

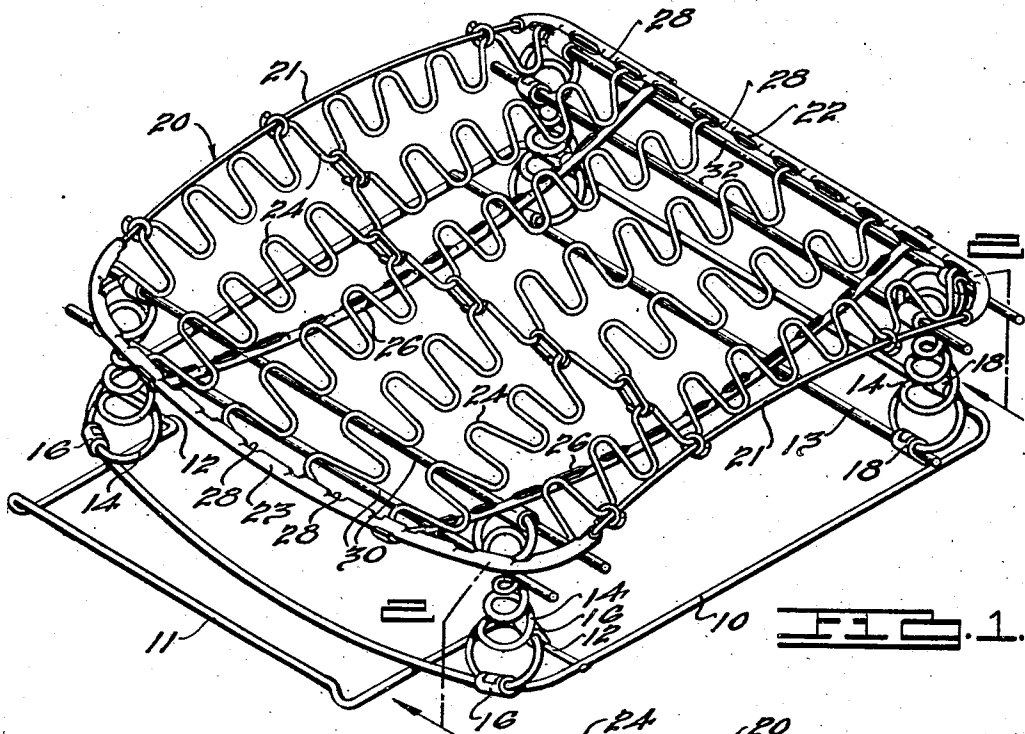
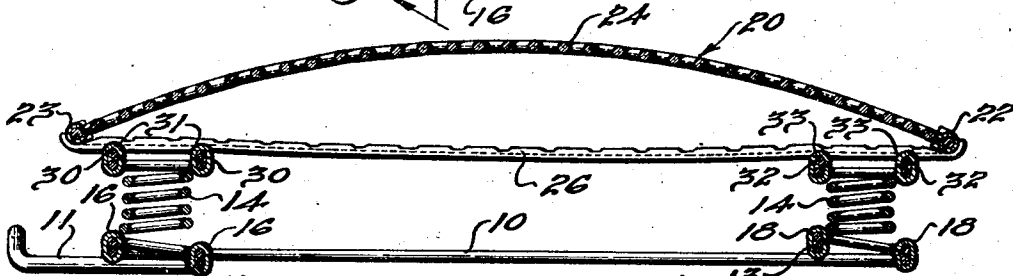
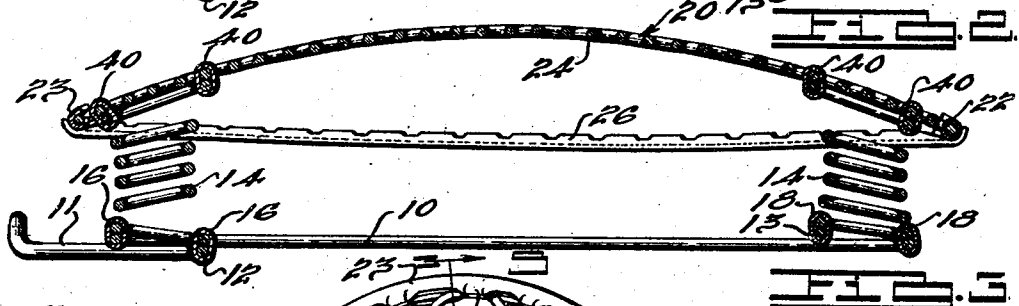
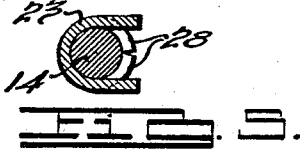
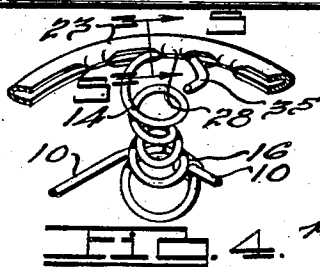
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2,158,647

SPRING SEAT CONSTRUCTION

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SPRING SEAT CONSTRUCTION

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4 Claims. (Cl. 155-179)

This invention relates to spring constructions and particularly relates to spring seat constructions.

The primary object of the present invention is to provide a resilient support between a base frame and a cushion which is connected to the cushion in such a manner as not to affect the spring characteristics of the cushion.

A further object of the present invention is to provide a resilient support between a base frame and a cushion having a soft spring surface which is so connected to the cushion that the soft spring characteristics of the spring surface are not interfered with and are retained.

Another object of the present invention is to provide a spring seat construction having a soft spring surface which is economical to manufacture.

Other objects of the invention will become apparent from the following specification, the drawing relating thereto and from the claims hereinafter set forth.

In the drawing, in which like numerals are used to designate like parts in the several views throughout:

Figure 1 is a perspective view of a seat cushion embodying features of the present invention;

Fig. 2 is a cross-sectional view taken substantially along the line 2-2 of Fig. 1;

Fig. 3 is a view similar to Fig. 2 illustrating an arrangement whereby the base frame and attaching member may be utilized with prior cushion constructions;

Fig. 4 is a fragmentary perspective view of a modified manner of attaching a coil spring to a seat cushion according to the present invention; and

Fig. 5 is a cross-sectional view taken substantially along the line 5-5 of Fig. 4.

Referring to Figs. 1 and 2 of the drawing, a seat cushion construction is illustrated which comprises a generally rectangular base frame member 10 which may conveniently be formed of a section of wire or similar material. The base frame 10 is reinforced at the rear corners by a generally U-shaped member 11 formed of a section of wire bent outwardly at 12 to form angles at the rear corners of the base. The member 11 and the bent out portion 12 may be secured to the base frame 10 by being welded thereto. The base of the U-member 11 extends beyond the rear edge of the base frame and serves to connect the seat with the seat back of a unit seat such as that disclosed in the co-pending application of Charles H. Widman, Serial No. 162,440, filed September 4, 1937. A transversely extending rod member 13 is disposed inwardly in substantially parallel relation to the front edge of the base frame 10 and is welded thereto.

A plurality of upwardly extending helical coil

springs 14 are disposed at the corners of the base frame. The coil springs are anchored at the rear edge to the rear edge of the base frame 10 and the angle portions 12 of the member 11 by clips 16; and are anchored at the front edge to the front edge of the base member 10 and to the rod member 13 by means of clips 18. The upper ends of the coil springs serve to support a cushion generally designated at 20; and are anchored to the cushion 20, according to the present invention, in a manner to be described in detail hereinafter so as not to interfere with the spring characteristics of the seat cushion.

The cushion frame construction 20 is of substantially the same construction as that disclosed and claimed in the copending application of Clarence H. Menge, Serial No. 139,765, filed April 29, 1937. The cushion frame 20 has the lateral side edges thereof formed of sections of wire 21 and the front and rear marginal edges thereof formed of border channel elements 22 and 23, respectively. The border frame elements 22 and 23 each have their ends bent to form the corners of the cushion frame 20 generally; and it will be readily seen that the ends of the lateral side frame element 21 may conveniently be crimped into the ends of the border frame elements 22 and 23 in order to provide a unitary generally rectangular cushion frame construction, which cushion frame construction is of substantially the same size and shape as the base frame 10.

The surface of the cushion frame 20 is composed of a plurality of parallel arcuately disposed continuously bent spring elements 24 of the general type disclosed in the patent to Kaden, No. 2,000,399. As disclosed in this patent, the spring elements 24 are preferably formed of wire bent to provide a series of similar adjacent lateral convolutions all lying in substantially the same arcuate surface. After the spring wire has been bent to the predetermined desired form, the spring elements are normalized in order that they will have an inherent tendency to lie along arcs of substantially smaller radius than the arcs upon which they are disposed when utilized in the construction of a seat cushion.

These spring elements 24 are cut to suitable desired lengths and are severed at such a point that they provide a last lateral convolution extending substantially transversely to the length of the spring element which last lateral convolution is utilized to anchor the ends of the spring elements in position within the border frame elements 22 and 23.

Since the spring elements making up the surface structure of the cushion construction are all tensioned to lie along arcs of substantially smaller radius than that on which they are disposed when mounted in the cushion construction, there is an inherent tendency to draw the front

border frame element 22 towards the rear border frame element 23. Consequently, in order to brace the surface frame 26 against these forces, it has been found necessary and desirable to provide suitable transverse brace elements 26 which extend transversely of the frame and have their ends welded to, or otherwise suitably secured, the border frame elements 22 and 23. In the embodiment illustrated, these brace elements 26 are shown of substantially the same configuration as the border elements 22 and 23, but this is to merely illustrate that the same stock may be used to provide the brace elements; and it is to be understood that the brace elements may be in other forms such as strips or rods. These frame members 26 are preferably arcuately disposed downwardly in order not to interfere with the function of the arcuately disposed sinuous spring elements 24.

As disclosed in the Menge application above referred to, the border frame elements 22 and 23 are preferably formed of sheet metal of rolled sections which may conveniently be formed in continuous lengths. These border frame elements are generally of channel section with the walls of the channel crimped together at spaced points 28 therealong, thus providing channels which are adapted to receive and anchor the last lateral convolutions of the spring element 24 in position within the channel.

According to the present invention, in order to connect the spiral spring elements 14 to the cushion 20 without interfering with the soft spring characteristics of the spring surface formed by the spring elements 24, transversely extending rod members 30 are disposed adjacent the rear edge member 23 in spaced and parallel relation to each other. The members 30 are preferably disposed under the brace members 26 and are secured thereto preferably by welding so that they are spaced from and do not interfere with the spring element 24. The spiral springs 14 adjacent the rear corners of the cushion are connected and secured to the rod members 30 by means of clips 31. Similar transversely extending rod members 32 are disposed adjacent the front border element 22 in spaced and parallel relationship to each other and are similarly fixed to the undersurfaces of the brace member 26 adjacent the front edge. The spiral spring element 14 adjacent the front corners are secured and fixed to the rod members 32 by means of clips 33.

It is evident from the above description that the spring surface formed by the elements 24 retains its soft characteristics and is not interfered with by the connection of the spiral springs 14 with the cushion member 20 as there is no direct or interfering connection between the spiral springs 14 and the spring element 24.

Referring to Fig. 3, a structure is illustrated in which the spiral spring elements 14 are connected directly to the spring elements 24 by means of clips 40 as in the Menge application above referred to. This figure illustrates that the cushion construction and connection of the Menge application may be used with the base frame structure and connecting member 11 of this application.

Referring to Figs. 4 and 5 a modified manner of attaching the spring elements 14 to the border element 23 adjacent the corner thereof is illus-

trated in which the free end 24 of the spring 14 may be snapped into the channel formed by the crimped-in portion 29 of the member 23. The springs 14 adjacent the front corners may be similarly attached to the border element 22.

Formal changes may be made in the specific embodiment of the invention described without departing from the spirit and substance of the invention, the scope of which is commensurate with the appended claims.

What I claim is:

1. A spring cushion construction comprising a base frame, a border frame disposed above and in spaced relation to said base frame, spring elements connected to said border frame forming a spring load supporting surface, spiral springs interposed between said base frame and said border frame adjacent the corners thereof, means connecting said spiral springs to said base frame, and members disposed inwardly of opposite sides of said border frame located below and out of engagement with said spring elements connecting said spiral springs to said border frame.

2. A spring cushion construction comprising a base frame, a border frame disposed above and in spaced relation to said base frame, spring elements connected to said border frame forming a spring load supporting surface, transversely extending brace members connected to said border frame and disposed below said spring elements, cross members fixed to said brace members, spiral springs interposed between said base frame and said border frame, means connecting said spiral springs to said base frame, and means connecting said spiral springs to said cross members.

3. A spring cushion construction comprising a base frame, a border frame disposed above and in spaced relation to said base frame, spring elements connected to said border frame forming a spring load supporting surface, transversely extending downwardly bowed brace members connected to said border frame and disposed below said spring element, cross-members fixed to said brace members, spiral springs interposed between said base frame and said border frame, means connecting said spiral springs to said base frame, and means connecting said spiral springs to said cross-members.

4. A spring cushion construction comprising a base frame, a border frame disposed above and in spaced relation to said base frame, spring elements connected to said border frame forming a spring load supporting surface, a pair of substantially parallel cross-members disposed adjacent one side of said border frame, another pair of substantially parallel cross-members disposed adjacent the opposite side of said border frame, a pair of spiral springs interposed between said base frame and said border frame adjacent said one side of said border frame, another pair of spiral springs disposed adjacent said opposite side of said border frame, means connecting all of said spiral springs to said base frame, means connecting said first named pair of spiral springs to said first named cross-members, and means connecting said second named pair of spiral springs to said second named pair of cross-members.

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