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WIRE SPRING AND SPRING STRUCTURE FOR CUSHIONED SEATS AND BACKS

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FIG. 1



FIG. 2



FIG. 3

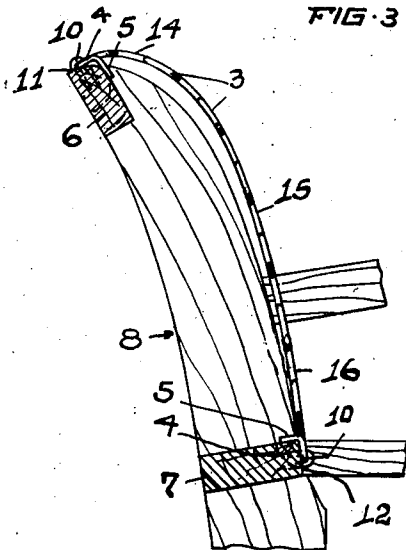


FIG. 4

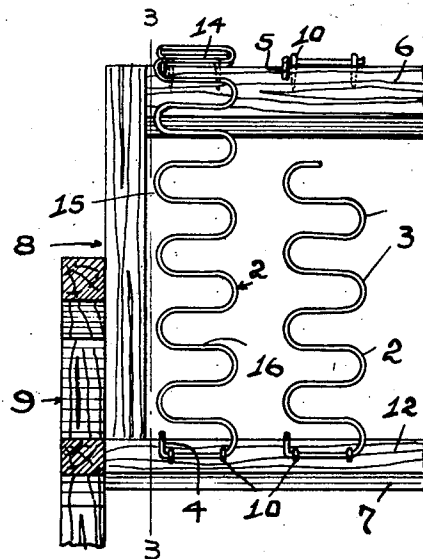
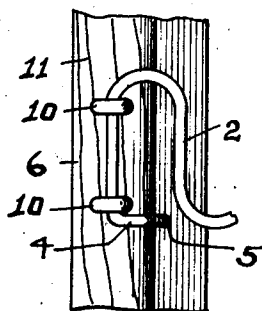


FIG. 5



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WIRE SPRING AND SPRING STRUCTURE FOR CUSHIONED SEATS AND BACKS

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3 Claims. (Cl. 155—179)

This invention relates to flat springs of sinuous or similar shape adapted to be used for backs of upholstered furniture and automobile seats, which backs generally embody a forwardly rounded upper edge portion and substantially less rounded middle and lower portions.

Presently used flat springs of the type referred to do not permit of the springs being formed to follow the desired outline of a back for upholstered furniture, due to the fact that these springs are secured under longitudinal compression to the furniture back frame in order to effect outward bulging of the central portion of the springs, and that the springs are secured to opposite or to symmetrical faces of the frame structure of the back.

It is the primary object of this invention to provide a flat spring of sinuous or similar shape which can readily and easily be attached to the frame of a back for upholstered furniture and, when properly attached, will embody a rounded upper portion and less rounded middle and lower portions.

Another object of this invention is to provide a flat spring of sinuous or similar shape embodying at opposite ends symmetrically arranged spacer- and extension-means, which spring, when properly attached to the back frame of a furniture piece, will include a rounded relatively stiff upper portion and softer, less rounded middle and lower portions.

A further object of this invention is the provision of a spring back for upholstered furniture embodying a plurality of flat springs embodying at their opposite ends spacer- and extension-means and dimensioned and secured to angularly related faces of the back frame for effecting tensile stresses in the springs and shaping of these springs to include substantially rounded upper edge portions and less rounded middle and lower portions.

In addition, the invention has certain other marked superiorities, which radically distinguish it from presently known structures above referred to. These improvements or superiorities embodying certain novel features of construction are clearly set forth in the following specification and the appended claims; and a preferred form of embodiment of the invention is hereinafter shown with reference to the accompanying drawing forming part of the specification.

In this drawing:

Fig. 1 is a plan-view of a flat spring of sinuous shape embodying the invention and

Fig. 2 is a side-view of the spring shown in Fig. 1.

Fig. 3 is a fragmentary longitudinal sectional view through the back frame of a piece of furniture having flat springs according to the invention attached thereto, the section being taken on line 3—3 of Fig. 4, and

Fig. 4 is a fragmentary front view of the spring-back frame of the piece of furniture shown in Fig. 3.

Fig. 5 is an enlarged, fragmentary plan-view of the upper inclined rail of the back frame shown in Figs. 3 and 4 with the upper end of a flat spring according to the invention attached thereto.

Referring more particularly to the drawing, reference numeral 2 represents a straight, flat sinuous spring, made of steel wire bent to sinuous shape, so that the loops 3 of the spring extend substantially parallel to each other and permit of longitudinal extension and/or compression of the spring under load. At the opposite ends the spring 2 is provided with rectangular offset portions 4, extending inwardly and arranged in the plane of the spring, which offset portions include downwardly extending end-parts or spacer means 5, rectangularly related to the plane of the spring 2. The springs 2 are attached to the top and bottom rails 6 and 7 of the back frame 8 of a furniture frame 9 by staples 10, which staples are secured to the inclined top face 11 of top rail 6 and the inclined front face 12 of the bottom rail 7 and prevented from pivotal movement towards the rails by their offset portions 4 and spacer means 5, engaging the top and front faces of these rails. In addition, the springs are dimensioned to necessitate longitudinal stretching in order to attach same in the manner described above to the top and bottom rails. This stretching effects tensional stresses in the springs and deforms same to embody substantially rounded top portions 14 and less rounded middle and lower portions 15 and 16 respectively.

It is important that the length of the springs between their fastening points is properly dimensioned to effect equal tensile stresses and equal curvatures in top, middle and bottom portions of all the springs. This is facilitated by the spacer means 5, which means, when contacting with the front and top walls of the top and bottom rails respectively insure and define the proper location of the fastening points between the springs and the upper and lower rails.

Assembly of a spring back furniture frame of the type referred to is readily and easily effected by attaching the upper ends of the springs

in properly spaced relationship to the top face of the top rail of the frame, pulling the thus fastened springs downwardly toward the bottom rail until the spacer means 5 engage the top face of the bottom rail and finely attaching the bottom ends of the springs to the side face of the bottom rail.

A spring back of the type described above has the proper stiffness at its rounded upper edge and the desired resiliency in its middle and lower portions and in addition will not bulge, when locally compressed, due to the fact that all the coils of the spring are under tension and will readily contract, when the overall length of the spring is decreased by inward bulging.

Having thus described my invention, what I claim is:

1. In a back for upholstered furniture and automobile seats a frame having top and bottom rails, and a plurality of flat springs corrugated in the plane of the springs and longitudinally stretched and secured with their ends to the top face of the top rail and the front face of the bottom rail, which front face is angularly related to the top face of the top rail, said springs having inwardly extending end portions for preventing pivotal movements of the ends of said stretched springs and said end portions having spacer means arranged at right angles thereto

for contact with the front face of the top rail and the top face of the bottom rail of said frame.

2. In a back for upholstered furniture and automobile seats a frame having top and bottom rails, and a plurality of flat springs having corrugations in the plane of said springs, said springs having their ends pivotally attached to the top face of the top rail and the front face of the bottom rail, and the ends of said springs being formed with spacer means adapted to contact with the said top and bottom rails of said frame to limit the pivotal movement of the end of said springs in one direction, said springs being longitudinally stretched between said top and bottom rails to form a substantially curved upper area and less curved middle and bottom areas in said springs.

3. In a back for upholstered furniture and automobile seats a frame having top and bottom rails, and a plurality of flat springs corrugated in the plane of said springs and longitudinally stretched and secured with their ends to the top face of the top rail and the front face of the bottom rail, said springs having off-set end portions for preventing pivotal movements of the ends of said springs when stretched between the top rail and the bottom rail of said frame.

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