July 9, 1957 P. R. ROBELL 2,798,233

SPRING MATTRESSES, CUSHIONS, SEATS AND SIMILAR ARTICLES

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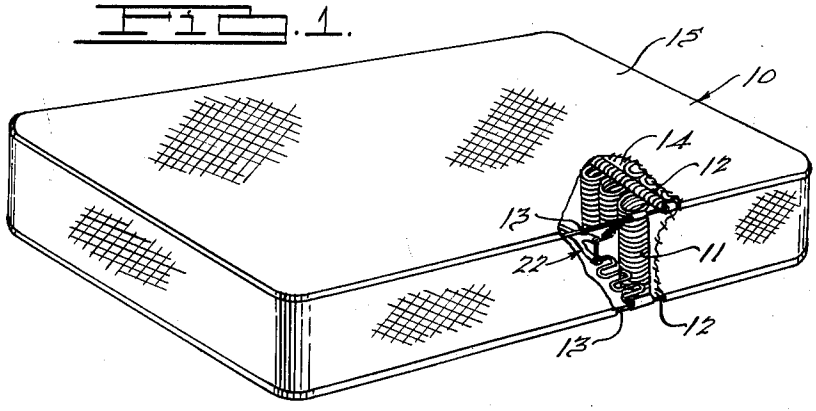
FIG. 1.



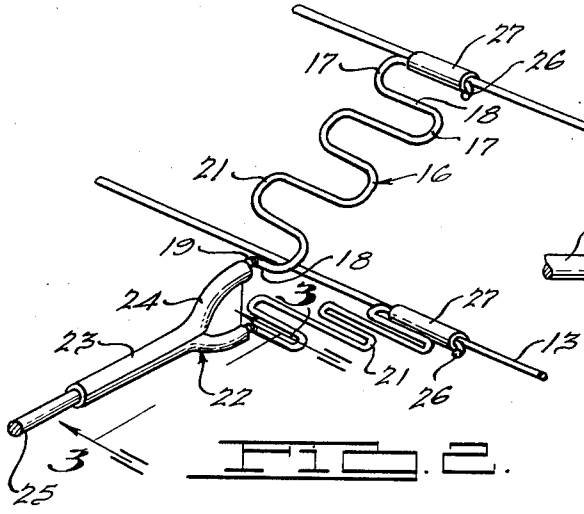


FIG. 2.

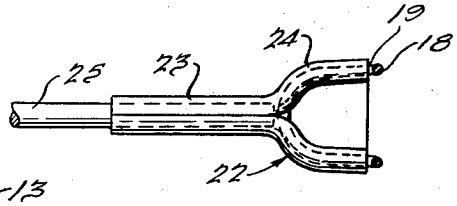


FIG. 3.

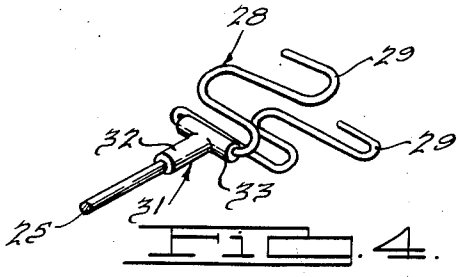


FIG. 4.

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SPRING MATTRESSES, CUSHIONS, SEATS AND SIMILAR ARTICLES

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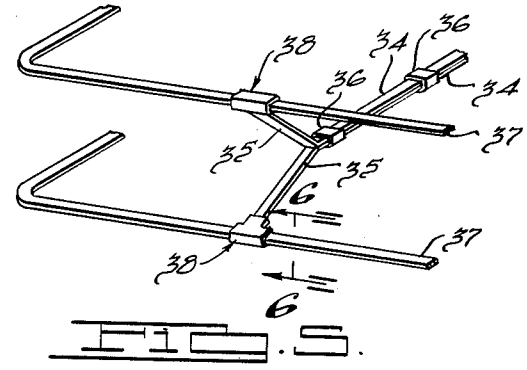

FIG. 5.

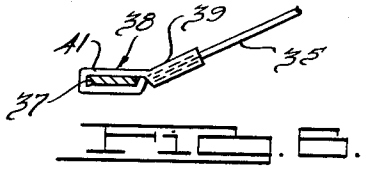

FIG. 6.

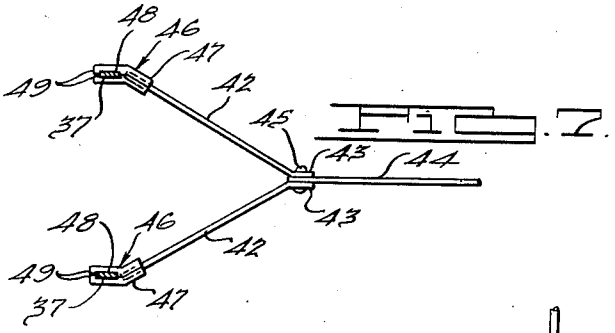

FIG. 7.

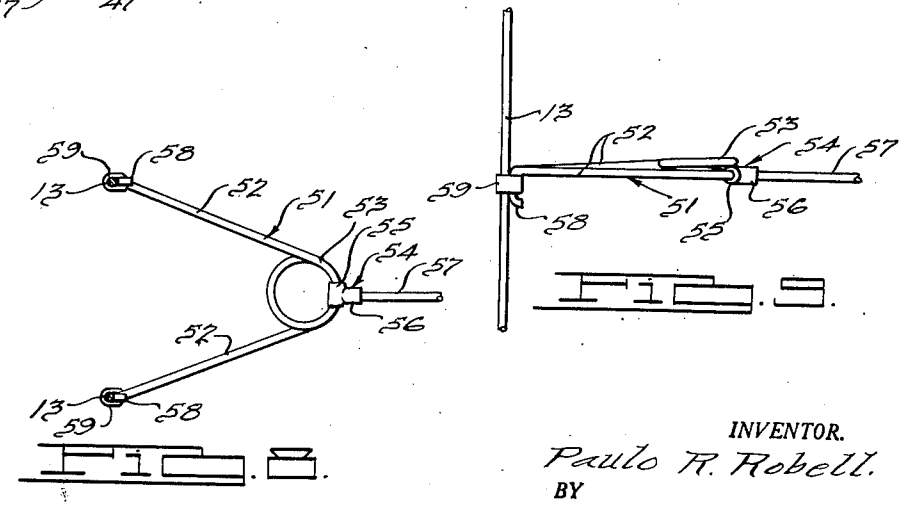

FIG. 8.

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SPRING MATTRESSES, CUSHIONS, SEATS AND SIMILAR ARTICLES

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Application March 26, 1954, Serial No. 419,297

3 Claims. (Cl. 5—351)

This invention relates to improvements in spring mattresses, cushions, seats and similar articles, and particularly to improved reinforcing structure for the framing wires thereof.

It has been the practice in the past to construct mattresses, cushions and similar articles from coil springs confined within flexible border wires which are spaced apart and define the length, breadth and thickness of the spring assembly. When springs are selected for supporting a particular load per unit area when the seat is occupied, sufficient strength is not provided for the border wires when the load is concentrated thereon. For example, when one is lying upon a mattress, the load is spread over a substantial area, while when one is sitting on the edge of the mattress a substantial concentration of the load occurs at the point occupied.

The present invention pertains specifically to the utilization of reinforcing elements or supports between the two edge border wires which are interconnected by a bracing member disposed internally of the assembled springs between the top and bottom surfaces of the assembly. The reinforcing or supporting elements are made of spring material and are preferably bent into V form so as to engage the top and bottom border wire. The apex of the V element is secured to a bracing member spanning the mattress, cushion and the like midway between the top and bottom surfaces thereof. The V elements may be made of wire bent into sinuous zigzag formation or into the shape of jack springs. The V element may also be of strap material, as will be explained hereafter. All of such structures provide reinforcement for resiliently supporting the border wires disposed about spring assemblies which are returned to initial position relative to each other after being deflected.

Accordingly, the main objects of the invention are: to provide a support for the border wires of a mattress, cushion or the like which retains them in predetermined spaced relation to each other while permitting them to deflect under load; to provide oppositely disposed V-shaped reinforcing elements for spaced border wires disposed about a spring assembly which are interconnected by a bracing member for strengthening the border wires and returning them to their initial spaced relation when unloaded; to provide V-shaped supporting elements for spaced border wires to which the free ends are connected, with the apexes of the V elements retained in position by a bracing member disposed midway between the planes of the border wires, and, in general, to provide reinforcing means for spaced border wires which is simple in construction, positive in operation and economical of manufacture.

Other objects and features of novelty of the invention will be specifically pointed out or will become apparent when referring, for a better understanding of the invention, to the following description taken in conjunction with the accompanying drawings, wherein:

Figure 1 is a plan view of a mattress, with a part broken away, disclosing the reinforcing and supporting element of the present invention;

Fig. 2 is an enlarged broken view of the reinforcing and supporting element illustrated in Fig. 1;

Fig. 3 is an enlarged view of the structure illustrated in Fig. 2, as viewed from line 3—3 thereof;

Fig. 4 is a view of structure, similar to that illustrated in Fig. 2, showing a different form thereof;

Fig. 5 is a view of structure, similar to that illustrated in Fig. 2, showing a still further form of the invention;

Fig. 6 is an enlarged, broken sectional view of the structure illustrated in Fig. 5, taken on the line 6—6 thereof;

Fig. 7 is a view of structure, similar to that illustrated in Fig. 5, showing another form of the invention;

Fig. 8 is a view of structure, similar to that illustrated in Fig. 7, showing still another form of the invention, and

Fig. 9 is a plan view of the structure illustrated in Fig. 8.

Referring to Figs. 1 to 3, a mattress 10 is illustrated by way of example, embodying a plurality of rows of coil springs 11 which are joined at the top and bottom by helical springs 12 to form a spring unit. The spring unit is confined within a bottom and top border wire 13 of rectangular shape and of such length and width as to produce a desired dimension to the mattress after padding material 14 and trim material 15 are applied thereto in the conventional manner. At certain points throughout the length of the mattress, reinforcing structures embodying features of the present invention are employed for maintaining the border wires 13 in predetermined relation to each other and for providing additional support against deflection under concentrated load. The reinforcing and supporting elements are aligned on opposite sides of the spring assembly so that a bracing member may be provided between the rows of coil springs and disposed in fixed relation to the reinforcing and supporting elements. The bracing member retains the reinforcing and supporting element in desired position and is preferably disposed midway between the top and bottom surfaces of the spring assembly.

Referring to Figs. 2 and 3, a reinforcing and supporting element 16 comprises a sinuously formed wire, one which is bent back and forth to provide oppositely presenting loops 17 joined by straight portions 18, as conventionally employed in the art. The straight portions 18 adjacent to the central loop 19 are twisted to form two arms 21 which are in V relationship to each other. The straight portions 18 adjacent to the loop 19 are bent outwardly at right angles to have the loop 19 disposed on the center line of the two arm portions 21. A stamping 22 has a cylindrical portion 23 and a U-shaped portion 24 which is clamped about the loop 19 to have the two arm portions 21 supported by the stamping in extension thereof. A bracing rod 25 is secured within the tubular portions 23 of two of the stampings 22 and is disposed between a pair of rows of the coil springs, with the ends 26 of the arm portions 21 secured to the border wires 13 by bands 27 in the conventional manner. A plurality of such assemblies of the V-shaped reinforcing and supporting elements, stampings 22 and the bracing rods 25 are mounted across the width of the spring assembly throughout the length thereof.

In Fig. 4, a similar V-shaped bracing and supporting element 28 is illustrated. The element is made from a similar sinuously formed wire, the central straight portion of which is twisted to provide two arms 29 disposed in V relation to each other. A stamping 31, formed to have a cylindrical portion 32 and a cylindrical portion 33 disposed at right angles thereto, has the latter portion secured about the central straight portion 18 of the element to form a support therefor. The bracing rod 25

extends within cylindrical portions 32 of a pair of the stampings 31 to support the elements 28 at the ends thereof. A plurality of the reinforcing and supporting assemblies are secured to the border wires 13 of a spring assembly in the manner pointed out hereinabove with regard to the structure illustrated in Fig. 2.

In Fig. 5, a further form of the invention is illustrated, that wherein a pair of steel strips 34 has arms 35 bent outwardly at the ends so as to be in V relation to each other when the central portions of the strips are secured in fixed relation to each other by bands 36. Border wires 37 are illustrated as being flat or rectangular in section, but it is to be understood that the bracing and reinforcing and supporting elements herein described may be applied to the border wires of cylindrical or any other cross section. Stampings 38 are employed for securing the ends of the arms 35 to the border wire by having the end 41 wrapped thereabout. A branch 39 of the stamping encompasses the end of the arm 35 and thereby secures the border wire to the end of the arm.

In Fig. 7, a similar arrangement is illustrated for bracing the border wires and providing a support therefor, embodying separate arms 42 having end portions 43 bent at an angle thereto and secured to a bracing bar 44 by suitable means, herein illustrated as by a rivet 45. The arms 42 are disposed in V relationship to each other and have clips 46 secured to the ends thereof by a rectangular-shaped socket 47. The end of the clip having a slot 48 therein which receives the border wire 37 is retained therein when the ends 49 are clinched thereover, as illustrated in the figure.

Figs. 8 and 9 illustrate a still further form of the invention, that wherein a jack spring 51 is employed at each end of the rod 57. The spring is made of wire having arms 52 extending in V relation to each other from a central coiled section 53. The coiled section is secured by a stamping 54 to the end of the rod 57. The stamping has a first portion 55 which is clinched about the coil and a cylindrical section 56 at right angles thereto which is clinched about the end of a bracing rod 57. The ends of the arms 52 are bent at right angles, as at 58, and are secured by bands 59 to the border wire 13.

In all of the various forms herein illustrated, reinforcing and supporting means are provided on opposite sides of the spring assembly for reinforcing and spacing the border wires from each other. The elements are interconnected by a rod extending across the width of the assembly to be disposed midway between the top and bottom surfaces thereof. Clips are employed to secure

the ends of the V-shaped spring arms to border wires of rectangular, cylindrical or other cross section. It is to be understood that the different types of arms, whether made of wire stock or strap material, may be secured to the border wires of different cross-sectional formation since the particular shape of the border wires or the stock material forming the V-shaped arms does not enter into the specific invention embodied in the various reinforcing assemblies.

What is claimed is:

1. A reinforcing element for the border edges of a mattress, cushion and the like having resilient load supporting means therein, said element embodying a bracing rod, a clamping element secured at each end of the rod, a pair of V-shaped sinuous spring strips made of wire and formed to have adjacent oppositely presenting loops, and means securing the central portions of the strips to opposite ends of the rod with the ends of the strips disposed in spaced relation.

2. A reinforcing element for the border edges of a mattress, cushion and the like having resilient load supporting means therein, said element embodying a bracing rod, a clamping element secured at each end of the rod, and a pair of sinuous spring strips made of wire and formed to have adjacent oppositely presenting loops bent in the center to form two arms in substantially V relationship to each other having the apex portion secured to said clamping elements.

3. A reinforcing element embodying a bracing rod, a clamping element secured at each end of the rod, and a pair of sinuous spring strips made of wire and formed to have adjacent oppositely presenting loops, said strips being bent at each side of the central loop to form arm portions disposed substantially in V relationship to each other and with the central loop bent at 90° away from the plane of the strip on the longitudinal center line thereof, said bent loops being secured to the clamping element at an end of the rod.

References Cited in the file of this patent

UNITED STATES PATENTS

1,445,409	Owen	Feb. 13, 1923
1,927,722	Stoerkel	Sept. 19, 1933
2,201,997	Freund	May 28, 1940
2,719,578	Flint	Oct. 4, 1955

FOREIGN PATENTS

410,907	Great Britain	May 31, 1934