Sept. 17, 1929. H. JOSEPHSON 1,728,289

FURNITURE SPRING

Filed Aug. 23, 1926

Fig. 2

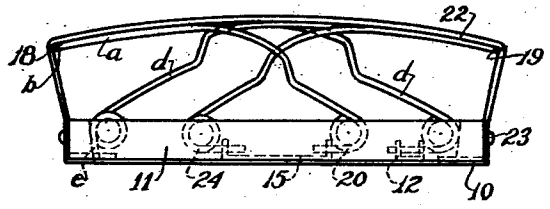


Fig. 3

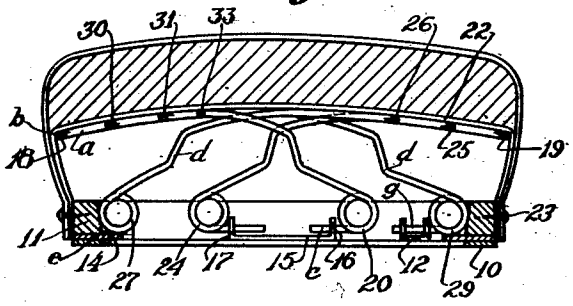


Fig. 1

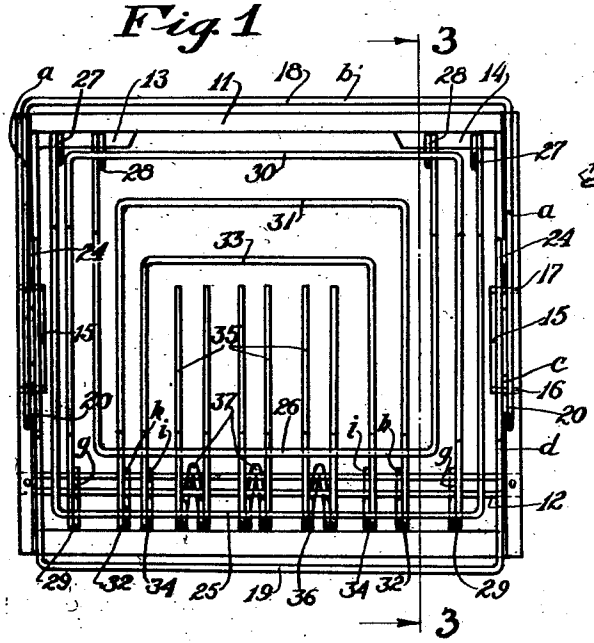
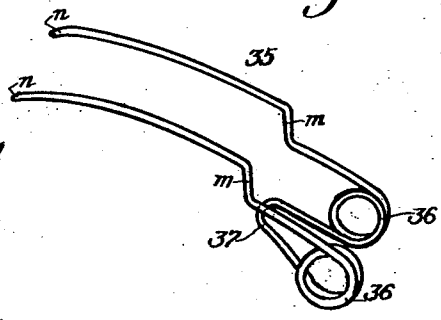


Fig. 4.



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Patented Sept. 17, 1929 1,728,289

UNITED STATES PATENT OFFICE

HARRY JOSEPHSON, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR OF ONE-HALF TO THE JOSEPHSON BAG COMPANY, OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF CONNECTICUT

FURNITURE SPRING

Application filed August 23, 1926. Serial No. 130,788.

My present invention relates to improvements in furniture springs of the class shown and described in my prior Patent #1,369,441, dated February 22, 1921; and, as will be noted, relates more particularly to spring means for cushioned seats, such as are employed in automobiles, davenports, chairs, and in other various kinds of furniture, and over which a suitable cushion covering is employed.

The object of the invention is to generally improve upon spring means for seats of this class, and particularly to produce a durable and flexibly-resilient seat of simple and inexpensive construction, and whereby the cushion and load to be carried thereby will be uniformly and comfortably supported without the springs being noticeably felt through the cushion at any point, thereby insuring a comfortable spring seat upon which to sit.

A further feature of the invention is to construct and support these springs in relation to each other, so that they will automatically resume and retain their shape when not in use, and to provide in the rear part of the seat, added support and resistance where the heaviest part of the load is usually supported.

With the above and other objects in view, an embodiment of the invention is shown in the accompanying drawing, and this embodiment will be hereinafter more fully described with reference thereto; and the invention will be finally pointed out in the claims.

In the accompanying drawings:—

Fig. 1 is a top plan of my improved spring, on a reduced scale, as it appears when assembled upon a frame, preparatory to being covered with upholstery of any preferred character;

Fig. 2 shows an end view of the spring and frame, as seen from the left of Fig. 1, and enclosed with a suitable flexible covering;

Fig. 3 is a cross sectional view taken on line 3—3 of Fig. 1, illustrating the flexible covering shown in Fig. 2, and additional upholstery upon the covering; and

Fig. 4 shows a perspective view of one of a series of spring members employed in the central portion of the spring.

Referring, in detail, to the characters of reference marked upon the drawings, 10 represents a metal frame member upon which is secured a suitable wood frame 11 to which the coverings for the springs and seat may be nailed. The ends of a metal channel frame member 12 is secured to the opposite side portions of the frame 10 and serves as a means to which a number of the spring members are attached, as will later be explained. Short metal plates 13 and 14 are secured to the rear metal frame member 10, and serve for the attachment and support of spring members, as will again be referred to. A special form of plate 15 having upturned end portions 16 and 17 are secured to each of the side members of the metal frame 10 (see Fig. 3) and serve for the attachment and support of the outermost U shape spring members 18 and 19 which are disposed in crossed and opposite relation to each other.

The spring 18, like a number of other springs included in the assemblage, is of a general U-shape and has its side portions *a*—*a* disposed in parallel relation with the side members of the frame, and its outer portion *b* disposed lengthwise across the rear and in spaced and parallel relation to the front frame member. A coil 20 is provided in the end portions of each of the side members *a*—*a*, and the ends *c* of the wire, proper, are positioned and secured in holes in the upturned ends 16 of the plates 15—15. The positions of these two coils of this U-shaped spring member are in opposite relation to each other, though in alignment, and the tension of the side coils is obviously to force the body portion of the spring upward against the covering 22 stretched down at the sides and end portions and nailed to the wood members of the frame 11, as shown at 23.

The spring 19 is somewhat similar in design to the spring 18 and serves in substantially the same way to provide spring means, but in this instance for the front

edge portion of the seat. The coils 24 formed in the end portions of this spring member 19 are situated to the rear of the coils 20 and are provided with inwardly-disposed ends which are mounted in the upturned ends 17 of the plates 15—15. By this positioning of the coils, and the securement of the end portions and oppositely disposing loop ends of the spring, the side portions of the said springs are crossed in close proximity to each other and thereby form a spring support for the two opposite side portions of the seat and cushion to be mouted thereon. These side members of the springs 18 and 19 are each provided with an upwardly and forwardly disposed bend *d* which serves to position the bearing portions of the springs, higher and close against the covering therefore.

The front portion of the spring seat is preferably provided with three U-shaped springs, of different sizes, and positioned one within the other in spaced relation to each other. The spring 19 is included in this series and as before stated, is supported in the angle plates 15, whereas the inner springs 25 and 26 are supported in the plates 13 and 14, secured to the frame. Each of these U-shaped springs 25 and 26 are of substantially the same shape but of different sizes, and like the outer spring member 19, comprises longitudinally disposed front members and side members arranged parallel with the side members of the before mentioned spring 18 and in spaced relation thereto.

The intermediate spring 25 is provided with a coil 27 in each of its end positions and has its end *e* disposed through the before mentioned plates, whereby the said spring is secured in position. The inner spring 26 also includes front and side portions and a coil 28 adjacent to each end and like the spring member 25, has its end seated in holes of plates 13 and 14. These springs are of different length and are so positioned and proportioned as to provide yieldable bearing surface for the front portions of the seat.

The rear portion of the spring seat is preferably provided with a greater number of U-shaped springs than the front portion, inasmuch as a greater part of the load comes on the rear, especially where the spring is used as an automobile seat. These rear springs like the front springs are graduated in size and arranged in spaced relation one within the other.

Aside from the outer-most spring 18, before mentioned, these rear springs are supported in the channel iron 12, before mentioned, forming a part of the frame. A coil 29 is formed in the end portion of the side members of the spring 30, and the ends proper designated as *g*—*g* are positioned in aligned holes through the flanges of the before mentioned channel iron 12.

A similar though smaller U-shaped spring 31, is positioned inside of the loop of the before mentioned spring 30, and includes a coil 32 in each of its end portions and an end *h* which is disposed through holes in flanges of the channel iron. 33 indicates the smallest and inner-most one of the U-shaped spring members, and is positioned within the before mentioned spring 31 and is provided with coils 34 and ends *i* that are also positioned in aligned holes of the webs of the channel iron 12. These U-shaped springs disposed rearward are supported on the front portions of the frame while the springs 19, 25, disposed forward, are attached to the rear portions of the frame and are positioned between the first mentioned series, so that the consecutive springs are arranged and projected in opposite directions, front and back.

In addition to the several U-shaped springs alternately disposed in opposite forward and rearward directions, I provide a series of shorter springs 35, which are preferably formed in pairs and of a single piece of wire. Each of the spring arms are yieldably supported through a coil 36 and by means of integral loop portion 37 formed of the wire connecting the coils, said loop member being formed and secured in holes of the flanges of the channel iron 12, attached to the frame. The arms of these spring members are bent upward and forward as at *m* in substantially the same way and same purpose as the bends *d* in the U-shaped spring members. The coils of these springs as well as the coils 29, 32, and 34, are positioned between the outer flange of the channel iron and the inner-face of the front member of the wood frame.

The extremities of the arms 35 of the short spring members are bent down as at *n* so as to avoid any possibility of said ends wearing or puncturing the cover enclosing the springs.

From the foregoing, it will be seen that I have provided an assemblage, of springs, mounted upon a frame which will provide a uniformally yieldable support for a cushion or other upholstery when supported thereon; thereby, insuring a comfortable seat having reinforced means for yieldably supporting that portion of the seat where the heaviest load is liable to occur.

Having thus described my invention what I claim and desire to secure by Letters Patent is,

1. A furniture spring comprising a frame, a series of U-shaped spring members secured to one portion of the frame, a second series of U-shaped spring members secured to an opposite portion of the frame, said spring members being disposed inward crossing one another and spaced apart and

having their yieldable end portions positioned in opposite relation.

2. A furniture spring comprising a frame, a series of U-shaped spring members secured to one portion of the frame, a second series of U-shaped spring members secured to an opposite portion of the frame, said spring members being disposed inward in alternate relation and out of contact, and having their yieldable end portions positioned on opposite sides.

3. A furniture spring comprising a frame, a series of U-shaped spring members secured to one portion of the frame, a second series of U-shaped spring members secured to an opposite portion of the frame, said spring members being disposed inward and having their yieldable end portions positioned on opposite sides, and additional spring members secured to the frame and positioned within the U-shaped spring members and independent thereof.

4. A furniture spring comprising a frame, a series of spring members having their two end portions secured to one side portion of the frame and including a coil adjacent to said end portions, and outwardly extended yieldable arm members projected from the coils and including abruptly upwardly and outwardly bent intermediate portions to elevate the supporting end portions of the spring arms.

5. A furniture spring comprising a frame, a spring member secured to the frame and including a loop portion formed intermediate of the spring wire for attachment to the frame, coils formed adjacent the two side members of the loop and arms of the spring, and arms projected outward from each coil in the general direction of the loop, and projected upward therefrom to form independent yieldable spring arms.

6. A furniture spring comprising a frame, a series of U-shaped springs secured to one portion of the frame, a second series of U-shaped springs secured to an opposite portion of the frame, the yieldable arms of one series being disposed inward across the arms of the opposite series.

7. A furniture spring comprising a frame, a U-shaped spring member secured to the front of the frame, a U-shaped spring member secured to the rear portion of the frame, and U-shaped spring members secured to the end portions of the spring frame, said spring members being disposed inward and upward in alternate relation and acting independent of each other.

8. A furniture spring comprising a frame, including a channel iron having holes therein, a series of springs, each of said springs including coils and a loop connecting said coils, said loops positioned in the holes in said channel iron, and independently yieldable spring supporting arms projecting from each of said coils and disposed above the loop, said arms being operable independently of each other.

Signed at Bridgeport, in the county of Fairfield and State of Connecticut, this nineteenth day of August, A. D. 1926.

HARRY JOSEPHSON.