Aug. 18, 1942. E. A. RUGGLES 2,293,563

CUSHION CONSTRUCTION

Filed May 8, 1939 2 Sheets-Sheet 1

Fig. 1.

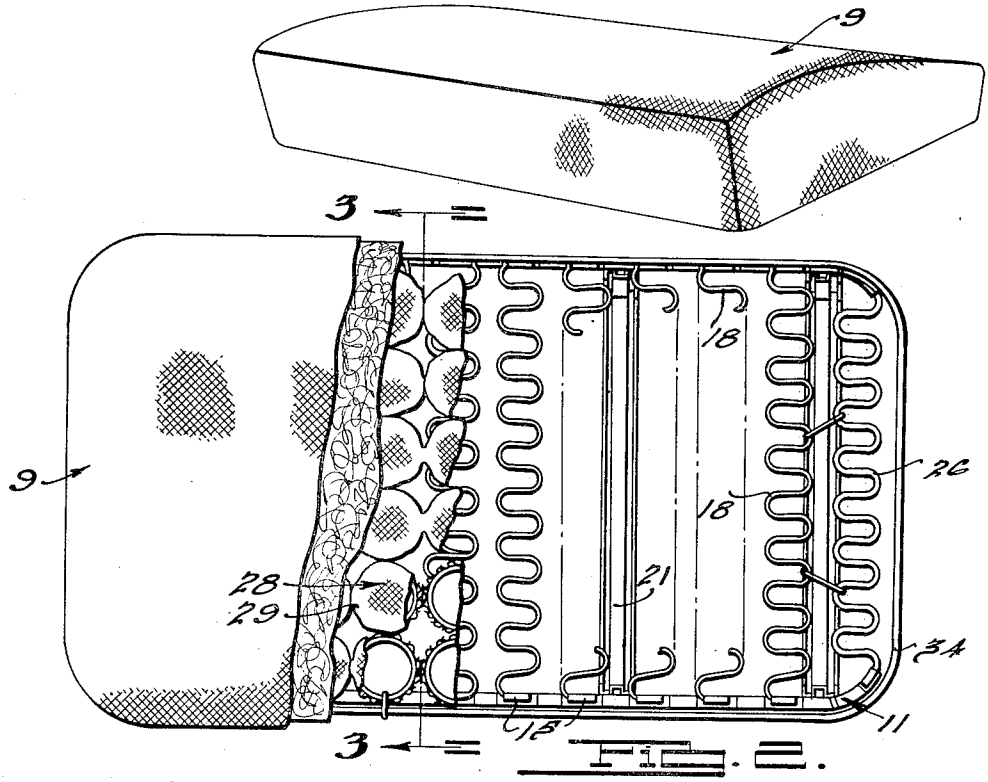

Fig. 2.

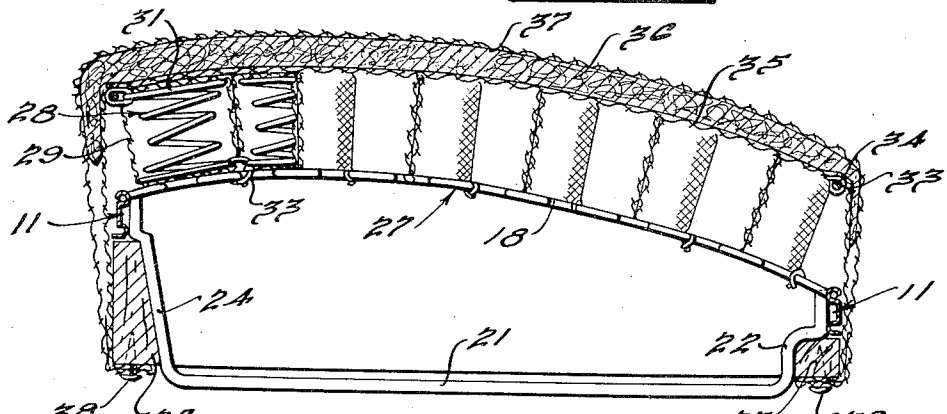

Fig. 3.

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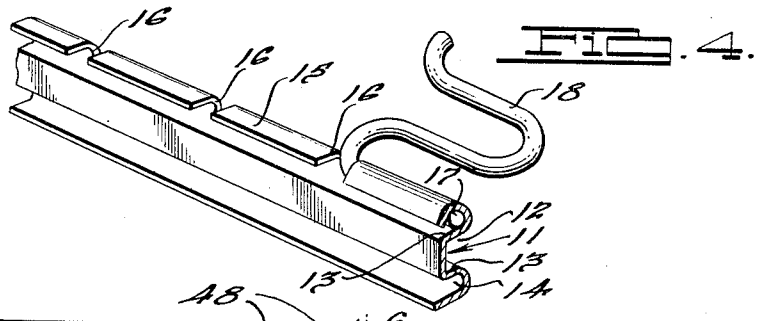

FIG. 4.

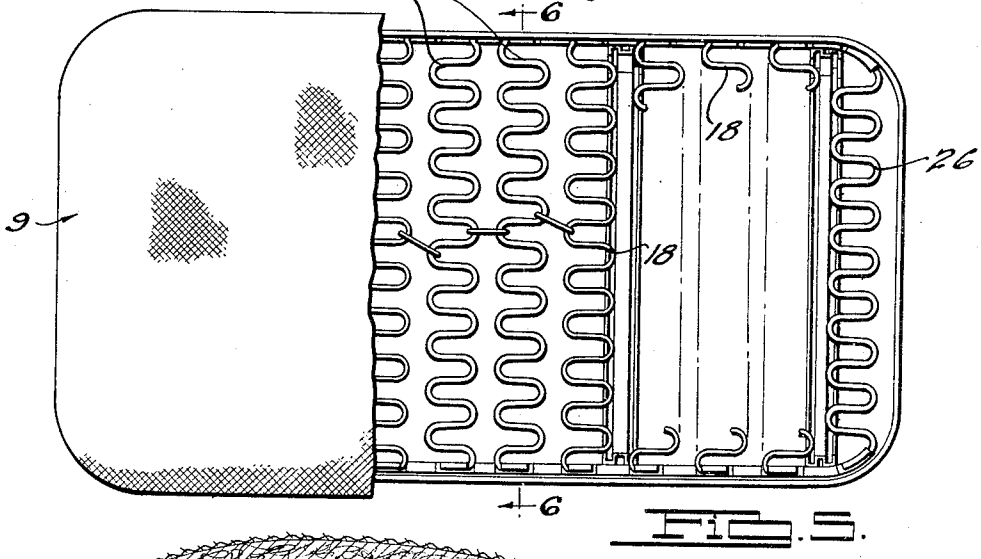

FIG. 5.

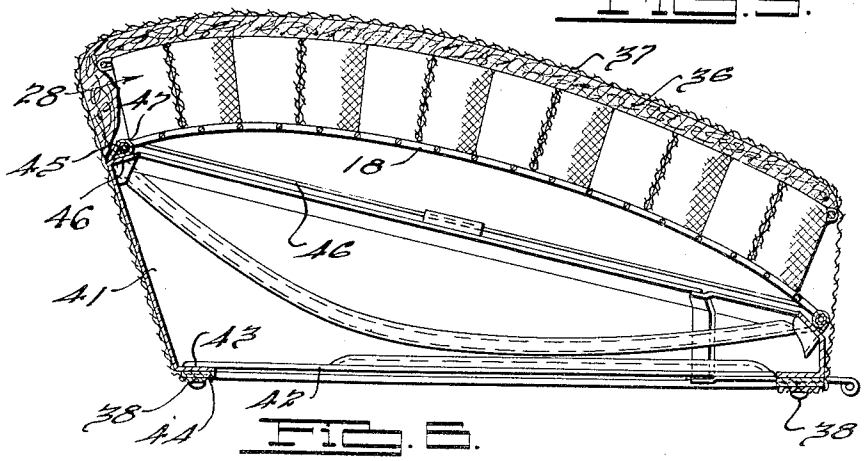

FIG. 6.

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UNITED STATES PATENT OFFICE

2,293,563

CUSHION CONSTRUCTION

Edward A. Ruggles, Detroit, Mich., assignor to The Murray Corporation of America, Detroit, Mich., a corporation of Delaware

Application May 8, 1939, Serial No. 272,338

6 Claims. (Cl. 155—179)

My invention relates to spring cushions, and particularly to a spring cushion of the composite type, embodying a spring surface supporting helical springs to provide compound spring action thereto.

Opposite border frame elements are employed of predetermined construction to provide strength, and having spaced slots in the wall of a channel section for receiving and supporting the ends of sinuous springs which form a spring sub-surface for the cushion. The two border elements are secured to the ends of U-shaped braces which extend across and form the base of the frame. The base material is of sufficient strength as to be capable of being the sole means of supporting the border frames in spaced relation. After the sinuous springs are secured in the border members, helical springs mounted in rows encased within cloth containers are placed thereon with each row disposed in alignment with one of the sinuous springs and secured thereto. Suitable means such as hog-rings, retain the rows aligned with the strips and with each other.

Longitudinally extending base members are provided below the border elements secured to the cross braces to provide further rigidity to the base as well as means to which the trim and the padding materials, disposed over the helical springs and frame, are stretched and secured. The cross bracing elements preferably extend slightly below the longitudinally extending base members to contact the seat frame or floor and to prevent wear on the trim material which projects into and is protected in the recess provided thereby.

Accordingly, the main objects of my invention are; to provide a cushion frame with a sub-spring surface and mount coil springs on said surface; to form a sub-spring surface on a cushion frame with spring strips and aligned coil springs on the strips to provide further resiliency to the assembly; to provide cross braces of sufficient number and strength to support oppositely disposed border frame elements for a cushion; to provide cross brace elements for supporting border members having an outwardly presented channel therein with the outward flange slotted at spaced points throughout its length; to support resilient spring strips on a base frame and mount on the strips rows of helical springs which are aligned with and interconnected to the strips and to each other; to mount rows of coil springs on spring strips and provide a wire about the top marginal edge of the coil springs to which they are secured to retain a predetermined form to the assembly; to mount base elements on the cross members of the frame to provide rigidity thereto and means to which the trim material is secured; and in general, to provide a composite cushion having coil springs mounted on a spring surface and over which padding and trim material is disposed and secured, all of which is simple in construction, extremely resilient, 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 drawings, wherein:

Fig. 1 is a perspective view of a cushion embodying features of my invention;

Fig. 2 is an enlarged broken, plan view of the cushion illustrated in Fig. 1;

Fig. 3 is an enlarged sectional view of the structure illustrated in Fig. 2, taken on the line 3—3 thereof;

Fig. 4 is an enlarged perspective view of a border element with the sinuous spring strips attached thereto to form the sub-spring surface of the cushion:

Fig. 5 is a view of structure similar to Fig. 2, showing a modified form thereof; and,

Fig. 6 is an enlarged sectional view of the structure illustrated in Fig. 5, taken on the line 6—6 thereof.

In Figures 1 to 4, I have illustrated a cushion 9 embodying oppositely disposed border elements 11 having a central inwardly disposed channel 12, the flanges 13 of which are reversely bent forming outwardly presenting channels 14 to provide material strength to the elements. The top flange 15 is slotted at 16 at spaced points for the purpose of receiving the ends 17 of sinuous spring strips 18, as illustrated in Fig. 4. After assembly, the flange 15 may be crimped over the end 17 of the strip to retain it in position. When the spring is so stretched when the end is disposed in the channel between the slots such an amount that an applied load would produce no extension thereof, the crimping of the flange 15 may be dispensed with since it is not likely that the end of the spring could be moved from the channel when in use. The spring strips 18 are similar to those illustrated and described in the patent to Karl Kaden, No. 2,002,399, issued May 21, 1935, and under which

the assignee has an exclusive license for automotive vehicle application.

The border elements are supported on a plurality of cross braces 21, preferably of the same cross section as that of the border elements 11 to which the border elements are welded or otherwise secured in fixed relation. The cross braces 21 are offset at the rear at 22 for receiving a bracing element 23 which is herein illustrated as a tacking strip. The front edge of the base elements 21 are offset at 24 for receiving the reinforcing and bracing element 25 which in like manner is a tacking strip to which the front edge of the trim material is secured. A sufficient number of cross braces 21 are provided to rigidly support the front and rear border elements 11 without their ends being interconnected. It will be noted in Fig. 2, that the endmost sinuous spring strip 26 is herein illustrated at being of a slightly greater gauge or wire size than the adjacent inwardly disposed strips. It is also within the purview of this invention to have one or two of the centermost strips made also of heavier gauge wire to provide soft pockets at points where the cushion will be occupied to thereby prevent the shifting or inadvertent leaning of the occupants toward each other.

A sub-spring surface 27 is formed by the plurality of zig-zag spring strips 18, the ends of which are hooked over the flanges 15 in a manner to provide an arcuate surface as illustrated in Fig. 3. A spring pad 28 is made up of a plurality of cloth pockets 29 in each of which a coil spring 31 is disposed. As illustrated in Figs. 2 and 3, the packets are provided in rows transversely of the spring strips 26 and are secured together, preferably with the springs of each row aligned with those of other rows, and are disposed over and secured to a spring strip 18. Hog-rings 33 are employed for securing the coil springs to the spring strips and to each other. A rectangular shaped border element 34 encompasses the top edge of the coil spring assembly 28, being secured to the springs 31 by the hog-rings 33 as illustrated in the figure.

Cloth material 35 is then drawn over the spring pad 28 and secured to the base elements 23 and 25. Padding 36 is disposed on the material 35, and trim cloth 37 is drawn over the assembly and tacked or otherwise secured to the base elements 23 and 25. In some instances, the inner cloth material 35 and trim cloth 37 are stitched together to form pleats with the padding material 36 therebetween. The assembled material is then drawn over the spring assembly and secured to the base elements 23 and 25 by tacks 38. It will be noted in this construction that the base elements are above the bottom of the cross members 21 out of contact with the seat frame and the floor. This protects the trim material from becoming worn through such contact.

In Figs. 5 and 6, I have illustrated a further form which my invention may assume, that of employing a stamped metal base frame 41 having reinforcing cross members 42 interconnecting the base flanges 43 on which tacking strips 44 are secured. A border frame 45 for supporting sinuous spring strips 18 is composed of adjacent tunnels and channel portions into which the ends 17 of the sinuous spring strips are disposed and secured. Such a border strip is illustrated and described in the patent to C. H. Menge, No. 2,175,062, issued October 3, 1939, and assigned to the assignee of the present invention.

In the present arrangement, the spring pad 28 has the rows of pocketed springs aligned with the spring strips 18 and are secured directly thereto by hog-rings or similar means. Thereafter the border frame 45 is disposed upon an angle ledge 46 on the top edge of the border frame 41 where it is secured by the foldable tabs 47 disposed at spaced points along the frame. Similarly, a pad 36 and trim material 37 is drawn over the assembly and about the tacking strip 44 where the marginal inturned edge is secured by the plurality of tacks 38.

It was found that, when securing the spring pad to the spring surface, the alignment of the rows of coil springs with the spring strips was important and produced the desired resiliency in like assemblies. Each row of coil springs is independent of adjacent spring strips, and is aligned with and secured to an intermediate strip of the spring surface. At the edge of the surface the endmost spring strips are preferably made of heavy gauge wire to support a greater load which may be concentrated at that point and thereby limit the degree of deflection. Similarly, as illustrated in Fig. 4, the pair of central springs 48 may be constructed from similar heavy gauge wire so that when two people occupy the seat the tendency to slide toward each other will be eliminated. The particular arrangement provides a proper deflection to the cushion and increases the contact with the occupancy and thereby decreases fatigue.

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.

I claim as my invention:

1. A cushion construction, including, in combination, a base frame embodying a plurality of cross members having upstanding ends, longitudinally extending border elements secured to said ends, said border elements having an outwardly extending flange which is slotted at spaced points to provide tongues, zig-zag spring strips having ends projecting over said tongues for anchoring said strips in the border elements, rows of pockets of fabric material, and coil springs in said pockets, each of said rows being aligned with a zig-zag spring strip and secured thereto.

2. A cushion construction, including, in combination, a base frame embodying a plurality of cross members having upstanding ends, longitudinally extending border elements secured to said ends, said border elements having an outwardly extending flange which is slotted at spaced points to provide tongues, zig-zag spring strips having ends projecting over said tongues for anchoring said strips in the border elements, rows of pockets of fabric material, coil springs in said pockets, each of said rows being aligned with a zig-zag spring strip and secured thereto, and base members spanning said cross braces and secured thereto.

3. A cushion construction including, in combination, a base frame embodying a plurality of cross members having upstanding ends, longitudinally extending border elements secured to said ends, said border elements having an outwardly extending flange which is slotted at spaced points to provide tongues, zig-zag spring strips having ends projecting over said tongues for anchoring said strips in the border elements.

rows of pockets of fabric material, coil springs in said pockets, each of said rows being aligned with a zig-zag spring strip and secured thereto, base members spanning said cross braces and secured thereto, trim material disposed over said springs, and means for securing the marginal edge of said trim material to said base.

4. A cushion construction embodying a border frame constituting a formed section having an outwardly presented flange at the top, said flange being slotted at spaced points to form tongues, spaced bracing elements having upstanding arms to which the border elements are secured, and zig-zag spring strips hooked over said tongues to form a spring surface across said border elements.

5. A cushion construction embodying a border frame constituting a formed section having an outwardly presented flange at the top, said flange being slotted at spaced points to form tongues, spaced bracing elements having upstanding arms to which the border elements are secured, zig-zag spring strips hooked over said tongues to form a spring surface across said border elements, and a spring pad embodying coil springs disposed in rows, each row aligned with one of said spring strips and secured thereto.

6. A spring cushion including, in combination, a sub spring assembly embodying a plurality of zig-zag spring strips having their ends secured to a frame to form a separate spring assembly, a plurality of coil springs, rows of connected pockets for receiving said coil springs, and means for mounting said rows of pockets and coil springs on said strips with the rows of pockets disposed transversely of said strips.

EDWARD A. RUGGLES.