

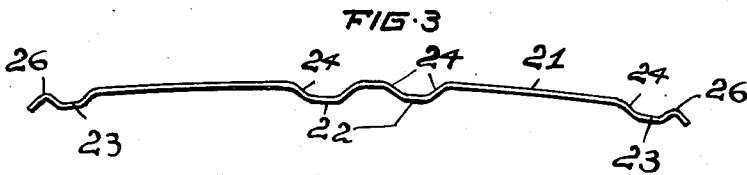
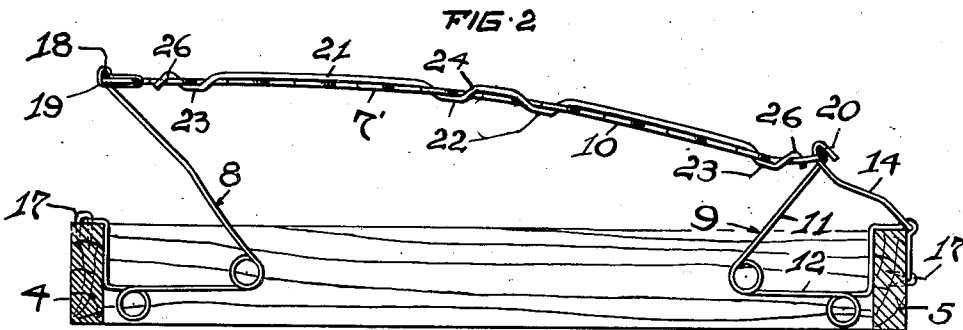
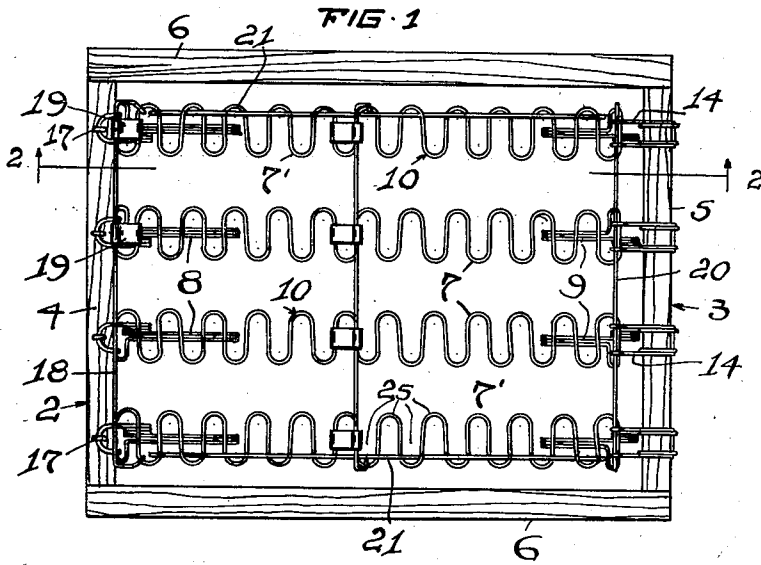
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REINFORCING MEMBER FOR FLAT WIRE SPRINGS

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REINFORCING MEMBER FOR FLAT WIRE SPRINGS

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5 Claims. (Cl. 155-179)

This invention relates in general to flat springs of sinuous or similar shape for use in seat structures of upholstered furniture, cushioned automobile seats or the like and more particularly to simple and economic means for stiffening flat springs of this type. These springs generally embody an axially compressible and extensible seating portion supported at its opposite ends by yielding supporting means integrally formed with the seating portion or rigidly connected therewith to effect upward bulging of the seating portion when a load is placed thereon. In seat structures built up from such flat springs, the seating portions thereof are interconnected, so that all springs, except the two outer springs, co-operate with the adjoining two springs in support of a load. This joint action of the springs makes it possible to manufacture flat springs for seat structures from relatively light wire, with the exception of the two outer springs which must be re-enforced by side edge wires of substantial thickness, rigidly clamped to the individual coils of the springs, or these outer springs must be manufactured from heavier wire stock, both of which procedures are expensive in time and costs.

The general object of the present invention is to overcome above described deficiencies in the manufacture of spring seat structures by the provision of simple and economic re-enforcing means for flat springs of sinuous shape, which means are constructed to be readily and easily interengaged and interlocked with the seating portions of the springs without use of extra clamping or other fastening means.

Another object of the invention is the provision of a wire re-enforcing means for flat springs of sinuous shape, which means has arranged therein specifically sized and located recesses permitting interweaving of the re-enforcing means with the open loops of sinuously shaped flat springs.

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

In the drawing:

Fig. 1 is a plan view of a seat structure embodying flat springs with sinuously shaped seating

portions, the two outer springs showing re-enforcing wire members interwoven with the coils of their seating portions.

Fig. 2 is a perspective view of one of the flat springs with a sinuously shaped seating portion re-enforced by two re-enforcing members interwoven with the coils of the seating portion of the spring; and

Fig. 3 is a perspective view of the wire re-enforcing member.

Referring now more particularly to the drawing, reference numeral 2 represents the spring seat structure of a chair embodying a rectangular open frame 3 with front, rear and side rails 4, 5 and 6. Open frame 3 has mounted on its front and rear rails 4 and 5 a plurality of flat springs 7, made of sinuously shaped or horizontally corrugated steel wire. These springs each include downwardly inclined V-shaped front and rear supporting means 8 and 9 respectively, adapted to support the proper seating portion 10 of each spring in an elevated position. Preferably, as shown, the front and rear supporting means extend integrally from the opposite ends of seating portion 10, and V-shaped rear supporting means 9 has two integral yielding lever arms 11 and 12, the ends of which are coupled with each other by means of a link member 14 for more effective control of forward and downward movements of the rear end of seating portion 10. The ends of the respective front and rear supporting means are additionally provided with integral seating and attachment means which permit of proper resting of these supporting means on front and rear rails 4 and 5 and which are rigidly held in proper position with respect to rails 4 and 5 by means of staples 17. Spring seat structure 2 has its springs 7 at the front ends of the seating portions attached to and coupled with a U-shaped edge wire 18 by means of clip members 19, and the rear ends of the seating portions of these springs are coupled with a U-shaped edge wire 20 supported by and yieldingly held in proper working position by the link members 14. The two outside springs 7' are re-enforced and stiffened by a steel wire re-enforcing member 21 consisting of a curved wire embodying in its central portion and its end portions symmetrically arranged, downwardly extended, parallel offsets or recesses 22, 23 respectively. These offsets have inclined sides 24 and are located to permit of interweaving of the sinuously shaped spring seating portion 10 with the wire re-enforcing member 21 by entering member 21 alternately from opposite sides into the respective open loops 25 of

seating portion 10 and contacting of the re-enforcing member 21 alternately with the top and bottom faces of seating portion 10. At its opposite ends member 21 is provided with hook-like portions 26 which prohibit creeping movements of said member with respect to seating portion 10.

The described wire-re-enforcing member 21, when interwoven with the sinuously shaped seating portion 10 of flat wire spring 7, materially stiffens the seating portions, increases its resistance against lateral outward tilting and thus permits of construction of spring seat structures from flat wire springs, all of which are substantially identical and made of relatively light wire stock.

Should it be desirable, the re-enforcing member 21 may simultaneously serve as side edge wire (see Fig. 1 of the drawing). The described re-enforcing members may of course also be used for re-enforcing any and all of the seating portions of the springs of a spring wire structure made of sinuously shaped flat wire springs, and this is of importance for adapting a piece of furniture built for average load to excessive loads.

Having thus described my invention, what I claim is:

1. The combination of a sinuously shaped, flat wire spring having open loops with a wire re-enforcing member interwoven with the loops of said spring by entering said wire member alternately from opposite sides into said loops, said wire member including symmetrically arranged offsets for alternate contact of said member with the top and bottom faces of said spring.

2. The combination of a sinuously shaped, slightly curved, flat wire spring having open loops with a slightly curved wire re-enforcing member

interwoven with the loops of said spring by entering said wire member alternately from opposite sides into said loops, said wire member including parallel offsets spaced from each other for alternate contact of said member with the top and bottom faces of said flat wire spring.

3. The combination of a sinuously shaped flat wire spring having open loops with a wire re-enforcing member interwoven with the loops of said spring by entering said wire member alternately from opposite sides into said loops, said wire member including parallel offsets connected with each other by inclined side portions, and said offsets being spaced to align their side portions with said loops to facilitate interweaving of said wire member with said flat wire spring for alternate contact with the top and bottom faces of said spring.

4. The combination of a sinuously shaped flat wire spring having open loops with a wire re-enforcing member interwoven with the loops of said spring by entering said wire member alternately from opposite sides into said loops, said wire member including symmetrically arranged offsets for alternate contact of said wire member with the top and bottom faces of said spring, and a hook-shaped portion engaged with the wire of one of the open loops of said wire spring to prohibit creeping of said wire member with respect to said spring.

5. The combination of a sinuously shaped flat wire spring having open loops with a wire re-enforcing member interwoven with the loops of said wire member, said wire member including symmetrically arranged offsets alternately contacting the top and bottom faces of said spring.

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