

Sept. 30, 1941.

A. M. BANK

2,257,633

SPRING SUPPORT FOR UPHOLSTERED SEATS AND BACKS

Filed Oct. 23, 1940

2 Sheets-Sheet 1

FIG. 1.

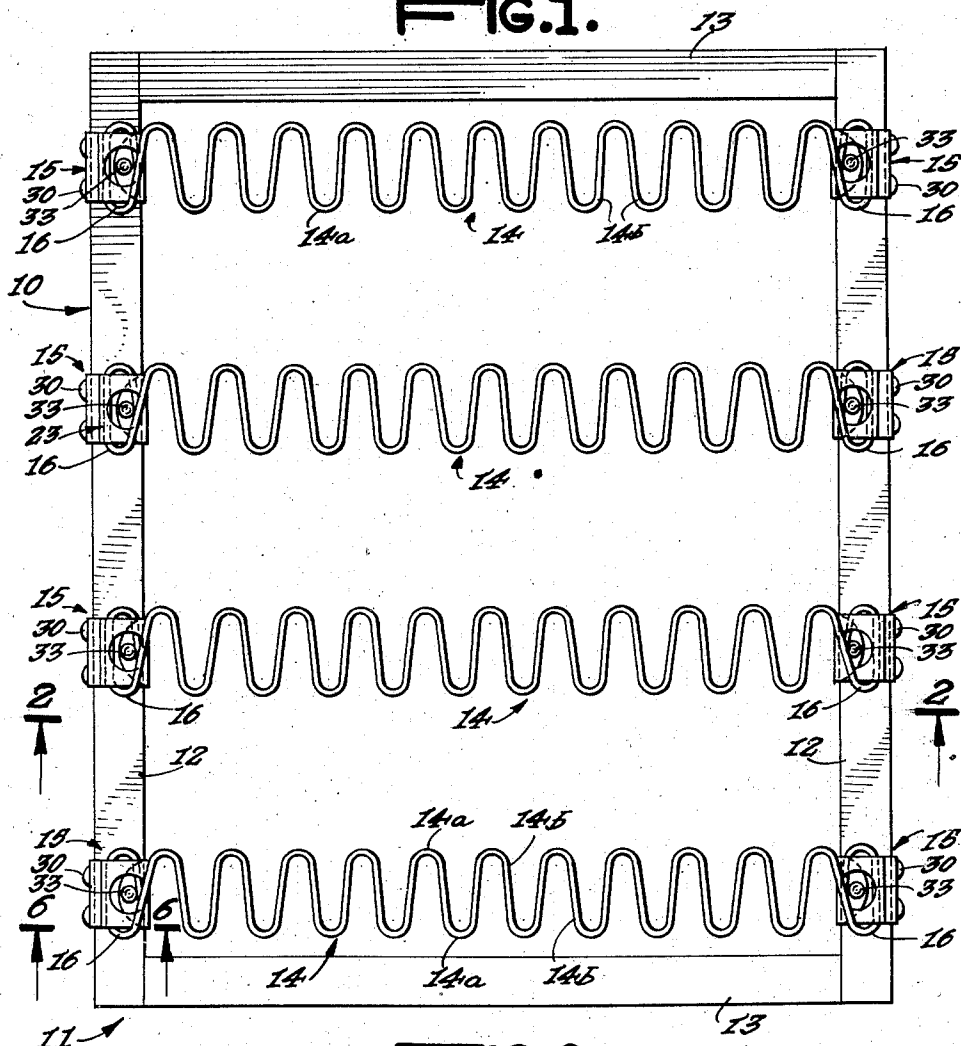


FIG. 3.

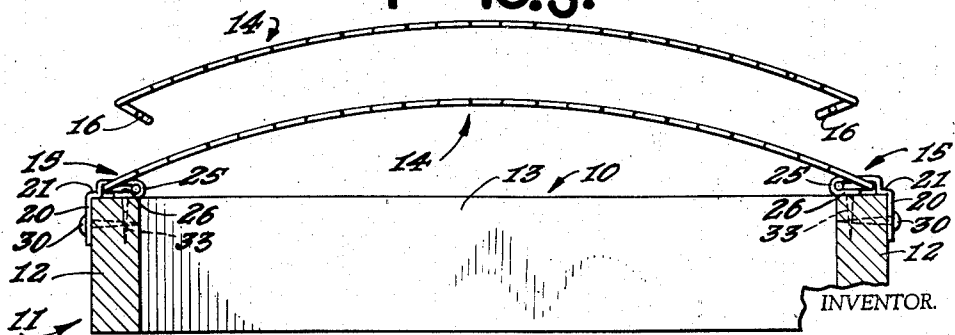


FIG. 2.

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2 Sheets-Sheet 2

FIG. 8.

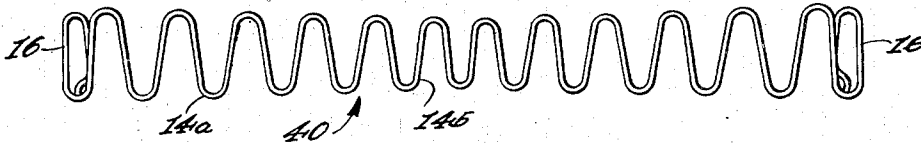


FIG. 9.

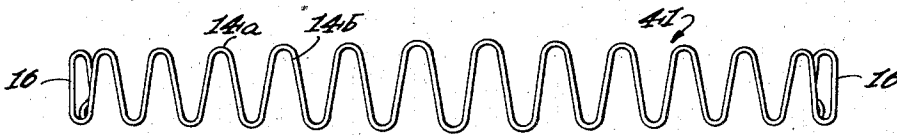


FIG. 5.

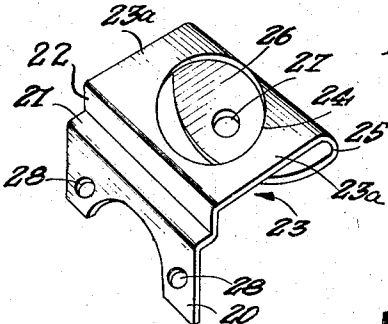


FIG. 7.

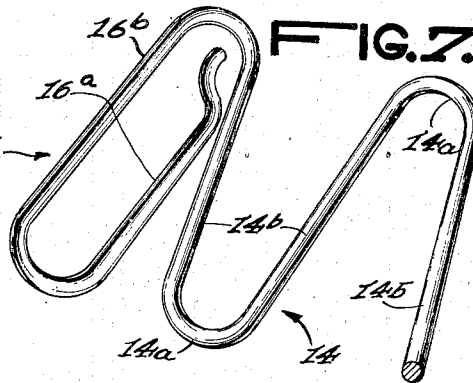


FIG. 6.

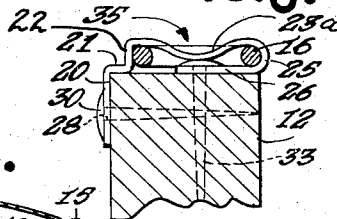
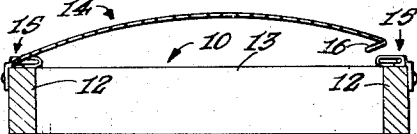


FIG. 4.



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UNITED STATES PATENT OFFICE

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SPRING SUPPORT FOR UPHOLSTERED SEATS AND BACKS

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14 Claims. (Cl. 155-179)

This invention relates to spring supports for upholstered seats and backs.

An object of this invention is to provide a seat support for upholstered furniture, which shall be extremely easy to assemble, and which when once assembled will not loosen, and in which the springs will not be subject to side sway.

A further object of this invention is to provide a spring support of the character described including a frame and a plurality of zig-zag shaped springs attached at their ends to the frame, said springs being so constructed that they will remain under tension and will not slap back when depressed below the level of the frame, said springs being furthermore so made that the arch therein may be regulated, and the resistance at various points in the spring may be varied.

Yet another object of this invention is to provide a simple, strong, rugged and durable spring support of the character described, which shall be relatively cheap to manufacture, easy to assemble, which shall be comfortable to use, and yet practical and efficient to a high degree.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts which will be exemplified in the construction hereinafter described, and of which the scope of application will be indicated in the following claims.

In the accompanying drawings, in which is shown various possible illustrative embodiments of this invention:

Fig. 1 is a top plan view of a spring seat or back embodying the invention;

Fig. 2 is a cross-sectional view taken on line 2-2 of Fig. 1;

Fig. 3 is a side elevational view of one of the springs before attachment to the frame;

Fig. 4 is a side elevational view illustrating the method of attaching the springs to the frame;

Fig. 5 is a perspective view of one of the brackets or anchors for one of the spring;

Fig. 6 is an enlarged, cross-sectional view taken on line 6-6 of Fig. 1;

Fig. 7 is a perspective view of one end of the spring;

Fig. 8 is a top plan view of a spring embodying the invention, and illustrating a modified construction; and

Fig. 9 is a view similar to Fig. 8, but illustrating a still further modified construction.

Referring now in detail to the drawings, 10 designates a spring support embodying the inven-

tion for an upholstered seat or back. The same comprises a frame 11 having side walls 12 and end walls 13. Mounted on the upper or front side of the frame 11, are a plurality of parallel springs 14 attached to the frame by means of brackets 15.

Each spring 14 is made of a single elongated piece of resilient wire. Said spring may be of sinuous shape or zig-zag, as shown in the drawings. The spring thus comprises oppositely facing U-shaped portions or turns 14a, the arms of which may be parallel, or as shown in the drawings, divergent from the rounded ends of the U, as disclosed at 14b. The spring 14 is preferably normally arched longitudinally with a preset curvature. At the ends of the spring 14 are normally inwardly and downwardly inclined looped abutment portions 16. The normal length of the spring 14 from end to end is preferably such that when the spring is attached to the frame, said spring must be stretched, as will appear hereinafter.

The loop portions 16 form abutments to aid in returning the springs to normal position after a weight imposed upon the seat or back is removed therefrom. The brackets 15 may be made of sheet metal and each comprises a wall 20 contacting the outer surface of frame wall 12, and an inwardly projecting ledger or shoulder 21 at the upper end of wall 20 contacting the upper edge of said wall. Extending upwardly from the shoulder 21 is a short vertical wall 22, from which there extends inwardly a wall 23 parallel to the upper edge of frame wall 12 and formed with a central opening 24, thus forming a pair of strips 23a on opposite sides of the central opening. Extending from wall 23, is a downwardly and outwardly curved portion 25, from which there extends a wall 26 contacting the top edge of frame wall 12, terminating short of wall 22. Wall 26 is formed with a nail or screw hole 27. Wall 20 is also formed with a pair of spaced nail or screw openings 28. The bracket 15 may be attached to wall 12 by first driving nails 30 through the openings 28.

The loop portion 16 at one end of the spring 14 is then inserted into the bracket between the walls 23 and 26. The width of the loop is preferably substantially the same as the distance which separates the vertical wall 22 from the downwardly and inwardly curved portion 25 of the bracket, so that a comparatively light blow on the loop 16 will wedge the loop into the bracket. A nail 33 may then be driven through the opening 27 down into the frame wall. The strips 23a may then be struck down with a hammer and

bent downwardly, as shown at 35 in Fig. 6. The width of the bracket is less than the length of the loop 16 so that the loop projects from opposite ends of the bracket. The downwardly struck strips 23a will therefore be disposed inside the loop to prevent the spring from working itself loose from the bracket. With one end of the spring anchored, the other end is pulled with any suitable tool, so that the loop at the other end can be inserted into the opposite bracket. After the second loop is inserted into the opposite bracket, the strips 23a of the said bracket are bent by striking down with a hammer or other tool to prevent said other end of the spring from working loose.

It will be noted that the abutments 16 are normally inclined downwardly and inwardly. In attaching the spring 14 to the frame, the spring is stretched and after the spring is attached to the frame, the abutments will be in a horizontal plane causing the arch of the spring to increase. When a weight is placed on the seat causing the spring 14 to flex, the distance between the turns 14a of the spring will decrease. If the spring is normally under no tension, such action would set a compression in the spring which might cause a tendency to slap back. However, by putting the spring under tension and attaching it to the frame, a weight imposed upon the spring will not flatten the spring sufficiently to set up any compression forces, and the spring remains under tension. The abutments aid in causing the spring to spring back to its normal shape when a weight placed upon the spring is removed therefrom. The abutments thus serve as cantilevers at both ends of the spring. The amount of stretching of the spring may be regulated to vary the arch. Furthermore, the angle of the abutments may be likewise varied depending upon the arch desired.

Furthermore, one abutment 16 may be set at a different angle from the other abutment, so as to get more of a curvature at one end of the spring than at the other. This feature may be utilized when making backs where it is desired to have a greater curvature at the upper end of the spring than at the lower end.

The opposite parallel portions 16a and 16b of loops 16 contact walls 22 and 25 of the brackets to prevent side sway of the springs 14.

It will be noted that openings 24 in the brackets permit the nails 33 to be driven through the nail holes 27. The loops 16 press downwardly on walls 26 of the brackets, thus lessening the tendency to pull the brackets out of place.

As the springs 14 are depressed the pressure is at first outwardly on portions 16b of loops 16. If the springs are pressed below the level of the upper edge of the frame, the pressure is inwardly on the inner arms 16a of the looped portions, whereby the looped portions serve as spring anchors at the ends of springs 14.

If the springs are attached to a pair of co-planer frame walls, then walls 20 of the brackets will be in the same plane as walls 21.

It will now be understood that the springs 14 are very easily attached to the frame, and when once attached thereto, will not loosen.

In Fig. 8 there is shown a spring 40 embodying the invention, and illustrating a modified form thereof. The spring 40 may be attached to the frame in the same manner as spring 14, and is similarly constructed except that the turns thereof decrease in width towards the middle. Furthermore, as the width of the turns decrease,

the distance between the arms of the U-shaped turns correspondingly decreases.

The smaller central turns being closer together, offer greater resistance than the outer turns which are more spaced apart. By making the central part of the spring with smaller turns, of less width between the arms of the U turns, softness at the middle of the spring is eliminated.

By varying the width of the turns of the spring and the distance between turns, the resistance at different longitudinal points in the spring may be made to suit the desired purpose.

In Fig. 9 there is shown a spring 41, similar to spring 40 except that the width of the turns increase towards the middle. The distance between the arms of the turns also increase toward the middle corresponding to the increase in the width of the turns.

It will thus be seen that there is provided a device in which the several objects of this invention are achieved, and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiments above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A spring support comprising a frame having opposite parallel walls, a pair of brackets attached to said opposite walls, each bracket comprising a wall contacting the outer surface of the frame wall, a wall disposed above the upper surface of the frame wall, a wall extending therefrom and contacting said upper surface, and a zig-zag shaped spring having looped ends disposed between the last mentioned walls of the brackets, and the walls of the brackets disposed above said upper surfaces being bent downwardly into said loops to hold said loops against coming out.

2. A spring support for upholstered furniture comprising a frame having opposite walls, pairs of brackets attached to said opposite walls, and longitudinally arched, sinuous shaped springs having inwardly extending, co-planer looped abutment portions at the ends thereof received in said brackets, said looped portions being normally inclined downwardly and inwardly when separated from said brackets.

3. A spring support for upholstered furniture comprising a frame having opposite walls, pairs of brackets attached to said opposite walls, and longitudinally arched, sinuous shaped springs having inwardly extending, co-planer looped abutment portions at the ends thereof received in said brackets, said looped portions being normally inclined downwardly and inwardly when separated from said brackets, and said springs being of less length when unattached to the frame so as to require stretching to attach the looped ends to the brackets.

4. A spring support for upholstered furniture comprising a frame having opposite walls, pairs of brackets attached to said opposite walls, and longitudinally arched sinuous shaped springs having inwardly extending co-planer looped abutment portions at the ends thereof received in said brackets, said looped portions being normally inclined downwardly and inwardly when separated from said brackets, said brackets hav-

ing portions projecting into the looped portions to prevent accidental loosening of said looped portions from the brackets.

5. In upholstered furniture, a frame having opposite walls, a pair of brackets attached to said opposite walls, each bracket having a wall contacting the outer surface of said wall, a ledge extending inwardly from the upper end of the wall of said bracket and contacting the upper surface of said frame wall, a wall extending upwardly from said ledge, a wall extending inwardly from said last wall disposed above the upper surface of said frame wall, a wall curved downwardly and outwardly extending from the wall disposed above the upper surface of said frame wall, and a wall extending from said downwardly and outwardly curved wall and contacting the upper surface of said frame wall, and a spring of zig-zag shape having at the ends thereof inwardly extending looped portions received between the walls of the brackets which are disposed above the upper surfaces of said frame walls and the walls of said brackets which contact the upper surfaces of the frame walls.

6. In upholstered furniture, a frame having opposite walls, a pair of brackets attached to said opposite walls, each bracket having a wall contacting the outer surface of said wall, a ledge extending inwardly from the upper end of the wall of said bracket and contacting the upper surface of said frame wall, a wall extending upwardly from said ledge, a wall extending inwardly from said last wall disposed above the upper surface of said frame wall, a wall curved downwardly and outwardly extending from the wall disposed above the upper surface of said frame wall, and a wall extending from said downwardly and outwardly curved wall and contacting the upper surface of said frame, and a spring of zig-zag shape having at the ends thereof inwardly extending looped portions received between the walls of the brackets which are disposed above the upper surfaces of said frame walls and the walls of said brackets which contact the upper surfaces of the frame walls, said looped portions having parallel arms contacting the walls which extend upwardly from the ledges and the downwardly and inwardly curved walls of said brackets.

7. In upholstered furniture, a frame having opposite walls, a pair of brackets attached to said opposite walls, each bracket having a wall contacting the outer surface of said wall, a ledge extending inwardly from the upper end of the wall of said upper surface of said frame wall, a wall extending upwardly from said ledge, a wall extending inwardly from said last wall disposed above the upper surface of said frame wall, a wall curved downwardly and outwardly extending from the wall disposed above the upper surface of said frame wall, and a wall extending from said downwardly and outwardly curved wall and contacting the upper surface of said frame wall, and a spring of zigzag shape having at the ends thereof inwardly extending looped portions received between the walls of the brackets which are disposed above the upper surfaces of said frame walls and the walls of said brackets which contact the upper surfaces of the frame walls, said looped portions having parallel arms contacting the walls which extend upwardly from the ledges and the downwardly and inwardly curved walls of said brackets, the walls of the bracket which contact the outer surfaces

of the frame walls being formed with one or more openings to receive fastening means driven through said openings into the frame walls, and the walls of said brackets which contact the upper surfaces of said frame walls being formed with openings to receive fastening means driven therethrough into the frame walls.

8. In upholstered furniture, a frame having opposite walls, a pair of brackets attached to said opposite walls, each bracket having a wall contacting the outer surface of said wall, a ledge extending inwardly from the upper end of the wall of said bracket and contacting the upper surface of said frame wall, a wall extending upwardly from said ledge, a wall extending inwardly from said last wall disposed above the upper surface of said frame, a wall curved downwardly and outwardly extending from the wall disposed above the upper surface of said frame wall, and a wall extending from said downwardly and outwardly curved wall and contacting the upper surface of said frame wall, and a spring of zigzag shape having at the ends thereof inwardly extending looped portions received between the walls of the brackets which are disposed above the upper surfaces of said frame walls and the walls of said brackets which contact the upper surfaces of the frame walls, said looped portions having parallel arms contacting the walls which extend upwardly from the ledges and the downwardly and inwardly curved walls of said brackets, the walls of the bracket which contact the outer surfaces of the frame walls being formed with one or more openings to receive fastening means driven through said openings into the frame walls, and the walls of said brackets which contact the upper surfaces of said frame walls being formed with openings to receive fastening means driven therethrough into the frame walls, the turns of the zig-zag shaped spring decreasing in width and in the distance between the turns from the outer ends of the spring towards the middle.

9. A spring support for upholstered furniture, comprising a frame and a normally longitudinally arched, zigzag shaped spring having at the ends thereof abutment portions extending inwardly beneath the underside of the body of the spring, and means for attaching said abutment portions to said frame, the straight line distance between the ends of the spring being less when the spring is unattached from the frame than when attached to the frame, so as to require stretching of the spring in order to attach the same to the frame, and said abutment portions being flexed inwardly toward the underside of the body of the spring when attaching said abutment portions to the frame, whereby said abutments are adapted to spring outwardly from the underside of the body of the spring when said abutments are separated from said frame, the width of the turns of said spring decreasing from the outer ends of the spring towards the middle of the spring.

10. A spring support for upholstered furniture, comprising a frame and a normally longitudinally arched, zigzag shaped spring having at the ends thereof abutment portions extending inwardly beneath the underside of the body of the spring, and means for attaching said abutment portions to said frame, the straight line distance between the ends of the spring being less when the spring is unattached from the frame than when attached to the frame, so as to require stretching of the spring in order to

attach the same to the frame, and said abutment portions being flexed inwardly toward the underside of the body of the spring when attaching said abutment portions to the frame, whereby said abutments are adapted to spring outwardly from the underside of the body of the spring when said abutments are separated from said frame, the width of the turns of said spring decreasing from the outer ends of the spring towards the middle of the spring, and the distance between the arms of the turns of said spring decreasing from the outer ends of the spring toward the middle.

11. A spring for a spring support made of a single piece of resilient wire arched longitudinally and of sinuous shape, and having at its ends inwardly extending abutment portions, the turns of said spring decreasing in width from the outer ends towards the middle.

12. A spring for a spring support made of a single piece of resilient wire arched longitudinally and of sinuous shape, and having at its

ends inwardly extending abutment portions, the turns of said spring decreasing in width from the outer ends towards the middle, the distance between arms of the turns of the spring decreasing from the outer ends towards the middle.

13. A spring for a spring support made of resilient wire and of sinuous shape, a plurality of turns of said spring decreasing in width from the outer ends of the spring toward the middle of the spring, the end turns of said spring extending inwardly beneath the underside of the main body of the spring to form resilient looped abutment portions at the ends of the spring.

14. A spring support comprising a frame, a pair of brackets on the frame, and a longitudinally arched, zigzag shaped spring, the ends whereof are attached to the frame by means of said brackets, the turns of said spring decreasing in width and in distance between arms of said turns, from the outer ends of the spring toward the middle of said spring.

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