Sept. 9, 1958 E. G. KRAKAUER 2,851,087

AUXILIARY FURNITURE SPRING

Filed May 31, 1956

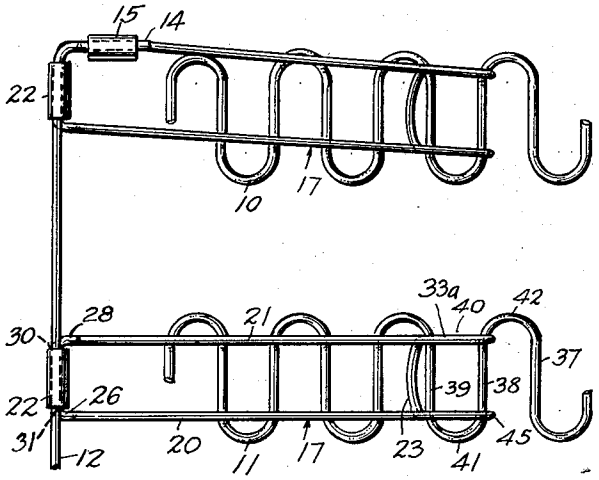


Fig. 1

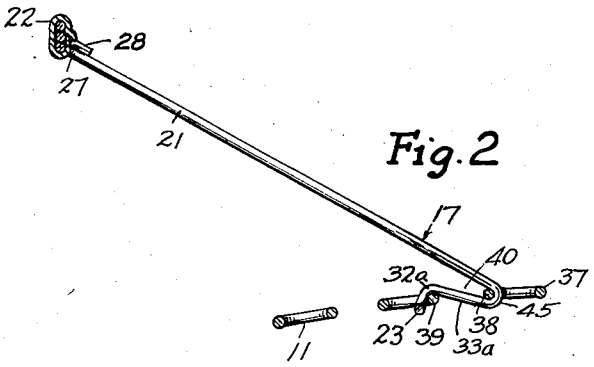


Fig. 2

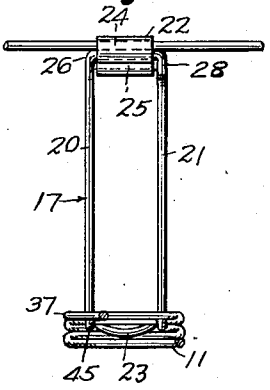


Fig. 3

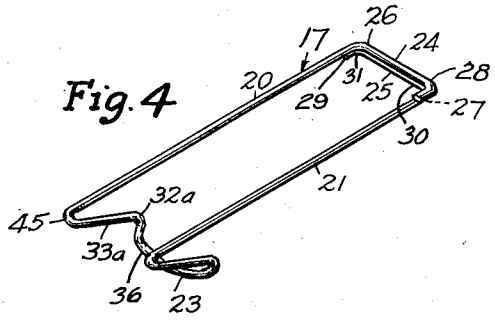


Fig. 4

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United States Patent Office 2,851,087 Patented Sept. 9, 1958

2,851,087

AUXILIARY FURNITURE SPRING

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Application May 31, 1956, Serial No. 588,358

4 Claims. (Cl. 155—179)

This invention relates to spring constructions in upholstered furniture and particularly to the auxiliary springs used to improve the spring action at the end portions of the main springs in cases where such main springs are of sinuous form and extend across the frame for the spring structure.

The invention contemplates the provision of an auxiliary spring of generally rectangular or O-shaped outline and made of a single length of wire, provided with bends at the rear end portion thereof whereby the auxiliary spring may readily be hooked as an individual unit about the sinuous spring independently of the other springs, the auxiliary spring being provided with a pair of attaching elements at the front end portion thereof whereby it may be attached to any point of a border wire, the spring also having an opening between its sides for the passage of a clip to secure it to the side portion of a border wire and thereby to adapt the same spring for use at the corner of the spring structure and obviating the need for special auxiliary springs at the corners.

The invention further contemplates the provision of an auxiliary spring for use in connection with sinuous springs and a border wire, the auxiliary spring being formed with elements permitting the attachment thereof to the front portion of the border wire or to the side portion of said wire or to both front and side portions of said wire independently of similar adjacent auxiliary and sinuous springs.

The various objects of the invention will be clear from the following description and from the drawings, in which

Fig. 1 is a fragmentary top plan view of the corner part of a spring seat or back showing one auxiliary spring at the corner and another adjacent thereto.

Fig. 2 is a side elevational view thereof partly in vertical section.

Fig. 3 is a rear elevational view thereof.

Fig. 4 is a perspective view of the auxiliary spring.

In general, the auxiliary spring as is customary, supplements the various bowed and spaced apart sinuous springs as **10, 11** and the like stretching from front to back across the usual frame, not shown, for the seat or back of a piece of upholstered furniture. The usual border wire **12** is arranged above the front end of the sinuous springs and passes around to the side of the spring structure. An individual auxiliary spring unit is provided for each sinuous spring and is independent of the other sinuous springs, but is connected at the front to the same border wire as the other auxiliary springs. The rear end of each auxiliary spring is provided with spaced apart bends which are alternately concave and convex and thereby adapted to hold said rear end to its sinuous spring, especially when the front end of the spring is pre-stressed by depressing and tying the border wire down closer to the frame than it would normally be.

By the use of an individual unit for each sinous spring, the special corner structure heretofore necessary is avoided, and the same type of auxiliary spring is employed both at the corners and elsewhere in the spring construction, the

spring unit being secured to the side portion **14** of the border wire by a suitable clip as **15**. The unit **17** may be readily disaligned with its sinuous spring **10** to bring the front part thereof close to the border wire **14** as shown in Fig. 1.

As shown, the auxiliary spring unit is made of wire in O-shaped or generally rectangular outline. The side edge portions **20, 21** are preferably straight and parallel but may diverge forwardly should it be desired to employ a clip wider than the sheet metal clip **22** shown to secure the front edge portions of the unit to the border wire **12**. At the rear end of the unit, the side edge portions **20, 21** are integrally joined by the cross bar **23** which closes said rear end and stiffens the unit and permits it to be made of a single length of wire. At the front end thereof, a pair of similar attaching elements **24, 25** are provided on the unit, said elements closing the front end portion of and also stiffening the unit. A substantially right angle bend **26** joins the element **24** to the side portion **20** while a similar bend **27** joins the other element **25** to the other side portion **21**. Each element terminates in a short substantially straight free end portion as **28** for the element **24** and **29** for the element **25**, said end portions **28** and **29** being joined to the remainder of the element by a substantially right angle bend as **30** and **31** respectively. The elements extend from the respective side edge portions of the unit transversely toward each other and preferably do not extend outside of the rectangular outline or outside of the sides **20, 21**.

One element as **24** is arranged preferably vertically above the other with the border wire **12** on top and above the element **25**. The clip **22** holds the parts in the positions described and is long enough to extend as closely as possible at both ends thereof to the bends **30** and **31**. The free end portions **28, 29** and the bends **30, 31** cooperate to prevent material rotation of the auxiliary spring unit on the border wire, being in the path thereof or interfering with each other should such turning as would cause objectionable noises, tend to occur under the stresses of normal use. The portions **28** and **29** also serve to prevent the sides **20, 21** from spreading apart under stress and ultimately being drawn out of the clip **22**.

As shown, the bends in the rear portion of the auxiliary spring unit **17** are three in number for each of the side portions **20** and **21**. The cross bar **23** is arranged transversely across and rigidly joins the side portions **20** and **21** through the intermediary of the bends **36, 32*a*** and **45**, the straight portion **33*a*** integrally joining the bends **32*a*** and **45** and being coplanar therewith. The bend **36** is coplanar with the bar **23** and lies in a plane substantially perpendicular to the plane of the bends **32*a*** and **45**. The substantially right angled bend **32*a*** is convex forwardly, while the remaining bend **45** is concave forwardly and subtends somewhat less than 180° and joins the straight portion **33*a*** to its side edge portion at **20**. Because of the large angle subtended by the bend **45**, the portions **23, 32*a*** and **33*a*** are brought below the side edge portions of the unit **17**. The unit **17** is consequently engaged with or hooked to the sinuous spring by arranging the cross bar **38** of the latter at the bend **45** and further arranging the bend **32*a*** at and above the cross bar **39**.

While certain specific forms of the invention have herein been shown and described, various obvious changes may be made therein without departing from the spirit of the invention defined in the appended claims.

I claim:

1. In a spring construction, a frame, a border wire in spaced relation to the frame, a sinuous spring bridging the frame, an auxiliary spring of generally O-shaped outline for and confined to the sinuous spring, the auxiliary spring having a continuous bent rear end portion adapted to be hooked to and thereby rigidly connected

solely by said end portion to the sinuous spring, said auxiliary spring being of a single shaped length of wire having a pair of transversely spaced apart sides and a pair of similar front end elements each integrally joined by a bend to one of the sides and each extending toward the other element and a free rearwardly extending portion at the end of each element similar, parallel to and of substantially the same length as the free portion of the other element, the overall width of both elements being substantially that of the auxiliary spring, the auxiliary spring being clipless and jointless and having an integral cross bar at the rear end thereof and a plurality of bends between the cross bar and the sides, said elements overlapping to form a closed front end on the auxiliary spring and a rigid connection between the elements and the border wire comprising a clip passed thereabout between the bends of the elements to secure the elements to and against rotation on the border wire.

2. In a spring construction, a series of transversely spaced apart sinuous springs, a border wire, and an individual clipless and jointless one piece wire auxiliary spring between the border wire and each sinuous spring, each auxiliary spring being independent of the other auxiliary and other sinuous springs, said auxiliary spring being generally O-shaped and having a front end portion, a rear end portion and straight sides integrally joining said portions, the front end portion comprising a pair of L-shaped members each extending transversely and integrally from one side toward the other side of the auxiliary spring, the transverse leg of each L-shaped member being in overlapping contact with the corresponding leg of the other member and being substantially perpendicular to said sides, the other leg of each member being free and constituting one of the ends of said one piece spring and being directed rearwardly and substantially parallel to said other side of the auxiliary spring, a clip between the free legs of the members and passing around both of the first mentioned legs and the border wire and securing said legs to said wire and thereby preventing relative rotary movement of the members and the border wire, the free legs being arranged adjacent the respective ends of the clips and preventing relative transverse movement of the sides and the clip, the rear end portion of the auxiliary spring comprising a first bend at the rear end of each of the sides and concave forwardly and subtending an angle somewhat less than 180° and coplanar with the side from which said first bend extends, a straight portion extending forwardly from said first bend substantially parallel to the side, a second bend concave downwardly and coplanar with the first bend and the side and subtending an angle of approximately 90° and at the forward end of said straight portion, a third bend subtending approximately 90° extending transversely of the second bend and arranged in a plane substantially perpendicular to the plane of the first and second bends, and a transverse cross bar integrally connecting corresponding third bends at the rear ends of the respective sides.

3. An auxiliary spring for the front end portion of a single sinuous furniture spring, and constituting a single shaped length of wire, and being a unit independent, when installed in a spring structure, of similar units and independent of the springs of said structure other than the aforesaid single spring, said unit having a pair of transversely spaced apart similar sides, a front end portion on each side comprising an L-shaped member having a leg extending integrally from the front end of one side toward the other side and having a second leg parallel to and adjacent said other side, a rear end portion on each side comprising a first bend concave forwardly and subtending an angle slightly less than 180°, a straight portion extending forwardly from and integral at one end with the first bend, a second bend concave downwardly and extending from the other end of the straight portion and coplanar with the first bend and the straight portion, a third bend extending toward the other side and in a plane substantially perpendicular to the plane of the first and second bends, and a transverse bar integrally and rigidly connecting the third bends of the respective sides, the first and second bends constituting the sole means for connecting the auxiliary spring to said single spring.

4. The auxiliary spring of claim 3, the second bend subtending approximately 90° and the L-shaped front members being maintained by the cross bar and said sides in permanent overlapping relation and being prevented from rotating within a clip when clipped to a border wire of said spring structure, to form a rigid connection thereto.

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