

T. L. A. ADLER.
 SPRING CONSTRUCTION.
 APPLICATION FILED NOV. 24, 1909.

991,187.

Patented May 2, 1911

Fig. 2

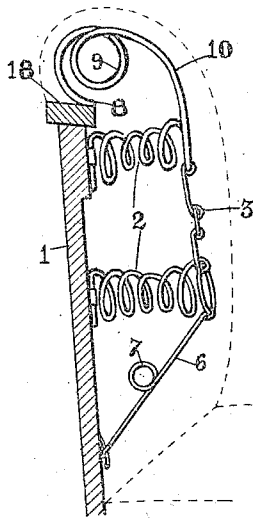


Fig. 1

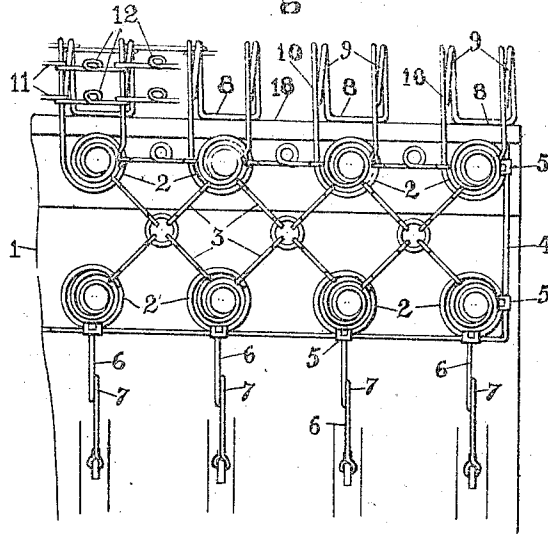


Fig. 3

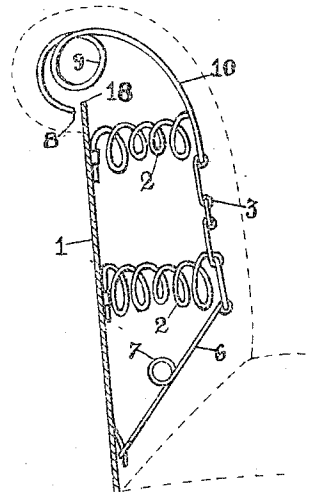


Fig. 5

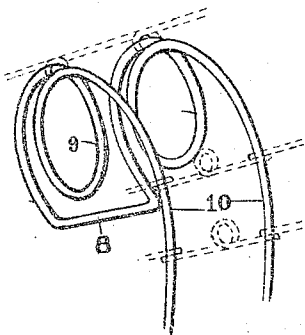
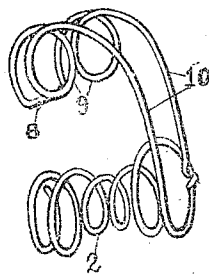


Fig. 4



Witnesses

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SPRING CONSTRUCTION.

991,187.

Specification of Letters Patent.

Patented May 2, 1911.

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To all whom it may concern:

Be it known that I, THEODOR L. A. ADLER, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Spring Construction, of which the following is a specification, reference being had therein to the accompanying drawings.

In the construction of spring backs and arms for seats, it is customary to build out the edge by a suitable roll of upholstery filling, such as hair or the like, that is secured by the seat or back covering to the margin of the rigid frame on which the main springs are placed. This does not yield uniformly with the main body and is liable to become matted or packed and to thus form a hard edge which is unpleasant to the seat occupant.

This invention relates to a cushion spring construction provided with a spring edge that yields uniformly with the adjacent portions of the body springs, and preserves the contour of the upholstery.

The invention consists in the matters hereinafter set forth, and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is an elevation of a portion of a spring structure that embodies features of the invention, some of the members being omitted; Fig. 2 is a view in end elevation thereof; Fig. 3 is a view in end elevation showing a modification of the structure; Fig. 4 is a view in detail of one of the spring members; and Fig. 5 is a view in detail showing the disposition of cross stays.

Referring to the drawings the front of a base or frame 1 is covered by a spring body structure that consists, preferably, of body springs 2, of helical or standard hour glass type, which are arranged in series and held in position by tie wires 3 or other suitable means; the sides of the structure may be reinforced by a border frame 4 secured by clips 5 or the like to the outer ends of the body springs. Stay wires 6 may be used to connect the upper coils of the main springs or the frame 4 with the members of the back frame 1 along that margin which is adjacent the seat cushion. Preferably the stays 6 are bent into loops 7 intermediate their ends so that they may yield slightly under strains.

The top of the spring cushion is formed by means of a row of edge springs each formed with two curved arms 10 which form the upper part of the face of the cushion and with the vertical coils 9 in each arm which form the top edge of the cushion, the two arms being united between the coils by a horizontal portion 8 forming a base for the support of the spring upon the top 18 of the back frame. Each edge spring is united with its arms to the top coil of the cushion spring next below and thus forms a part of such spring. As shown in the drawings the edge springs may be made integral with these springs leaving thus only one arm of each edge spring to be united.

To preserve the parallel relation between the arms of the edge springs cross stays 11 are hooked around the arms at suitable intervals and eyelets 12 may be formed in these stays to permit of yielding under strain. Preferably these connecting stays are of two types, the upper one 12 being of the eyeleted or looped form shown, or even being so resilient as to require the use of a long helical spring suitably attached to the arched portion 10 of each edge spring, while the lower stay member 19 is preferably attached to the lower portion (below the eyelet 9) of each edge spring, and is of sufficient rigidity to transmit from one spring to another any lengthwise strains imposed upon it. There is thus constituted by this series of arched edge springs and their connecting stay members an edge cushioning structure, any of whose members will yield to strain imposed directly thereon, but the degree of whose distortion is yieldingly reduced from what it would otherwise be by the pull of the stay members 12 and 19, which transmit some of the strain to the arched spring members immediately adjacent and a lesser amount to those farther from the point of greatest strain. In the case of the more or less resilient members 12, which are nearest the top part of the spring, where the greatest strain occurs, their yielding character causes a less pull to be placed on the adjacent arched springs than by the relatively unyielding lower member 19; thus the top edge, against which the user's body rests, is rendered most yielding and soft. The edge springs thus form a cushion for the upper part of the back as well as for the upper edge and it requires but little

upholstery to give it the desired appearance. By this independent action they keep this part of the cushion in proper shape and prevent the upholstery from falling down as is usually the case where the shape depends upon the use of a great quantity of curled hairs or other upholstery. The edge springs also greatly increase the action and efficiency of the adjacent cushion springs to which they are united as it releases them from the direct pressure and downward weight of the upholstery and allows them to retain their proper position. By this action of relieving some of the strain on the back cushion spring they make it possible to use a lighter and softer wire in their construction and increase the possibility of forming a very soft and elastic back and yet retain the shape of the cushion.

20 What I claim as my invention is:—

1. In combination with a supporting frame, a helical spring rising therefrom and adapted to oscillate along its helical axis an arched spring uniting the support and the free end of the helical spring, the arch extending beyond the edge of the supporting frame and forming a support for an upholstering cover extending from the plane of the top of the helical spring around the edge of the frame, and a pair of connecting and bracing members extending from the curved portion of said arch spring to corresponding portions of similar adjacent springs, one of said members being resilient and the other being relatively rigid, substantially as described.

2. A spring construction, having, in combination with a seat frame and a series of spiral springs mounted thereon somewhat interiorly of one edge thereof, a corresponding number of arched springs arranged along the edge of said seat frame and connected at their upper and inner ends with the top of said spiral springs, each curving outwardly and downwardly therefrom to a point of attachment to said frame, and having intermediate its ends an integral loop arranged within the over-extending curved portion, and a pair of connecting and bracing members extending parallel with the adjacent side of the frame and connected with each of said rail springs, the lower one of said members being relatively stiff, and the upper one being resilient, whereby the edge of the seat is made yieldingly responsive to compression strains thereon, though held from permanent distortion of individual spring members by the distribution of the strain through said lower member along the seat on other springs than those directly receiving the strain, substantially as described.

3. In a spring seat, in combination with a supporting frame, a plurality of rail springs attached thereto at their bottom ends and curving upwardly and outwardly therefrom,

with an integral loop intermediate the ends of each arm of the spring and within the curve thereof, a relatively rigid correlating member for the several rail springs, being attached to the lower portion of the curved part of each, a series of spiral springs mounted on the frame and somewhat removed from the edge thereof, to the tops of which the upper ends of said rail springs are attached, and a relatively resilient correlating member extending parallel with the adjacent portion of the frame, and attached to each of the rail springs above the point of attachment thereto of said rigid correlating member, adapted to distribute the strain on any one of the springs among those relatively remote from the point of greatest strain, while resiliently yielding thereto, substantially as described.

4. In a spring seat, the combination of a frame, a plurality of spiral springs mounted thereon at an appreciable distance from the edge thereof, a corresponding series of upwardly arched rail springs attached at their lower ends to the outer or lower face of the frame and bending outside the outer line, and above the side, of the frame to points of attachment at their upper ends to one of the spiral springs, each rail spring having a loop within the curve of its length, whereby greater resiliency is imparted to the spring as a whole, an expansible correlating member extending parallel with the adjacent portion of the frame and attached to the upper intermediate portion of each arched spring, and a relatively rigid correlating member extending parallel to said resilient correlating member, and connecting the lower intermediate portions of the several arched springs, whereby the strain placed on any one of them is distributed among the others, substantially as described.

5. An edge spring for a cushion seat, consisting of a unitary piece of spring wire adapted to be yieldingly attached at its top to the top of one of the coiled springs of the seat and to be yieldingly held thereby at the desired distance above the plane of the base, and to engage at its bottom against the lateral face of the exposed frame piece, its central portion being convolute and arched to extend over the edge of the seat frame and interiorly of the outer edge thereof at the yieldingly anchored top, whereby an upholstering cushion rested thereon may be yieldingly held from contact with the seat frame along the edge thereof, substantially as described.

6. A spring seat, having in combination with a supporting frame and a row of helical springs attached at one end of each to portions of said frame appreciably spaced from the edge thereof, a corresponding number of arched springs, one for each of the row of helical springs, and attached at their tops

to the top portion thereof, said arched
springs extending convolutely therefrom
over and outside of the edge of the frame,
with their base portions engaging there-
5 against, a relatively rigid connecting bar ex-
tending parallel to the edge of the frame and
attached to the lower arched portion of each
of said last named springs, and a resilient
connecting member extending parallel to
10 said bar and to the edge of the frame, being
attached to the upper arched portion of each

of said last-named springs, whereby a strain
imposed on any one of said arched springs
is yieldingly communicated to the other
springs and yieldingly opposed accordingly, 15
substantially as described.

In testimony whereof I affix my signature
in presence of two witnesses.

THEODOR L. A. ADLER.

-Witnesses:

ANNA M. DORR,

ANNA M. SHANNON.