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June 18, 1963 J. MARTIN 3,093,840

BORDER STABILIZERS

Filed July 20, 1961

Fig. 1.

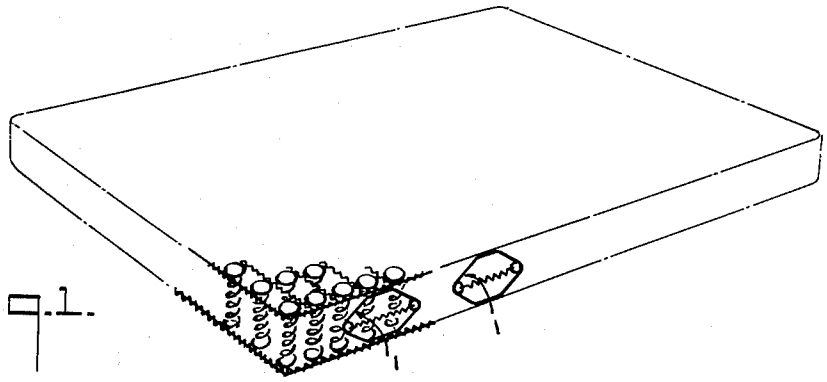


Fig. 2.

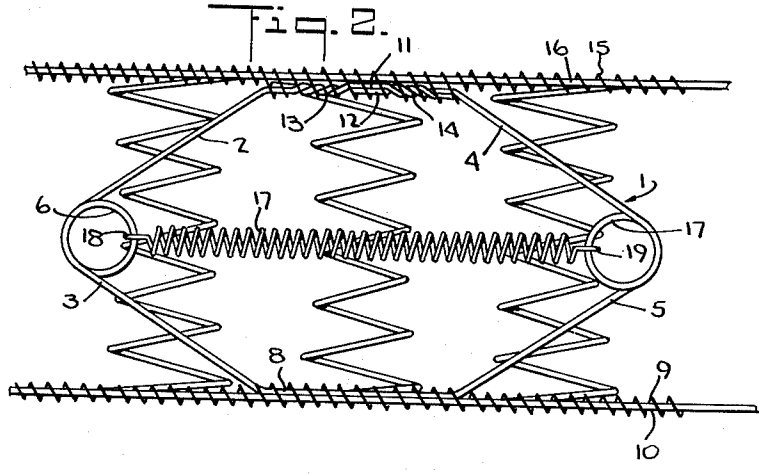


Fig. 3.

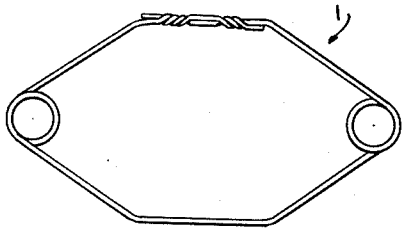


Fig. 4.

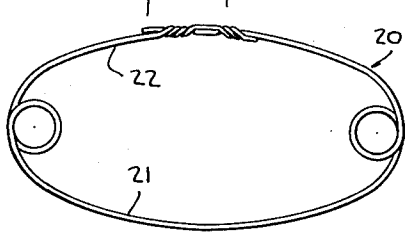


Fig. 5.



Fig. 6.



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BORDER STABILIZERS

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3 Claims. (Cl. 5—351)

This invention relates to border stabilizers for mattresses, box springs, upholstered items and the like, and is particularly related to stabilizers of the class illustrated in United States Letters Patent No. 2,509,831 issued May 30, 1950.

Among the objects of the present invention it is aimed to provide an edge stabilizer for a mattress, box spring, and the like, of the class illustrated in said United States Letters Patent No. 2,509,831 composed of yieldable wire in which the laterally extending ends characterized by circular loops extend inwardly and are disposed on opposite sides of the stabilizer in order to counteract the stresses and strains on the laterally extending ends of the stabilizer to guard the stabilizer from buckling or bulging laterally.

It is still another object of the present invention to provide an edge stabilizer for a mattress, box spring, or the like, of the class illustrated in said United States Letters Patent No. 2,509,831 composed of yieldable wire in which the laterally extending ends characterized by circular loops extend inwardly and are disposed on opposite sides of the stabilizer and constitute the abutments for the ends of a helical spring which extends from one loop to the other to aid and cooperate with the elasticity in the wire of the stabilizer proper to return the stabilizer to its normally expanded position after having been compressed when in use.

It is a further object of the present invention to provide an edge stabilizer for a mattress, box spring, or the like, of the class illustrated in said United States Letters Patent No. 2,509,831 composed of yieldable wire in which the laterally extending ends characterized by circular loops extend inwardly and are disposed on opposite sides of the stabilizer and in which the ends of the wire are twisted over one another to incline in opposite directions with the opposite positions of said loops to counteract the stresses and strains on the laterally extending ends of the stabilizer thereby to guard the stabilizer from buckling or bulging laterally.

These and other features, capabilities, and advantages of the invention will appear from the subjoined detailed description of specific embodiments thereof illustrated in the accompanying drawings in which:

FIG. 1 is a fragmental perspective of a mattress equipped with the improved stabilizer made according to one embodiment.

FIG. 2 is an enlarged side elevation of the stabilizer shown in FIG. 1.

FIG. 3 is a side elevation on a smaller scale than FIG. 2 of a second embodiment of the invention.

FIG. 4 is a side elevation on the scale of FIG. 3 of a third embodiment.

FIG. 5 is a cross section of the wire used in the embodiments of FIGS. 1 to 4 inclusive.

FIG. 6 is a cross section of a narrow flat stock used in place of the round stock illustrated in FIG. 5.

In the embodiment illustrated in FIGS. 1, 2 and 3, the stabilizer **1** consists essentially of upper and lower abutments, outwardly extending extensions between said abutments and inwardly extending loops formed in the outer ends of the outwardly extending extensions. More specifically, the stabilizer **1** composed of a yieldable material such as wire or narrow flat stock is provided with two outwardly extending pairs of inclined sides **2**, **3** and **4**, **5**, constituting outwardly extending extensions, connected to one another by the circular loops **6** and **7** respectively constituting inwardly positioned abutments at the outer ends of said outwardly extending extensions. The lower inclined sides **3** and **5** are connected by the lower horizontally extending side **8** constituting the lower abutment which is connected by the helical connecting spring **9** to the lower border wire **10** and the upper inclined sides **2** and **4** terminate in the upper sides **11** and **12** constituting an upper abutment, which overlap and are connected to one another by any suitable means such as the twists **13** and **14** and then connected by the helical connecting wire **15** to the upper border wire **16** of the mattress frame.

The sides **11**, **2**, **3**, **8**, **5**, **4** and **12**, constituting an endless unit, and loops **6** and **7** are part of a single resilient wire. A second helical spring **17** is provided with hook formations **18** and **19** at its ends which engage the loops **6** and **7** respectively and maintain the loops **6** and **7** at a predetermined tension relative to one another determined by the cooperation of the elasticity in the spring wire of the unit **1** and the elasticity in the helical spring **17**. The spring **17** thereby in turn facilitates adjusting the tension in the stabilizer either by eliminating the helical spring **17** and relying only on the rhomboid construction **1** or twisting the helix of the spring **17** more or less according to the tension required.

Excellent results have been achieved when the wire constituting the unit **1** illustrated in FIGS. 1, 2 and 3, is No. 13 gauge, of about 0.0915" in diameter and when the wire of the helical spring **17** is composed of wire of No. 17 gauge of about 0.052" in diameter.

With regard to adjustment by means of the helical spring **17**, attention is called to the fact that when the wire of the unit **1** is composed of high carbon steel wire No. 13 gauge of about 0.0915" in diameter and in size approximates 8" from the inner periphery of loop **6** to the inner periphery of the loop **7** of about 10½" from the outer periphery of the loop **6** to the outer periphery of the loop **7** and about 5½" from the outer periphery of the sides **11** and **12** to the outer periphery of the side **8**, and the helical spring **17** in its free unstretched extent is about 8" in length, the diameter of the helix about ½" and the wire is composed of high carbon steel of about No. 17 gauge of about 0.052" in diameter, that then the load will be increased from two pounds to two and three-quarter pounds when the helix of the wire **17** is given two turns as contrasted to its free unstretched condition.

The upper portion of the loop **6** is disposed on the front side of the unit **1** while the lower portion of the loop **6** is disposed on the rear face of the unit **1** looking at FIGS. 1, 2 and 3, whereas the upper portion of the loop **7** is on the rear face of the unit **1** and the lower portion of the loop **7** is on the front side of the unit **1**, looking at FIGS. 1, 2 and 3. In turn, although the twists **13** and **14** looking at the same from the right hand side of FIG. 2 are twisted in the same direction, the inclinations of the two twists are in opposite directions thereby to cooperate with the formation of the loops **6** and **7** on opposite sides of the unit **1** to counteract any buckle or bulge laterally in one direction. In other words, since the pressure is downwardly, the tendency would be to bulge the end of the stabilizer **1** at the loop **6** outwardly while the buckle or bulge on the end of the unit adjacent the loop **7** would tend to buckle inwardly looking at FIG. 2. In turn, the twist **13** when the unit **1** is compressed would tend to unravel and cause the unit **1** to buckle outwardly and the twist **14** would tend to unravel and buckle the unit **1** inwardly. Consequently, there would be the tendency of the twist **13** and loop **6** to buckle outwardly counteracted by the tendency of the twist **14** and loop **7**

to buckle inwardly and protect the unit from buckling in the same direction.

The embodiment illustrated in FIG. 4 is distinguished from the embodiment in FIGS. 1, 2 and 3 in that in place of the sides **3**, **8** and **5** of the embodiment illustrated in FIGS. 1, 2 and 3, the lower portion of the unit **20** is formed into a single arc **21** in the embodiment illustrated in FIG. 4 and the sides **2**, **11**, **12** and **4** of the embodiment illustrated in FIGS. 1, 2 and 3 are formed into a single arc **22** in the embodiment illustrated in FIG. 4.

FIG. 5 illustrates a cross section of a round wire such as illustrated in FIGS. 1, 2, 3 and 4 inclusive and FIG. 6 is a cross section of a flat stock from which the unit **1** of FIG. 1, 2 and 3 and unit **20** of FIG. 4 may be formed.

While the spiral spring **17** is desirable when the mattress is to be used to support fairly heavy loads, with mattresses for children and persons of lighter weight, the springs **17** may be omitted as illustrated in FIGS. 3 and 4.

I claim:

1. A boarder stabilizer for a mattress or the like having an upper and a lower border wire, said stabilizer being composed of an elastic material and having upper and lower substantially longitudinally extending abutments, helical connecting springs connecting said abutments to said upper and lower border wires, said stabilizer having outwardly protruding extensions intermediate and about midway between said border wires, said abutments, extensions, and loops disposed in a substantially common vertical plane, inwardly protruding loops extending from the middle of each extension, said loops extending from opposite sides of the plane of said stabilizer, and one free end of said elastic material is twisted around said elastic material adjacent its other free end inclining in one direction, and the other free end of said elastic material is twisted around said elastic material adjacent said one free end inclining in the other direction.

2. A border stabilizer for a mattress or the like having an upper and a lower border wire, said stabilizer having upper and lower substantially longitudinally extending abutments, helical connecting springs connecting said abutments to said upper and lower border wires, said stabilizer comprising a single yieldable wire formed into

outwardly protruding extensions intermediate and about midway between said border wires, inwardly protruding loops extending from the middle of each extension, said abutments, extensions, and loops disposed in a substantially common vertical plane, means for connecting the ends of said wire to one another, said loops extending from opposite sides of said stabilizer, and one free end of said wire is twisted around said wire adjacent its other free end inclining in one direction and the other free end of said wire is twisted around said wire adjacent said one free end inclining in the other direction.

3. A border stabilizer for a mattress or the like having an upper and a lower border wire, said stabilizer having upper and lower substantially longitudinally extending abutments, helical connecting springs connecting said abutments to said upper and lower border wires, said stabilizer comprising a single yieldable wire formed into six sides with the upper and lower sides constituting said upper and lower abutments and the remaining four sides formed into pairs, the sides of each pair of equal length, the sides of each pair forming an acute angle with one another and extending outwardly from said abutments and in turn forming obtuse angles with said abutments, a helical tension spring, inwardly extending loops at the acute angles of each pair of outwardly extending sides connecting the ends of said tension spring to said sides, said loops extending from opposite sides of said stabilizer, said six sides and loops disposed in a substantially common vertical plane, and one free end of said wire is twisted around said wire adjacent its other free end inclining in one direction and the other free end of said wire is twisted around said wire adjacent said one free end inclining in the other direction.

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