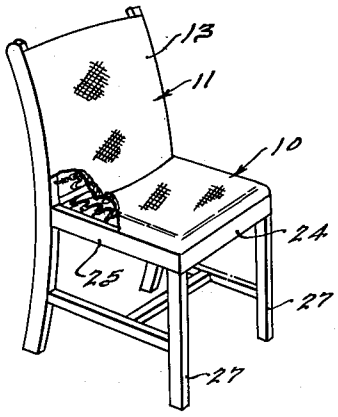


FIG. 1.

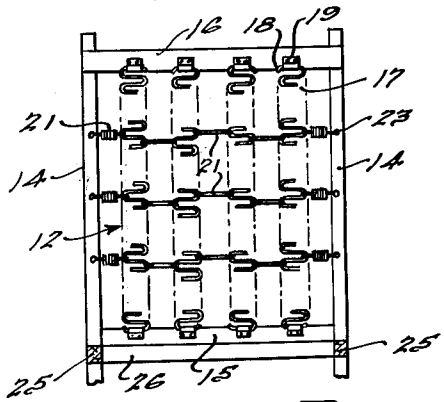


FIG. 2.

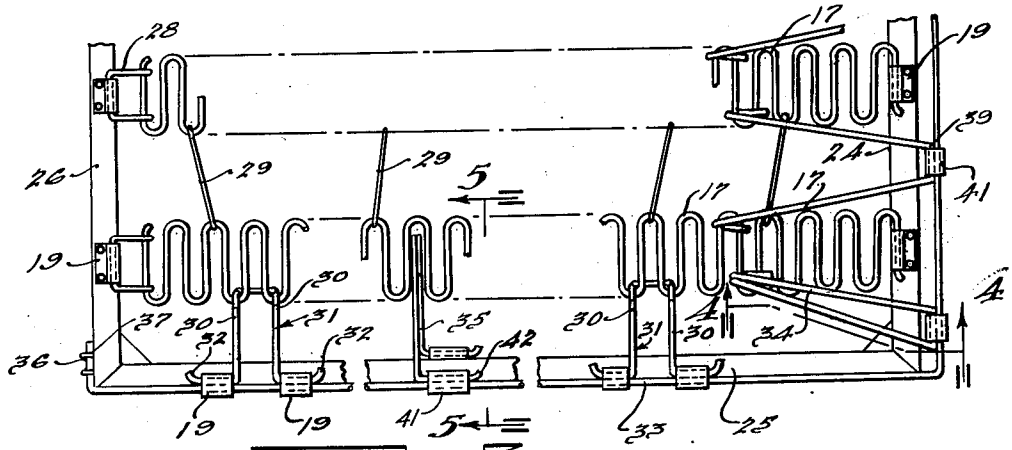


FIG. 3.

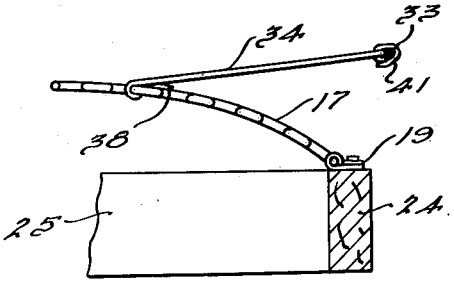


FIG. 4.

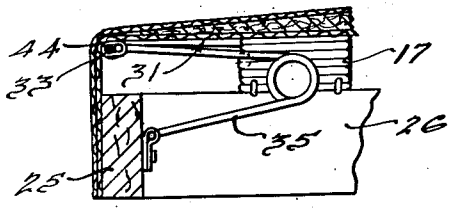


FIG. 5.

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SPRING CONSTRUCTION

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2 Claims. (Cl. 155—179)

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This invention relates to spring construction and particularly to a spring seat construction made from spring strips having border elements supported thereabout to provide a soft edge at the front and sides of the seat.

The invention pertains to the use of sinuous spring strips which are set on an arc of small diameter on the longitudinal axis of the strip to provide resistance against downward deflection when the ends are drawn outwardly and anchored to opposite elements of a frame. The frame may be a separate element or may be that of a chair, davenport, mattress, or similar spring construction. A hard edge will be formed where the spring strips are attached along the frame. In the present arrangement, wire elements are provided around the frame above the top edge thereof which are supported on the spring strips.

At the front edge of the frame the U-shaped spring elements are employed, having hook ends which extend under and over adjacent convolutions of the spring strips to provide a spring support for the front portion of the border wire which deflect with the strips. At the sides of the frame, jack springs are employed having one arm attached to the side frame members, while the other arm is secured to the border wire. At the rear of the frame the spring strips are secured to pivotal U-shaped elements, which permits the spring end to be deflected downwardly below the top of the frame. This clip is employed when a back is utilized on the seat frame construction to produce greater flexibility and softness to the main supporting portion of the seat. The spring strips adjacent the side frame elements are secured to the side portions of the border wire by U-shaped elements which are hooked over a convolution of the strip and attached to the border wire by the ends of the leg portions of the elements. Suitable padding and trim material are applied to the top of the spring structure and border wire which provides shape to the top surface of the frame, the edges of which are deflectable with the spring strips and independent thereof to provide a soft edge at the sides and front of the cushion the rear edge of which is downwardly deflectable.

Accordingly, the main objects of the invention are: to form a spring surface for a seat from a plurality of sinuous spring strips and provide a soft edge at the sides and front of the seat by securing spring elements to the strips and the frame which resiliently support a border wire above the seat frame; to pivotally secure a plurality of sinuous spring strips across a frame and resiliently support a border element at the sides and front above the frame edge which is deflectable therewith and independent thereof; to secure the ends of sinuous spring strips in

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arms pivotally attached to a frame and to support the strips adjacent to the sides of the frame by U-shaped elements having the web portions extended over one of its convolutions and the end portions secured to a border wire extending above the frame; and, in general, to form a spring surface having a soft edge at the sides and front which is simple in construction and economical of manufacture.

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

Figure 1 is a perspective view of a chair having a spring surface embodying features of the invention;

Fig. 2 is an elevational view of the frame and spring structure employed in the back of the chair illustrated in Fig. 1;

Fig. 3 is a broken view of the frame and spring construction employed in the seat of the chair illustrated in Fig. 1;

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

Fig. 5 is an enlarged sectional view of the structure illustrated in Fig. 3, taken on the line 5—5 thereof.

The chair illustrated in Fig. 1, by way of example, has a seat portion 10 of such construction that the side and front edges are deflectable. The back portion 11 embodies a spring surface 12 which is covered with upholstering material 13 in the conventional manner. In Fig. 2, the back of the chair is illustrated as being made from extended leg elements 14 having a bottom cross member 15 and a top cross member 16. Between the cross members 15 and 16 a plurality of spring strips 17 are secured by pivotally attaching the end portions 18 in the clips 19 which are nailed or otherwise secured to the cross members. The springs 17 are made of wire which is bent back and forth in sinuous form and set on an arc along the longitudinal axis of the strip following the teaching of the Kaden reissue patent, Re. 21,263. The springs are interconnected to each other and to the leg elements 14 by a plurality of coil springs 21 bent to form an eye at each end which hooks over adjacent convolutions of the spring strips 17. The ends of the coil springs adjacent to the leg members 14 may be bent normal to the spring axis and be driven directly into the frame or may be secured to pins 23 as herein illustrated having a head or an eye on their projecting ends.

The seat portion 10 embodies a frame constructed of a front member 24, side members 25, and a rear member 26. Front legs 27 are at-

tached to the front of the frame for supporting the front edge of the chair. The plurality of spring strips 17 are stretched across the frame elements 24 and 26 and are secured in position by clips 19 at the front end and by U-shaped elements 28 at the rear end. The elements 28 have their web portions secured by clips 19 which are attached to the rear frame member 26. This permits the rear portion of the spring strips 17 to deflect below the top of the frame member 26 when a load is applied to the spring surface formed by the strips. The spring strips are interconnected between the side members 25 by a plurality of wire clips 29.

U-shaped elements 31, having arm portions 30 laterally extended at 32, are hooked over a convolution of the strips 17 which are disposed adjacent to the side frame members 25. A border wire 33 extends around the frame along both the side members 25 and across the frame member 24 and is supported thereabove at the front by a plurality of spring elements 34 and at the sides by the elements 31 which provide a soft edge to the resulting cushion. The two ends 36 of the border wire are bent inwardly and are secured by staples 37 to the rear surface of the rear frame member 26. Clips 19 secure the laterally extending portions 32 of the U-shaped elements 31 to the border wire portions disposed above the side frame members 25. The border wire resists the inward deflection of the spring strips and extends the spring surface to the edge of the side frame members providing a soft edge to the cushion disposed thereabove.

The spring-supporting elements 34 are similar to those illustrated, described and claimed in the patent to Louis T. Mayer, No. 2,356,417, issued August 22, 1944, and assigned to the assignee of the present invention. The element 34 is made of wire bent in U shape having ends 38 reversely bent into S shape to extend under and over adjacent portions of a convolution of the spring strips to resiliently support the web portion 39 above the border frame. Suitable clips 41 secure the web portion 39 of the spring elements 34 to the border wire 33 at the front of the seat portion 10. Jack springs 35 have lateral projecting arm 42 attached to the border wire at the sides by the clips 41 and to the side frame members 25 to further support the border wire thereabove. Suitable padding and upholstering trim material 44 is secured over the spring surface and the border wire 33, as illustrated in Fig. 5, which provides a desired form to the seat surface and a soft edge at the sides and front of the seat frame.

When the seat is occupied, the main load is supported by the spring strips 17 which will be deflected downwardly due to the resiliency of the strips and the downward movement of the rear ends of the strips on the U-shaped elements 28. A soft edge is provided to the sides and front of the seat by the border wire 33 which is permitted to deflect due to the resiliency of the supporting elements 31, 34 and the jack springs 35. In the spring construction herein provided, which may be extended to other spring structures besides that of the chair herein illustrated, a freely deflectable main load-supporting surface is formed having a rear edge which is free to move downwardly with a resilient border element extending above the rigid side and front frame members supported on the load-supporting surface to provide softness to the side and front edges and form to the upholstering and padding material which is stretched thereover.

What is claimed is:

1. In a spring construction having a frame and spaced parallel sinuous springs, means securing the sinuous springs at opposite ends to the front and rear edges of the frame to provide a resilient load supporting surface, the combination of a U-shaped border wire having the arms extending along the sides and the web disposed along the front edge of the frame, means for resiliently holding the front edge of the border wire above the front edge portion of the sinuous springs so as to provide a soft front edge to the assembly, said means comprising U-shaped wire spring elements each having a lateral web secured to the border wire at the front edge of the frame with longitudinal arms extending rearwardly from the web to the sinuous springs to which the ends of the arms are secured, and similar spring elements supporting the corners of the border wire at the junction of the arm and web portions thereof, with the ends of the arms of the spring elements secured to the sidemost sinuous springs of the assembly at the outer side edges thereof.

2. In a spring construction having a frame, spaced parallel sinuous springs attached at the front end directly to the front edge of the frame, U-shaped clips having the web portion secured to the rear edge of the frame, with the arms extending therefrom provided with eyes for receiving the rear ends of the sinuous springs and supporting the ends on the rear edge of the frame, a U-shaped border wire having a web portion disposed parallel to the front edge of the frame and having arms extending therefrom disposed along the sides of the frame, means for resiliently holding the front edge of the border wire above the front edge portion of the sinuous springs so as to provide a soft front edge to the assembly, said means comprising U-shaped wire spring elements each having a lateral web secured to the border wire at the front edge of the frame with longitudinal arms extending rearwardly from the web between two adjacent sinuous springs to which the ends of the arms are secured, and similar spring elements supporting the corners of the border wire at the junction of the arm and web portions thereof, with the ends of the arms of the spring elements secured to the sidemost sinuous springs of the assembly at the outer side edges thereof.

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