

June 3, 1941.

C. H. MENGE

2,244,469

SPRING CONSTRUCTION

Filed Dec. 19, 1938

FIG. 1.

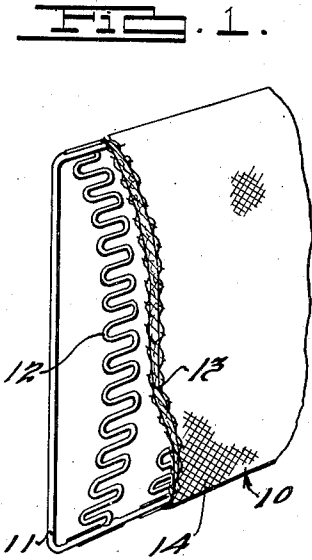


FIG. 2.

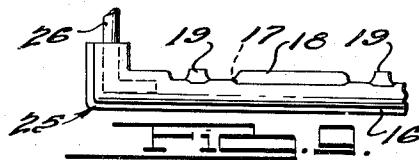
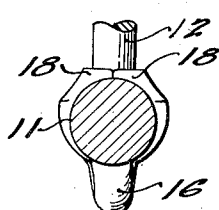
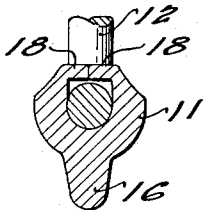
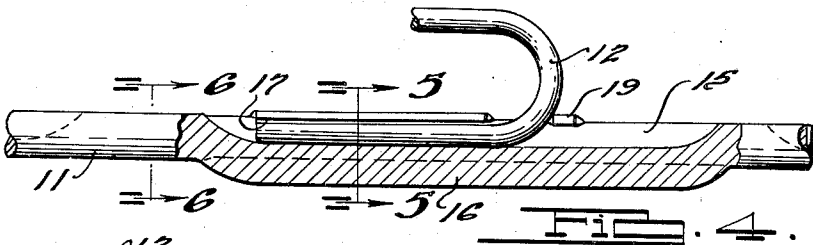
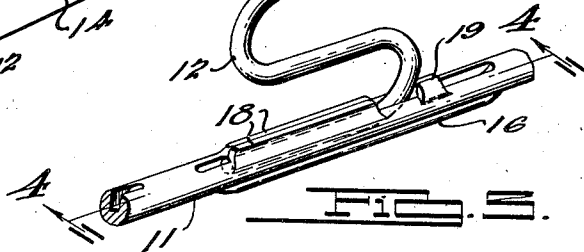
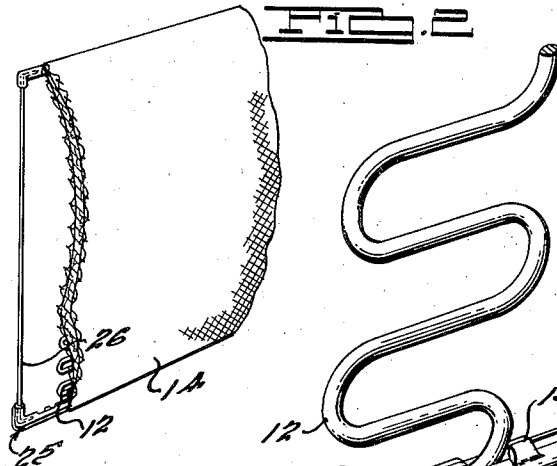
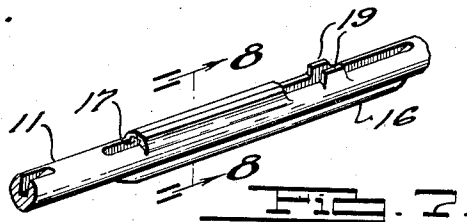
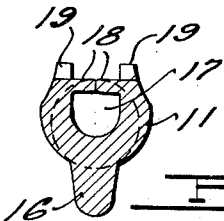


FIG. 5. FIG. 6.



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2,244,469

SPRING CONSTRUCTION

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Application December 19, 1938, Serial No. 246,558

5 Claims. (Cl. 155—179)

My invention relates to spring constructions and particularly to a border element for spring cushion seats and the like of unique and novel construction and is a continuation in part of my Patent No. 2,172,942, issued September 12, 1939.

Difficulty was experienced heretofore when employing sinuous springs of the type illustrated in the Kaden Patent No. 2,002,399, issued May 21, 1935, under which the present assignee has an exclusive license for automotive application. Solid rods having a groove therein were first employed into which the ends of the sinuous spring were inserted and retained when the sides of the walls of the wire were crimped over the ends of the spring elements. Jigs and fixtures were required on which the spring elements were placed in such manner as to have the ends free so that, upon the manipulation of the holding portions, the ends of the wire were forced into and retained in the groove of the border elements and as the elements were advanced through a clinching device the wall of the groove was crimped over the spring end.

Various other border elements were developed from rolled strips forming a channel having spaced portions crimped to form tunnels into which the ends of the wires were directly assembled. This advanced the art over the use of the solid rod having the groove therein, as the jig and fixtures were eliminated and the ends of the wires inserted directly into the tunnels of the border element and anchored therein. Through the crimping of the material back of the convolution adjacent the end, the spring ends were retained in position in the tunnel securely anchored in position. Various forms of the section have been invented and covered by applications for Letters Patent.

In practicing my present invention, I utilize a solid rod having at spaced points channels formed therein through the displacement of metal which projects from the opposite side of the rod to brace and strengthen the portion of the rod adjacent to the channel. Thereafter a portion of the metal forming the side walls of the channel was drawn upwardly and deflected to form a tunnel for receiving the end of a spring element. Tongues were struck from the channel sides beyond the tunnel which, after the assembly of the spring end, were deflected over the channel to prevent the reverse movement of the end of the element from the tunnel. A preformed border wire was constructed which retained the strength of the solid rod and which was provided with a

tunnel in which the ends of the springs were directly anchored, retained therein by the flanging of a tongue or the crimping of the end walls in the rear of the springs to prevent their removal.

Accordingly, the main objects of my invention are; to provide a border frame having channels formed therein through the offsetting of the metal, the side walls of which are deflected to form a tunnel; to provide a border element for anchoring the ends of spring strips made from solid material having tunnels formed therein through the displacement of the metal in which tunnels the ends of the springs are anchored and retained by the further displacement of the metal of the walls; to preform a solid rod to have tunnels therein for receiving the ends of spring strips which are locked in position through the deflection of the metal of the rod adjacent to the ends; to form a spring cushion from solid border elements having tunnels formed therein at spaced points in which a series of spring strips have their ends anchored to form a spring surface covered with trim material; and, in general, to provide a border frame and a seat assembly which is rigid in construction, which positively lock the spring ends in position and which is economical of manufacture.

Other objects and features of novelty of my invention will be 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 broken plan view of a seat construction embodying features of my invention;

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

Fig. 3 is an enlarged broken view in perspective of a section of the border element and spring strip assembly embodying features of my invention;

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

Fig. 5 is an enlarged sectional view of the structure illustrated in Fig. 4, taken on the line 5—5 thereof;

Fig. 6 is an enlarged sectional view of the structure illustrated in Fig. 4, taken on the line 6—6 thereof;

Fig. 7 is a perspective view of the border element illustrated in Fig. 3, before the spring element is secured therein;

Fig. 8 is a sectional view of the structure illustrated in Fig. 7, taken on the line 8—8 thereof; Fig. 9 is an enlarged broken view of the structure illustrated in Fig. 2.

The cushion 10 of Fig. 1, embodies a border frame 11 rectangular in shape across the longitudinal dimension of which sinuous spring elements or strips 12 are disposed forming an arcuate resilient surface over which padding material 13 and trim material 14 is stretched in a conventional manner.

In the figures I have illustrated in detail the border element 11 as comprising a heavy rod or wire which has been preformed by a pressing or rolling operation to provide spaced channels 15, the metal of which has been displaced to form a rib or ridge 16 opposite to the channel to maintain the strength of the rod or wire at the points where the spring elements are attached.

Tunnels 17 are formed in a portion of the length of the channel by a further operation producing a lip 18 from the metal of the sides of the channel. The lips are flanged into abutting or substantially abutting relation to form a tunnel 17, as illustrated in Fig. 8. Additional tongues 19 may be struck from the side of the channel spaced from but adjacent to the open end of the tunnel 17 in position to be flanged over after the end of the spring element 12 has been inserted in the tunnel. The tongues engage the adjacent convolution 21 to prevent the end of the spring element 12 from being moved out of the tunnel.

In Figs. 7 and 8, I have illustrated the border element before the end of the spring strip has been inserted therein to disclose the tunnel 17 and the tabs 19. The tabs are disposed in the extension of the channel walls and permit the insertion of the end of the spring in the tunnel, after which they may be flanged over to retain the spring end therein. The tabs 19 are similar to the flanged over side portion 18 but such tabs may be omitted and by deforming the metal of the walls of the channel element, the end of the spring is prevented from being moved from the tunnel.

In Fig. 2 I have illustrated a further form of my invention wherein a pair of border elements 25, instead of being continuous to form a rectangular frame, as in Fig. 1, are employed only across the front and rear edge of the cushion. The elements 25 are joined at the end by the spring wires 26 in a somewhat similar manner as that illustrated in my United States Letters Patent No. 2,106,644, issued January 25, 1938 and assigned to the assignee of the present invention. The end of the wire is inserted in the end tunnel 17 and is formed thereafter to not only bend the end of the frame element 25 but also to bend the end of the wire 26 and to thereby firmly anchor it to the border element. The channel of the border element is made continuous so that the tunnels 17 may be disposed closer to each other. The tabs or tongues 19 may be provided adjacent to each tunnel or the deforming of the side wall, after the spring end is disposed in the tunnel, may be relied upon to prevent the removal of the end. The continuous rib or ridge 16 extends along the entire length of the border element and provides additional strength at all points therealong.

In either arrangement, a solid border element is provided, having tunnels spaced therein reinforced by a ridge of material opposite thereto. The ends of the spring elements are disposed in the tunnels and anchored in place by distorting the metal of the walls of the channel adjacent thereto. The deflected metal anchors the last convolution of the elements against movement and retains the ends of the spring elements against movement and retains the ends of the spring elements within the tunnels.

While I have described and illustrated 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. A seat construction embodying a border element made from a metal rod having spaced channels with a projecting ridge disposed opposite to said channels, the sides of the channels extending over a portion of said channels to form tunnels, sinuous spring elements having their ends disposed in said tunnels, and tabs at the side of said channels deflectable thereafter to retain the ends of the elements in position.
2. A seat construction embodying border elements extending along opposite sides, made from a metal rod having spaced channel portions backed by ridge portions, the sides of said channels extending over the top of a portion of said channels to form tunnels, a plurality of sinuous spring strips extending across said border elements having their ends disposed in said tunnels, and tabs at the sides of said channels deformable thereafter to retain the ends of the spring strips within the tunnels.
3. A seat construction embodying a border element extending along opposite sides, made from a metal rod having spaced channel portions backed by ridge portions the sides of said channels extending over the top of portions of said channels to provide tunnels, a plurality of sinuous spring strips extending across said border elements having their ends disposed in said tunnels, tabs at the sides of said channels deformable thereafter to retain the spring ends within the tunnels, and resilient wires joining the ends of said border element to complete the frame.
4. A border element comprising a metallic rod having portions displaced therefrom to form channels in one face of the rod and ridges on the side of the rod opposite said channels, portions of the walls of said channels being extended and flanged over corresponding channel portions to form tunnels with their respective channel portions.
5. A border element comprising a metallic rod having portions displaced therefrom to form channels in one face of the rod and ridges on the side of the rod opposite said channels, portions of the walls of said channels being extended and flanged over corresponding channel portions to form tunnels with their respective channel portions, and tabs adjacent to the tunnel ends which are deformable over an adjacent channel portion.

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