W. LEWIS.

SPRING SEAT.

APPLICATION FILED MAY 5, 1914.

1,164,534.

Patented Dec. 14, 1915.

2 SHEETS-SHEET 1.

FIG. 1.

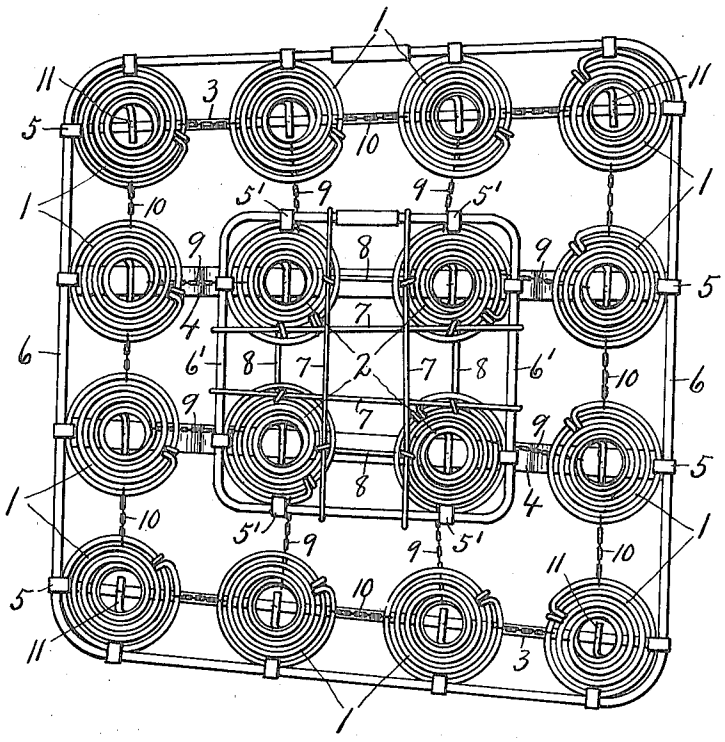
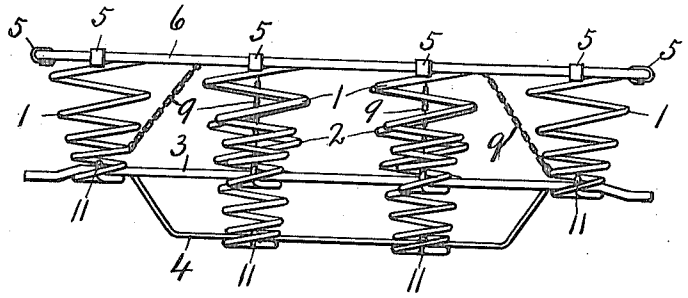


FIG. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

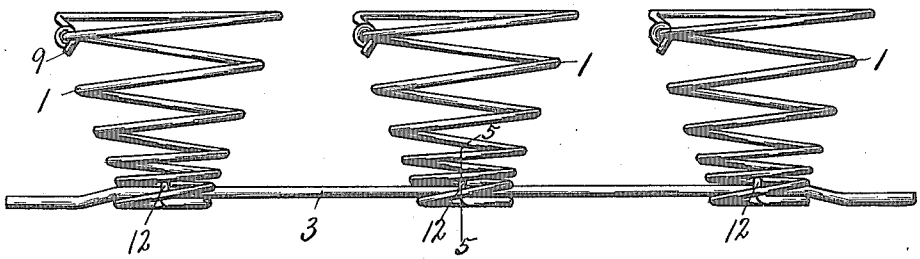


Fig. 4.

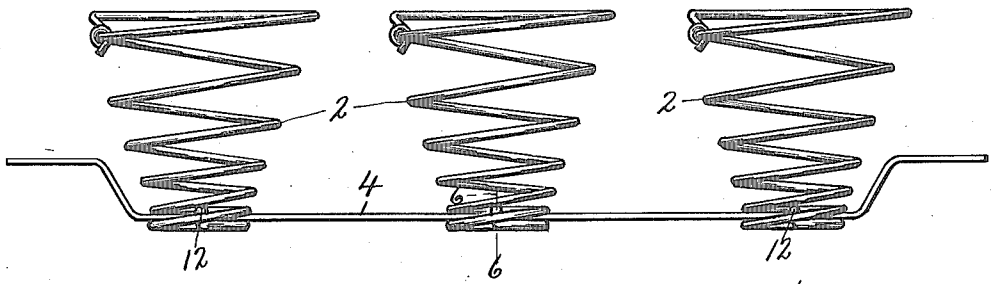


Fig. 5.

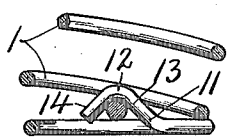


Fig. 6.

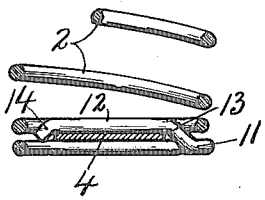


Fig. 7.

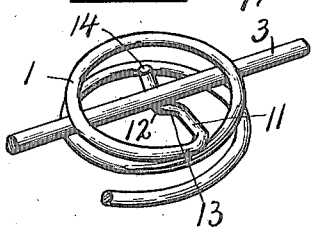
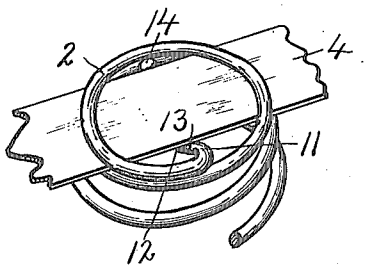


Fig. 8.



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WILLIAM LEWIS, OF UTICA, NEW YORK.

SPRING-SEAT.

1,164,534. Specification of Letters Patent. Patented Dec. 14, 1915.

Application filed May 5, 1914. Serial No. 836,481.

To all whom it may concern:

Be it known that I, WILLIAM LEWIS, of Utica, in the county of Oneida, in the State of New York, have invented new and useful Improvements in Spring-Seats, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to certain improvements in spring seats of the class set forth in my Patent No. 1,087,248 issued February 17, 1914, in which an inner set of springs is surrounded by a marginal set of similar springs so that each set may yield under pressure independently of the other set. These springs are usually mounted upon underlying supporting bars having means, such as raised bosses, transverse grooves or equivalent adjuncts, for interlocking connection with the corresponding ends of the springs to hold them in fixed relation against lengthwise or transverse movement on their supporting bars. This not only standardizes the distance between the springs but entails a considerable expense in the making of dies and operation of stamping or pressing the bosses, grooves or ribs in the bars and makes it impossible to locate the springs at any other points along the bars than those determined by the location of the bosses, grooves or ribs.

Owing to the wide diversity of opinion as to the proper distribution of springs for different classes of upholstered furniture, as for example: couches, settees, chairs and other articles of furniture requiring spring seats, it is not always possible to meet different demands with any special distribution of the springs by the use of spring supports which establishes a fixed relation of the springs without carrying in stock an excessive quantity of differently embossed bars and a corresponding equipment of dies for making the same and the primary object of my present invention is to obviate these difficulties by using plain stock bars or rods without specially constructed spring seats or bosses and to construct the adjacent ends of the coil springs so that they may be frictionally interlocked with the bars and adjusted to any position thereon without displacement therefrom and at the same time obviating any liability of displacement of the springs from the bars when in use.

Another object is to permit the use of one or more extra springs anywhere on the bar as may be necessary to impart to or maintain the desired form of the upholstering.

A further object is to provide for a more even distribution of the load which may be applied to the inner set of springs by tying all of the springs of the inner set to a marginal frame and cross bars carried wholly by the upper ends of said inner set of springs independently of the marginal frame which surrounds the outer set of springs.

Other objects and uses will be brought out in the following description.

In the drawings—Figure 1 is a top plan of a spring seat embodying the various features of my invention. Fig. 2 is a side elevation of the same seat. Figs. 3 and 4 are enlarged side elevations of modified forms of spring-supporting bars shown in Figs. 1 and 2 except that each bar carries a series of three springs instead of four. Figs. 5 and 6 are enlarged sectional views taken respectively on lines 5—5, Fig. 3, and 6—6, Fig. 4, showing the manner of connecting the lower ends of the springs to their respective bars. Figs. 7 and 8 are inverted perspective views of the lower ends of the springs and adjacent portions of their supporting bars shown in Figs. 3 and 4.

I have shown my invention as used in connection with spring seats having a marginal series of conical coil springs —1— running around the four sides and an inner series or set of, in this instance four, similar coil springs —2—, the entire series of both sets being arranged in rows upon the outer side and intermediate supporting bars —3— and —4— in a special manner hereinafter described. The outer sides of the upper convolutions of the marginal set of springs are connected by tie-pieces —5— to a marginal frame —6—, preferably of wire and continuous around the four sides of the seat. In a like manner, the outer sides of the uppermost convolutions of the inner set of springs —2— are connected by tie-pieces —5′— to a separate substantially rectangular marginal frame —6′— having its opposite sides connected by cross bars —7— extending across the inner sides of the uppermost convolutions of the springs —2— and connected by tie-pieces —8— which are also interlocked with the adjacent convolutions of the springs.

As shown more clearly in Figs. 2, 3 and 4, the outer sides of the upper convolutions of the springs —2— are connected by down-

wardly and outwardly inclined chains —9— to the inner sides of the lower convolutions of the outer set of springs —1— in the same row to normally center the inner set of springs within the outer marginal set, and at the same time, keep the upper ends of such inner set in approximately the same horizontal plane as those of the outer set or in such plane as may be previously determined upon according to the length of the springs and chains.

The marginal frame —6'— and cross bars —7— serve to distribute any load which may be applied to or in the vicinity of any one spring to all of the other springs of that set, the same being also true of the marginal frame —6— for the outer set of springs so that each set may yield under pressure independently of the other set.

The adjacent sides of the upper convolutions of the outer set of coils are connected by chains —10— which together with the tie-pieces —5— and marginal frame —6— serve to hold these springs against relative lateral displacement and at the same time allows a limited yielding action of each.

The spring-supporting bars —3— and —4— extend in the same general direction and, therefore, the springs which are mounted thereon are arranged in rows lengthwise of the bars and, being substantially equal distances apart, are also arranged in rows transversely. The portion of each bar, with which the lower or smaller ends of the corresponding row of springs are slidably interlocked, are straight and of substantially the same cross sectional area to permit the adjacent ends of the springs to be adjusted to any position along such bar without removal therefrom after having once been interlocked therewith, the object of which is to enable the assembler to properly distribute the springs wherever desired along said straight portions without detaching them. For this purpose, the convolutions at the smaller ends of the springs are preferably arranged close together and the bar for that particular row of springs is passed diametrically between these convolutions so that the adjacent convolutions are spring-pressed under their own tension against opposite faces of the bar to frictionally hold the springs in their adjusted positions and at the same time permit the sliding adjustment referred to. The lower terminal ends —11— of the springs are offset diametrically of and within the adjacent end of the coil and extend across the upper face of their corresponding bar as shown more clearly in Figs. 5 and 6 where they are again deflected to form concave seats or open-sided loops —12— having opposed shoulders —13— and —14— engaging opposite edges of said bar to firmly hold the adjacent end of the springs and bar against relative transverse movement without in any way interfering with the free sliding adjustment of said springs along and upon the bars to whatever position may be desired. These offset arms —11— are spring-tensioned against the upper faces of their respective bars which not only serves to increase the frictional grip of the offset upon the bar but also tends to draw the adjacent convolutions more snugly against the lower and upper faces of the same bar.

The outermost bars —3— are preferably made of round wire but the innermost bars consist of flat metal strips. These flat metal strips are particularly efficient in holding the springs against rocking movement either transversely or lengthwise of the bar, while the use of the round rods are more effective in preventing rocking movement of the springs lengthwise of the bars, but by using both the flat strips and the round rods in connection with the same system of springs, tied together in the manner described, it will be noted that the convolution just above the bar has two relatively long bearings thereon while the lower convolution also has two relatively long bearings which, together with the relatively long bearing of the corresponding offset or open loop —11—, all tensioned in the manner described, tend to hold the springs in their adjusted positions with a considerable amount of friction and at the same time prevents rocking movement of the spring either lengthwise or transversely of the bar, the springs in turn serving to prevent transverse rocking movement of the bar. This particular connection of the spring with either bar and particularly with the flat bar forms one of the main features of my invention, and while I have shown and described a system of springs for a seat, I do not wish to limit myself to the use of any particular number of springs nor to their application to a seat since the same invention may be applied to spring backs for chairs, couches, settees and other pieces of upholstered furniture.

What I claim is:

1. In a spring seat, a spring-supporting bar having a straight portion of uniform cross sectional area throughout its length and of sufficient length to support a plurality of helical springs side by side, and a conical helical spring having its smaller end supported on said straight portion of the bar and slidable lengthwise thereof, the lowermost convolution being engaged with the under side of the bar and the terminal end thereof extended across and upon the upper face of the bar.

2. In a spring seat, the combination of a spring-supporting bar having a straight portion of sufficient length to support a plurality of helical springs side by side, and the helical springs having their lower ends slid-

ably interlocked with said bar for relative adjustment lengthwise thereof, the lowermost convolutions of said springs engaging the under side of the bar and having their terminal ends extended across the upper side of said bar and tensioned to frictionally engage the same.

3. In a spring seat, a plurality of spring-supporting bars extending in the same general direction some distance apart, an outer marginal set of coil springs supported on said bars, a marginal frame running around said outer set of springs and attached to the upper convolutions thereof, an inner set of springs supported by the corresponding bars, and a separate frame supported by the upper convolutions of the inner set in approximately the same horizontal plane as that of the marginal frame and movable under pressure independently of the marginal frame.

In witness whereof I have hereunto set my hand this 28th day of April, 1914.

WILLIAM LEWIS.

Witnesses:
EMORY J. WELLER,
WM. WALKER LEWIS.