Aug. 22, 1944. L. T. MAYER 2,356,417

SOFT EDGE SEAT CONSTRUCTION

Filed Feb. 12, 1941

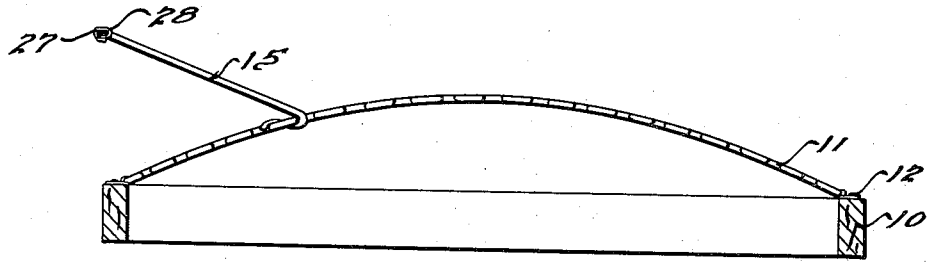

FIG. 1.

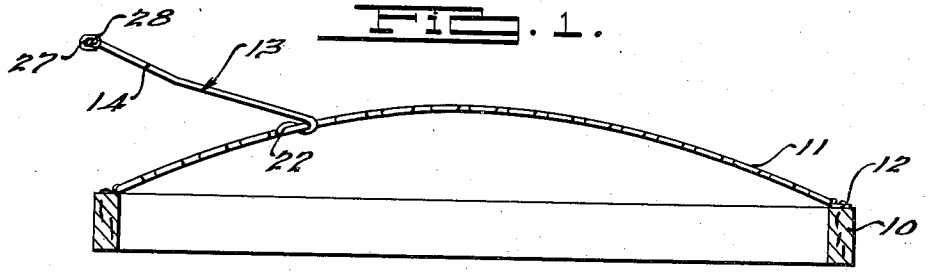

FIG. 2.

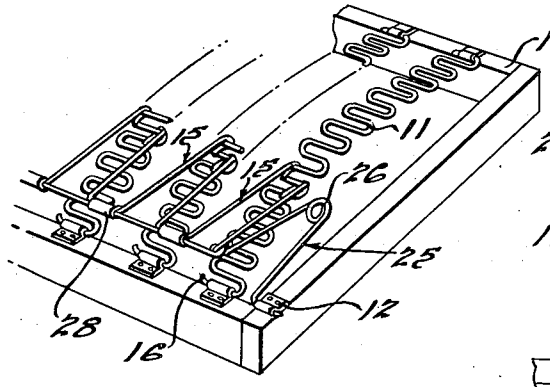

FIG. 3.

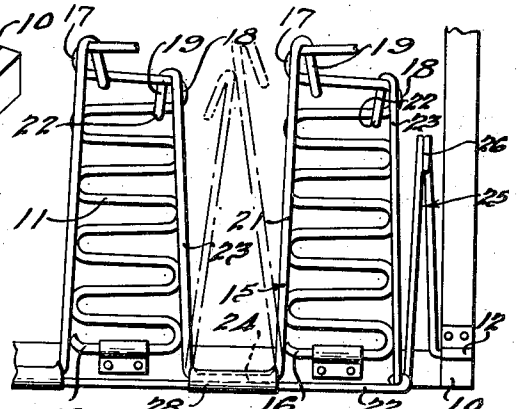

FIG. 4.

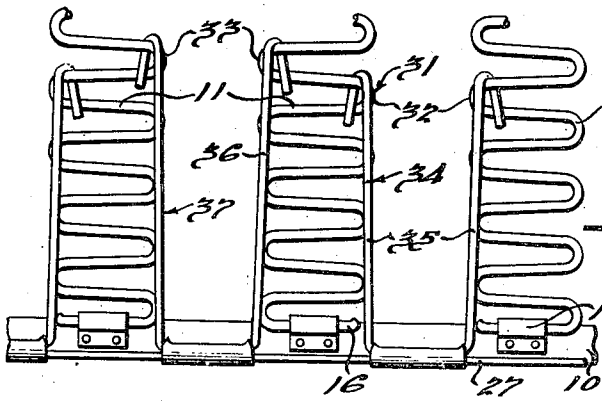

FIG. 5.

INVENTOR
Louis T. Mayer.
BY
Harness, Dickey & Pierce
ATTORNEYS.

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SOFT EDGE SEAT CONSTRUCTION

Louis T. Mayer, Detroit, Mich., assignor to No-Sag Spring Company, Detroit, Mich., a corporation of Michigan

Application February 12, 1941, Serial No. 378,506

10 Claims. (Cl. 155—179)

My invention relates to a spring cushion, and particularly to a cushion having a soft edge to support the legs or shoulders of an occupant.

In my copending application, Serial No. 364,108, filed November 4, 1940, and assigned to the assignee of the present invention, I illustrated a continuous spring strip of sinuous form, the ends along one edge of which are reversely bent to form hooks. The ends are hooked over the convolutions of sinuous strips which are formed from wire and follow the construction of the spring strip of the Kaden Reissue Patent No. 21,263, issued November 14, 1939. While this construction proved satisfactory, it was found objectionable because special lengths were required for the various widths of seat which were constructed.

My present invention embodies an advancement of the inventive concept of my prior application when providing individual elements which span the space between the sinuous spring strips and are attached to adjacent edges of the adjacent strips. When the sinuous spring strips are mounted in like manner across a frame, the convolutions being alternate, will be offset from each other on adjacent edges of adjacent strips, so that for spanning a strip, one leg of the projecting element will be shorter than that of another. It is within the purview of my invention to alternate the strips so that adjacent edges of adjacent strips have aligned convolutions and the projecting spring elements may have both arms of the same length. However, in this arrangement, the alternate projecting spring elements will have longer arms as the adjacent convolutions at alternate spaces between the strips are offset from each other.

Accordingly, the main objects of my invention are; to provide projecting spring members which span the space between adjacent sinuous strips when the ends are hooked over the convolutions thereof; to form a surface of similarly disposed sinuous spring strips which span opposite sides of a border element and provide U-shaped spring elements having reversely bent end portions which hook over convolutions of adjacent strips to have the spring element project upwardly from the space therebetween; to mount sinuous spring strips in like manner across opposite sides of a border member and provide U-shaped elements having arms of different lengths which engage offset loops of the strips when supported thereby; to mount the sinuous spring strips with adjacent convolutions aligned and secure in a pair of the adjacent convolutions, U-shaped elements having arms of similar length to have the web portions thereof aligned and projected forwardly over the space between the strips; to provide alternate projecting spring elements with different length arms to engage convolutions which are in aligned relation on adjacent edges of the strips but which are offset from the adjacent pairs of the next adjacent strips; and in general, to provide individual projecting elements which are supported on adjacent spring strips to provide a soft edge to a spring structure, which is positively anchored on adjacent strips and is readily assembled thereon.

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 sectional view in elevation of a spring construction embodying features of my invention;

Fig. 2 is a view of structure similar to that illustrated in Figure 1 showing a slightly modified form thereof;

Fig. 3 is a broken perspective view of the structure illustrated in Figs. 1 and 2;

Fig. 4 is an enlarged, broken plan view of the structure illustrated in Fig. 3; and,

Fig. 5 is a view of structure, similar to that illustrated in Fig. 4, showing a further form which my invention may assume.

In Figures 1 and 2, I have illustrated a border frame 10 which may be made of metal, wood or other suitable material, across the opposite edges of which sinuous spring strips 11 have their ends anchored by suitable clips 12. Individual U-shaped spring elements 13 span adjacent strips 11 and project over the edge of the frame to which one end of the sinuous spring strips 11 are secured. The element 13, illustrated in Fig. 2 has the end portion 14 bent upwardly at an angle to the portion containing the hook while the element 15, illustrated in Fig. 1, is disposed in a plane.

In Figs. 3 and 4, it will be noted that the strips 11 have the ends 16 extended to the left, as viewed in the figures, so that the convolutions on the left and righthand edges of two adjacent strips are out of alignment with each other. That is to say, the convolution 17 is offset from the convolution 18 on adjacent edges of the adjacent strips so that the reversely bent end portion 19 on the arm 21 hooks over the convolution 17 and is retained in position by the hook end 22. The reversely bent por-

tion 19 on the arm 23 is hooked over the convolution 18 and is retained in position by the hooked end 22. The reversely bent end portion 19 and the hook end 22 form an S-shape projection on the ends of the arms 21 and 23 as clearly illustrated in the figures. In this connection it will be noted that the length of the arm 23 of the element 13 or 15 is shorter than the arm 21 because of the fact that the convolutions 17 and 18 are out of alignment with each other. When the sinuous spring strips 11 are mounted in the same sense as illustrated in Fig. 4, all of the elements 13 are the same, being provided with a web portion 24 and arm portions 21 and 23 with the arm portion 23 of shorter length than that of the arm portion 21.

The endmost elements 25 of the soft edge structure comprise a jack spring 26 having one end anchored by a clip 12 to the base frame 10, the other end of which is formed into an arm 23 to hook over a convolution 18. The junction between the jack spring and arm portion 23 is engaged by the end of a border wire 27 which is coiled thereabout and which is joined to the web portion 24 of the elements 13 by suitable clips 28. The ends of the arms 21 and 23 are normally in adjacent relation, as illustrated in dot and dash lines, so that when spread apart to hook over the convolutions, the inherent set of the arms causes them to move to the outermost edge of the convolutions.

In Fig. 5, I have illustrated a further form which my invention may assume; that wherein certain strips 11 are mounted in the same manner as illustrated in Fig. 4, while alternate strips 31 have the ends 16 projecting toward the right, as viewed in the figure. In this construction, the adjacent convolutions 32 of one pair of edges are in aligned relation the same as the convolutions 33 on an adjacent pair of edges, the pairs of convolutions, however, being offset from each other. The projecting spring element 34 spanning the space between one pair of adjacent strips has arms 35 of shorter length than the arms 36 of the element 37 which spans the next adjacent space between the strips. As a result, the alternate elements 34 and 37 have arms of different length, so as to have the webs of the elements aligned when the ends are hooked over the aligned pairs of convolutions with the pairs offset from each other.

In either construction, I have provided U-shaped spring elements having reversely bent hooked ends which extend over and under adjacent sides of a convolution in a sinuous spring strip. When the sinuous spring strips have the same convolution employed as the anchoring ends, the U-shaped elements are the same with one arm thereof longer than the other. When the end convolution on the alternate springs is different so that the adjacent convolutions of adjacent strips are in aligned relation, the arms on the elements are equal with the adjacent elements having arms of different lengths so as to have the web portions in aligned relation when the ends are hooked over the pairs of convolutions which are offset from each other.

A border element joins the web portion of the elements and the jack spring at the end of the seat construction and provides a resilient projecting spring surface which is disposed over one edge of the frame. The surface provides a soft edge to a seat cushion and a soft back edge to a back cushion for chairs, davenports and the like.

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

What I claim is:

1. In a cushion construction, a frame, spring strips made of wire bent in zig-zag formation providing oppositely presenting convolutions spanning said frame, U-shaped elements made of wire having a web and two legs, with the ends of the legs reversely bent from a plane through the legs and formed into S-shaped hooks, with one leg of the element of greater length than the other so that the hooks may extend under and over the wires of oppositely presenting convolutions of adjacent strips to provide the sole support for the elements, a border wire joining the web portions of the elements, and means uniting the border wire to said web portions.

2. In a cushion construction, a frame, spring strips made of wire bent in zig-zag formation providing oppositely presenting convolutions spanning said frame, U-shaped elements made of wire having a web and a pair of extending legs, the ends of the legs being reversely bent and sinuously formed into S-shaped hooks, with one leg of the element of greater length than the other so that the hooks may extend under and over adjacent wires of the oppositely presenting convolutions of adjacent strips to provide the sole support for the elements, with the webs thereof aligned with the frame, a border wire joining the web portion of the elements, and a jack spring at each front corner of the frame having one end secured thereto and the other end reversely bent and secured to the spring strip with the ends of the border wire secured to the jack springs.

3. In a seat construction, a border frame, zig-zag spring strips made of wire providing oppositely disposed convolutions spanning said border frame and secured thereto, U-shaped spring elements having a web and extending legs made of wire, with the ends of the legs reversely bent and formed into S-shaped hooks on one side of a plane through said legs and web, said hooks being secured under and over adjacent wires of convolutions of adjacent strips.

4. In a seat construction, a border frame, zig-zag spring strips made of wire providing oppositely disposed convolutions spanning said border frame and secured thereto, U-shaped spring elements having a web and extending legs made of wire, with the ends of the legs reversely bent and formed into S-shaped hooks on one side of a plane through said legs and web, said hooks being secured under and over adjacent wires of convolutions of adjacent strips, with the webs of the U-shaped elements in aligned relation above the frame and spring strips.

5. In a seat construction, a border frame, zig-zag spring strips made of wire providing oppositely disposed convolutions spanning said border frame and secured thereto, U-shaped spring elements having a web and extending legs made of wire, with the ends of the legs reversely bent and formed into S-shaped hooks on one side of a plane through said legs and web, said hooks being secured under and over adjacent wires of convolutions of adjacent strips, with the webs of the U-shaped elements in aligned relation above the frame and spring strips, and a border

element secured to the webs of said U-shaped elements.

6. In a seat construction, a border frame, zig-zag spring strips made of wire providing oppositely disposed convolutions spanning said border frame and secured thereto, U-shaped spring elements having a web and extending legs made of wire, with the ends of the legs reversely bent and formed into S-shaped hooks on one side of a plane through said legs and web, said hooks being secured under and over adjacent wires of convolutions of adjacent strips, with the webs of the U-shaped elements in aligned relation above the frame and spring strips, a border element secured to the webs of said U-shaped elements, and a jack spring at each of the front corners of the frame having one arm secured thereto and the other arm reversely bent and secured to an adjacent spring strip, the ends of the border element being secured to said jack springs.

7. A soft edge producing element for a seat which has strips of sinuously formed wire spanning a frame, comprising a U-shaped spring wire having a web, and a pair of extending legs, the end portions of the legs being reversely bent from a plane through the legs and further formed into S-shaped hooks which are capable of extending under and over adjacent portions of said sinuously formed wire to constitute the sole supporting means for the element.

8. A soft edge producing element for a seat having a frame which is spanned by wire strips constructed to have spaced substantially parallel portions, comprising a wire bent in U-shape to provide a web, and a pair of extending legs, the ends of the legs being reversely bent and sinuously formed into S-shaped hooks which constitute the sole supporting means for the element when secured under and over a pair of said parallel portions, one leg of the element being of greater length than the other.

9. In a cushion construction, a frame, spring strips spanning said frame, said spring strips being made of wire bent in zig-zag formation providing oppositely presenting convolutions made up of straight portions and end loops, and U-shaped elements made of wire having a web and extending legs with the ends of the legs reversely bent and formed into S-shaped hooks, one leg of the element being of greater length than the other, said hooks extending under and over adjacent straight portions of a convolution of adjacent strips providing the sole support for said elements.

10. A soft edge producing element for a seat embodying a frame spanned by strips of wire having portions substantially in parallel relation, comprising a wire having one end reversely bent and formed into an S-shaped supporting hook, the opposite end being reversely bent and shaped into a jack spring having an extending supporting arm, said S-shaped hook being capable of extending under and over a pair of said parallel wire portions to constitute the sole supporting means for the one end of said element.

LOUIS T. MAYER.