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SPRING SEATED CONSTRUCTION FOR UPHOLSTERED FURNITURE

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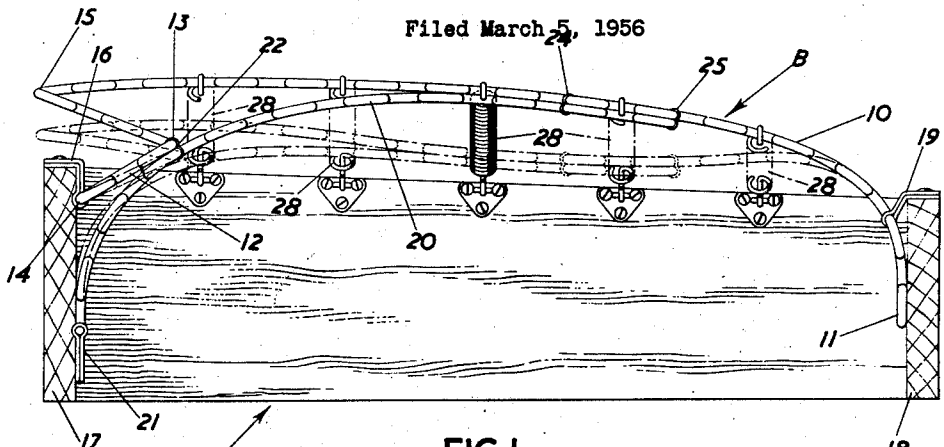


FIG.1

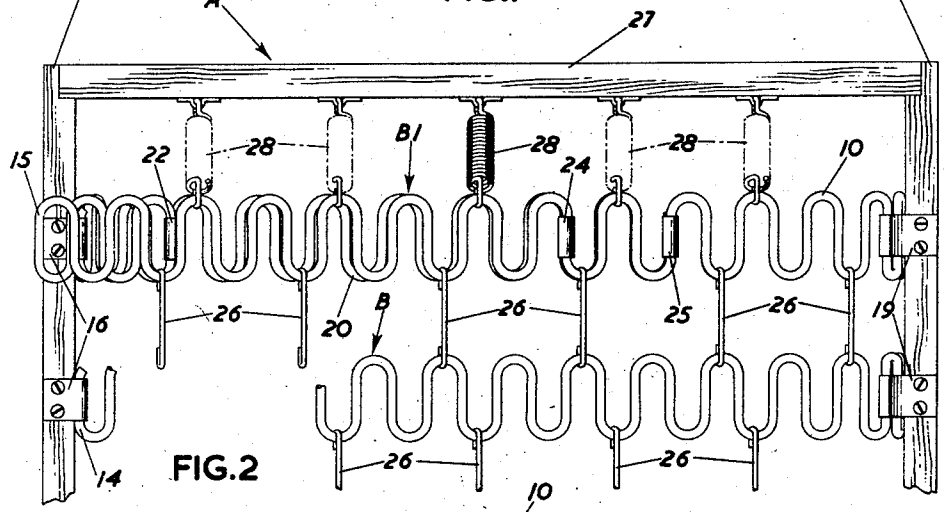


FIG.2

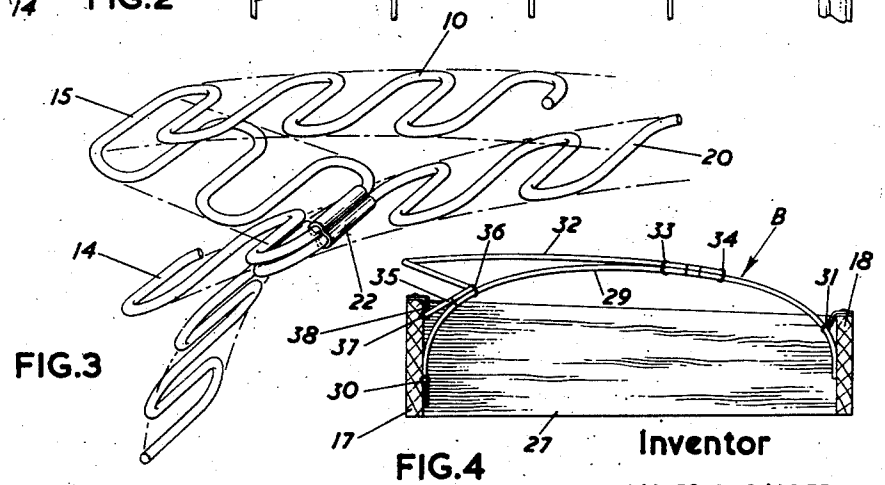


FIG.3

FIG.4

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SPRING SEATED CONSTRUCTION FOR UPHOLSTERED FURNITURE

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4 Claims. (Cl. 155—179)

This invention relates to spring seating construction for upholstered furniture.

Over a period of years, linearly extending sinuous or zig-zag springs have largely replaced coil spring construction in upholstered furniture. In terms of seat construction, such springs extend between the back and front rails of the furniture and are prestressed to provide a yieldable seat when under load. Two difficulties present themselves in the employment of such springs for this purpose in providing a practical and economical structure; viz., providing a yielding forward edge on the seat and avoiding "dead bottom" effect, i. e. an unyielding seat once under load when accordingly does not provide the effect of spring depth.

Numerous attempts have been made to provide a yieldable forward edge employing such springs by forming what may be termed a bellows-fold at the front or an addition to the spring which in effect provides a bellows-fold, but in most cases there results a receding of the forward edge of the seat when under load whereas attempts to eliminate dead bottom effect have usually culminated in complicated and expensive structures.

The present invention provides spring seating construction employing this type of spring in a relatively simple structure which provides a practical yieldable forward edge for a seat and a structure through which dead bottom effect is eliminated, thus to provide a seat of practical economical construction with full spring depth.

According to the invention, the spring units which are inter-tied in a simple conventional manner to provide the whole seat generally comprise a unit having a bellows-fold at one end to constitute that portion of the unit disposed at the front of the seat, the apex of the bellows-fold being disposed inwardly of the front rail of the seat, the upper extremity of the bellows-fold constituting the front edge of the seat and the lower extremity of the bellows-fold constituting a pivotal anchoring point for securement to the frame in combination with a second zig-zag spring arched to extend from an anchoring point on the frame and secured to the apex of the bellows-fold, said spring members forming said unit being secured together intermediate the linear extent of said unit, the latter formed by said spring members extending between the front and rear frame to form with like inter-tied units a spring construction resistant to recession of the front seat edge and to dead bottom effect when said units are under compression load. Preferably said units are designed for a seat but may be employed as a back-rest for such furniture.

The invention will be clearly understood by reference to the following detailed specification taken in conjunction with the accompanying drawings.

In the drawings:

Fig. 1 is a cross-section taken through a simple furniture base frame showing the spring unit construction applied thereto.

Fig. 2 is a plan view showing the manner in which the spring units are inter-tied and secured at the ends of the frame.

Fig. 3 is a fragmentary detailed perspective view of a spring unit to illustrate the manner in which the two spring elements forming the unit are interconnected; and

Fig. 4 is a view similar to Fig. 1 showing an alternative arrangement of spring construction to form a spring unit.

Referring to the drawings, A indicates a simple frame for an upholstered piece of seating furniture and B indicates one of the spring units according to the present invention employed as an inter-tied group to form the yieldable seat. In the preferred construction, the unit is comprised by a linear zig-zag spring **10** having a free rear end **11** and which is formed at the front end with a bellows-fold **12** having an apex **13**, a forward free end **14**, and a folded extremity **15** which forms the front edge of the seat. The free end **14** is anchored by a conventional anchoring clip **16** to the front frame piece **17** while the rearward free end **11** is designed to bear against the inner face of the rearward frame piece **18** of frame A being secured inwardly of its free end to the frame by means of an anchoring clip **19**.

The second spring element of the unit B comprises a linearly extending zig-zag spring **20** which is anchored on the frame preferably to the forward frame piece **17** on its inner face by means of a clip **21** which is disposed somewhat towards the lower extremity of frame piece **17** and it is pre-stressed or arched to extend below spring **10** and in particular is secured to the apex **13** of its bellows-fold **12** by means of a conventional spring clip **22** and is secured also adjacent to its free rearward end **23** to spring **10** by means of clips **24** and **25** at a point intermediate the front and rear ends of spring **10**. This point is chosen in accordance with the degree of deflection desired when under load and in combination with the location of the point of anchorage between clip **19** and spring **10**, which latter may be varied, the effect of spring depth under load is chosen. This may be further varied by employing selected gauges of spring as may be desired.

The spring **20** effectively reinforces the spring **10** in such manner that the connection between it and the apex **13** of bellows-fold **12** has the result of resisting the normal tendency of the front edge **15** of spring **10** to recede when the spring is subjected to load, thus providing for a normal depression or vertical flexing of the forward edge of the seat as may be understood by reference to the dotted line position of the spring unit as shown in Fig. 1. Moreover, the spring **20** also functions to avoid dead bottom effect since it is pre-stressed and anchored at an appropriate point intermediate the ends of spring **10** and thus, in combination with the rearward anchoring of spring **10** at a chosen point inwardly of the free end **11** thereof, will operate to produce a predetermined degree of flexing of the whole unit such that it does not give to a point where it will not yield further under load or rigorous test which would otherwise give dead bottom effect but, under load it gives the effect of further or full spring depth. This is completely achieved solely by two simple linearly extending zig-zag spring units interconnected in a simple manner and anchored also in a simple manner on the base frame.

As shown in Fig. 2, the units B are inter-tied by conventional spring typing clips **26** while the end spring units B–1 of identical construction are secured to the end frame piece **27** of frame A by means of coil tension spring **28**. The overall effect, therefore, is a very substantial seat which will not recede rearwardly to any substantial extent when under load and in which the units B will not tend to sway laterally when under load.

In the alternative form of construction shown in Fig. 4,

the units B are comprised by the linearly extending zig-zag spring **29** which is pre-stressed and extends between the anchoring point **30** on the front of the frame and the anchoring point constituted by the clip **31** securing it to the rear frame piece **18**. In this construction, the second spring element **32** is secured at its inner end to spring **29** at the points **33** and **34**, which spring is formed with the bellows-fold **35**, the apex of which is secured to spring **29** by suitable clip **36** and the free end of this spring is anchored as at **37** by the clip **38** on the forward frame piece **17**. The same effect is thus achieved whether the longer of the two springs constitutes the bottom member extending between the frame pieces **17** and **18** or whether it constitutes the top member and includes the bellows-fold as well, as in the case in the showing of Fig. 1. In both cases, there results a very simple spring unit composed merely of two springs of the same character so connected and mounted as to achieve economically a practical full spring depth seat with a yieldable front seat edge.

It is obvious, of course, that units according to the invention could be grouped and arranged to form a yieldable back for the seat wherein the front seat edge **15** may become the yieldable top edge of the back. However, the yieldable back of seating furniture does not require the spring depth required in the seat due to the fact that it assumes a lesser load and other constructions may, therefore, be usefully employed in a back support.

I claim:

1. A spring unit for a seating frame employed with other similar units inter-tied to form a combined spring base, said unit comprising a pair of linear zag-zag spring members, the first of said members having a bellows-fold at one end to constitute that portion of the unit having a yieldable edge, said bellows-fold having an apex to be disposed inwardly of the frame of the seating construction, the upper extremity of the bellows-fold constituting the yieldable edge and the lower extremity of the bellows-fold constituting an anchoring element for securement to the frame, the second spring member being arched to extend from an anchoring point on the frame inwardly of the first spring member, and secured intermediate its extent to the apex of the bellows-fold of the first spring member, said spring members being secured together intermediate the linear extent of said unit, the latter extending between spaced apart, opposed members of said seating frame to form with like inter-tied units a spring construction resistant to recession of the yieldable edge in the axial direction of said unit and to dead bottom effect when said units are under compression load.

2. A spring unit for a seating frame employed with other similar units inter-tied to form a combined spring base, said unit comprising a pair of outer and inner linear zig-zag spring members, the outer of said members extending from one portion of the frame to an opposed portion thereof and having a bellows-fold at one end thereof to constitute that portion of the unit having a yieldable edge, said bellows-fold having an apex to be disposed inwardly of the frame of the seating construction, the upper extremity of the bellows-fold constituting the yieldable edge and the lower extremity of the bellows-fold constituting an anchoring element for securement of that end of said member to the frame, said inner spring member being arched to extend from an anchoring point on the frame inwardly of the outer spring member and being secured intermediate its extent to the apex of the bellows-fold of the outer spring member and secured at a second point to said outer spring member intermediate the bellows-fold and the opposite end of said outer spring member, said unit together with said corresponding units being designed to be inter-tied to form a composite spring construction resistant to recession of the yieldable edge in the axial direction of each unit and resistant to dead bottom effect when said units are under compression load.

3. A spring unit for a seating frame employed with other similar units inter-tied to form a combined spring base, said unit comprising a pair of outer and inner linear zig-zag spring members, the outer of said members having a bellows-fold at one end to constitute that portion of the unit having a yieldable edge, said bellows-fold having an apex to be disposed inwardly of the frame of the seating construction, the upper extremity of the bellows-fold constituting the yieldable edge and the lower extremity of the bellows-fold constituting an anchoring element for securement to the frame, said inner spring member being arched to extend from an anchoring point on the frame to an anchoring point on an opposed portion of the frame, the apex of the bellows-fold of the outer spring member being secured to said arched inner member at a point intermediate the extent of the latter and the end of said outer member opposed to the anchored end being secured to said inner spring member at a point intermediate its anchored ends, said unit together with said corresponding units being designed to be inter-tied to form a composite spring construction resistant to recession of the yieldable edge in the axial direction of each unit and resistant to dead bottom effect when said units are under compression load.

4. Spring seating construction formed from a plurality of inter-tied zig-zag springs, each comprising a unit having a bellows-fold at one end to constitute that portion of the unit disposed at the front of the seat, the apex of the bellows-fold being disposed inwardly of the front rail of the seat, the upper extremity of the bellows-fold constituting the front edge of the seat and the lower extremity of the bellows-fold constituting a pivotal anchoring point for securement to the frame in combination with a second zig-zag spring arched to extend from an anchoring point on the front frame member and secured adjacent its opposite end to the first mentioned zig-zag spring at a point intermediate its extent, said second zig-zag spring being secured to the apex of the bellows-fold and forming the unit resistant to recession of the front seat edge and dead bottom effect when said spring is under compression load.

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