June 7, 1955 V. V. WISE 2,709,819

SIDE REINFORCEMENT FOR INNER SPRING MATTRESSES

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FIG. 1.

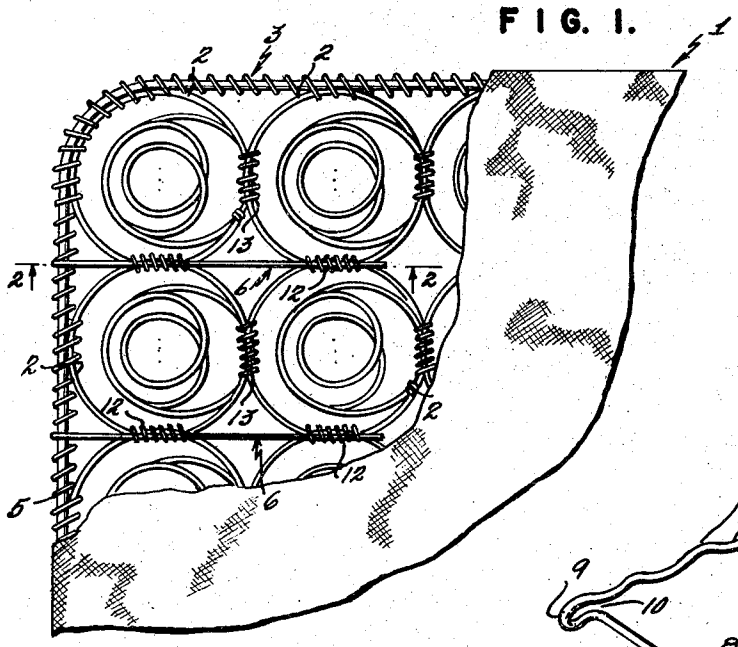

FIG. 3.

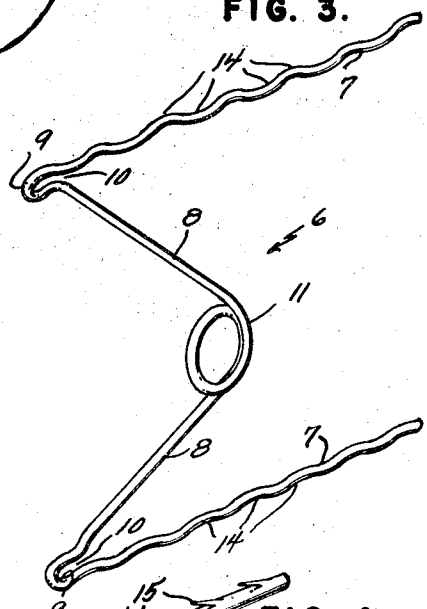

FIG. 2

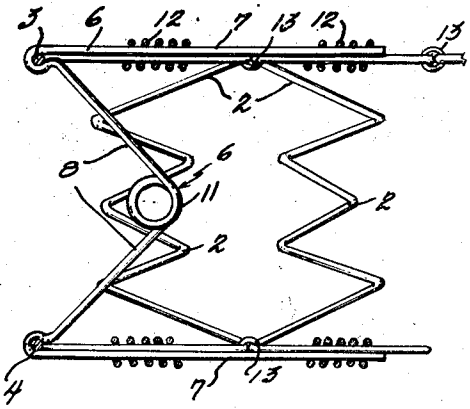

FIG. 4.

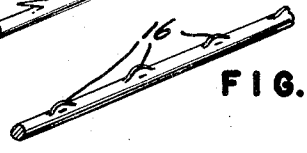

FIG. 5.

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SIDE REINFORCEMENT FOR INNER SPRING MATTRESSES

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10 Claims. (Cl. 5—351)

This invention relates to mattresses, cushions or the like having an inner spring construction and, more particularly, to the reinforcement for the edges of such a mattress or cushion.

When inner spring mattresses are in use for long periods of time, the edges of the mattress or cushion become weakened and sag, presenting an unsightly appearance and ceasing to function properly as resilient weight bearing devices. Attempts have been made to reinforce the inner spring unit of such mattress or cushion along the edges thereof which will yieldably support a weight but which will act to restore the unit to its original shape upon removal of that weight. However, these attempts have not been entirely satisfactory for a variety of reasons, such as difficulty of assembly with the inner spring unit, insufficient resiliency, a tendency to shift or slip thus damaging the fabric covering the unit, and expense of manufacture.

Accordingly, it is a major object of the present invention to provide an inner spring unit for use in mattresses, cushions, or the like, having a simplified reinforcing device for the edges thereof.

It is a further object of the present invention to provide such a unit in which the reinforcing device will be of simple construction, easily manufactured, easy to assemble in the inner spring unit, and, when mounted in its proper position, will not slip or shift during use and thus damage the fabric.

In the attainment of these objects, one feature of my invention resides in the arrangement of M-shaped reinforcing devices which are mounted in the sides of the inner spring unit in planes normal to the planes of the faces and of the sides to be reinforced. Another feature of my invention concerns the formation in the wire of the reinforcing device of means for retaining said devices in their proper position during the life of the mattress. This retaining means may include clamps for engaging the wire frame of the mattress and/or projections for engagement with the convolutions of wires binding together contiguous coils of the spring unit.

These and other objects and features of my invention will become apparent from the following description of the preferred embodiment illustrated in the accompanying drawings in which

Fig. 1 is a plan view of an inner spring unit embodying the present invention in its preferred form;

Fig. 2 is a sectional view along the line 2—2 of Fig. 1 showing one of the reinforcing devices mounted in operational position;

Fig. 3 is a perspective view of one of the reinforcing devices shown in Fig. 1;

Fig. 4 is a perspective view of part of a leg of a reinforcing device illustrating a modification thereof; and

Fig. 5 is a perspective view of part of a leg of a reinforcing device illustrating a second modification thereof.

Referring now to Fig. 1, an inner spring unit 1 has, as resilient members, double conical springs 2, 2. Wire

frame members 3 and 4 surround the spring unit defining the faces thereof and are tied to the top coils and bottom coils, respectively, of the outermost coil springs 2 in any suitable manner. In the embodiment shown, this is accomplished by means of helical binding wires 5 which are wound around the frame members 3 and 4, some of the turns also being wound around those portions of the coil springs which contact the frame members.

In order to reinforce the edges of the inner spring unit, I employ resilient reinforcing devices 6 having the construction shown in Fig. 3, and consisting of a substantially M-shaped piece constructed from a single length of spring steel wire of circular cross section, having two parallel legs 7, 7 each leg being joined at one end thereof to a sloping arm 8, the arms 8, 8 being joined together at a point approximately midway between the legs 7, 7.

At the juncture of legs 7, 7 with arms 8, 8 the wire is bent back upon itself for a short distance, forming an arcuate loop 9 which is of a width slightly greater than the diameter of the material comprising frame members 3 and 4, and which has a mouth 10 of a width slightly less than the diameter of the frame material for a reason hereinafter explained.

The juncture of the sloping arms 8, 8 of the M is formed by coiling the wire to provide a resilient spring coil 11 which acts in a manner to urge the legs of the M apart. The slope or inclination of the arms 8,8 of the M is such that the unit, when finally formed, will have the distance between the legs 7, 7 somewhat greater than the height of the inner spring unit when in its unstressed or non-load bearing condition.

Reinforcing device 6 is placed in the inner spring unit in a plane at right angles to the plane of the side to be reinforced as best seen in Figs. 1 and 2. The frame members 3 and 4 are forced through the narrow opening 10 and are seated within loop 9 of each reinforcing device. Due to the fact that openings 10 are of less width than the diameter of the material of frame members 3 and 4, the frame members will be firmly held in the loops 9, thus preventing shifting or sliding of the members relative to the spring frame and thereby preventing damage to the fabric and stuffing material of the mattress or cushion.

As is customary in inner spring construction, contiguous coils are connected by helical binding wires 12, 12. The legs 7, 7 are inserted into these helical binding wires 12, 12. Preferably, legs 7, 7 of the reinforcing devices are of a length sufficient to enter two of the binding wires 12, 12. Additional helical binding wires 13, 13 serve to tie contiguous coil springs together at their points of contact which are not common with the contact points of the legs on the reinforcing device 6.

In order that binding wires 12, 12 may exert a more positive gripping action on the legs 7 of the devices 6, the legs 7 are formed with a series of projections thereon. These projections positively engage the convolutions of the helical binding wires 12, 12, thus preventing shifting and sliding of the device 6 during use, thereby preventing damage to the fabric and material of the mattress.

In the embodiment shown in Fig. 3, the legs 7, 7 are formed with a series of projections consisting of slight bends 14, 14 which extend for the entire length of the legs. These bends extend on either side of the center line of the legs 7, successive bends being on opposite sides of said center lines.

In the modification shown in Fig. 4, the projections on the legs 7, 7 consist of a series of upstanding barbs 15, 15 pointing to the end of the leg which join the arm 8 and serving the same function as the bends 14 of Fig. 3. As can be seen in Fig. 4, these barbs are integral

with the legs 7 and are slanted in such a manner that their point of juncture with leg 7 is further from the juncture point of arms 8 and legs 7 than is the point of the barb 15. It is necessary to point the barbs to the front of the device 6 so that legs 7, 7 may be inserted into binding wires 12, 12 when assembling the unit.

In Fig. 5, I have shown another modification of the present invention having arcuately shaped projections 16 on the legs 7. These projections serve the same purpose as bends 14 and barbs 15, and are oriented on the legs 7 in such a manner that the plane of the projection is parallel to the longitudinal axis of the leg 7.

When inserting the devices 6, 6 in the inner spring unit 1, due to the force exerted by coil 11, it is necessary to compress devices 6, 6 somewhat, thus, when in place, devices 6, 6 exert a constant force tending to urge the faces of the unit 1 apart.

When the devices 6 are in place and the mattress or cushion is completely assembled and in use, the presence of a weight at the edge of the mattress will cause resilient devices 6 to compress along with coil springs 2, but, upon removal of the weight, device 6 will act to restore the sides of the mattress to their original dimension thus overcoming and effectively preventing the tendency of such mattresses or cushions to sag at the sides after long periods of use due to a gradual weakening of the outermost coil springs.

It is obvious that various changes and modifications may be made to the details of construction without departing from the general spirit and scope of my invention as set forth in the appended claims.

What I claim is:

1. For use in a mattress cushion or the like having wire frames defining upper and lower faces spaced apart by coil springs, and helical binding wires tying together contiguous coil springs; a side reinforcing device formed of a single length of spring wire and comprising two spaced apart substantially parallel legs for entering the convolutions of the helical binding wires of the spring unit, and a pair of arms respectively joined to said legs by arcuate loops having narrow mouths for admitting the upper and lower wire frames to secure said device in a plane normal to the plane of the side of the mattress unit to be reinforced, said arms being joined together to form a substantially M-shaped device.

2. For use in a mattress cushion or the like having wire frames defining upper and lower faces spaced apart by coil springs, and helical binding wires tying together contiguous coil springs; a side reinforcing device formed of a single length of spring wire and comprising two spaced apart substantially parallel legs for entering the convolutions of the helical binding wires of the spring unit, projections on said legs for engaging said convolutions, a pair of arms respectively joined to said legs by arcuate loops having narrow mouths for admitting the upper and lower wire frame to secure said device in a plane normal to the plane of the side of the mattress unit to be reinforced, said arms being joined together to form a substantially M-shaped device.

3. For use in a mattress cushion or the like having wire frames defining upper and lower faces spaced apart by coil springs, and helical binding wires tying together contiguous coil springs; the side reinforcing device as claimed in claim 2 wherein said projections include a series of bends on either side of the center line of each leg, successive bends being on opposite sides of said center line.

4. For use in a mattress cushion or the like having wire frames defining upper and lower faces spaced apart by coil springs, and helical binding wires tying together contiguous coil springs; the side reinforcing device as claimed in claim 2 wherein said projections include a series of barbs on each leg, each barb being integral with the leg and joined to said leg at a point further from the junction of the leg with said arm than the free end of said barb.

5. For use in a mattress cushion or the like having wire frames defining upper and lower faces spaced apart by coil springs, and helical binding wires tying together contiguous coil springs; the side reinforcing device as claimed in claim 2 wherein said projections are arcuately shaped and integral with said leg and disposed along the leg so that the plane of said projections is parallel to the longitudinal axis of said leg.

6. A mattress cushion or the like having wire frames defining upper and lower faces spaced apart by coil springs, helical binding wires tying together contiguous coil springs and an M-shaped side reinforcing device mounted in a spring unit in a plane normal to said faces and to the plane of the side of said spring unit, said side reinforcing device being formed of a single length of spring wire and comprising two spaced apart substantially parallel legs inserted into the convolutions of said helical binding wires, and a pair of arms joined together and respectively joined to said legs by arcuate loops having narrow mouths, said arcuate loops embracing the outer periphery of said upper and lower wire frames to secure said device to said frames.

7. A mattress cushion or the like having wire frames defining upper and lower faces spaced apart by coil springs, helical binding wires tying together contiguous coil springs and an M-shaped side reinforcing device mounted in a spring unit in a plane normal to said faces and to the plane of the side of said spring unit, said side reinforcing device being formed of a single length of spring wire and comprising two spaced apart substantially parallel legs inserted into the convolutions of said helical binding wires, projections on said legs engaging said convolutions, and a pair of arms joined together and respectively joined to said legs by arcuate loops having narrow mouths, said arcuate loops embracing the outer periphery of said upper and lower wire frames to secure said device to said frame.

8. The mattress cushion as claimed in claim 7 wherein the projections on the legs of said M-shaped reinforcing device include a series of bends on either side of the center line of each leg, successive bends being on opposite sides of said center line.

9. The mattress cushion as claimed in claim 7 wherein the projections on the legs of said M-shaped reinforcing device include a series of barbs on each leg, each barb being integral with the leg and joined to said leg at a point further from the junction of the leg with said arm than the free end of said barb.

10. The mattress cushion as claimed in claim 7 wherein the projections on the legs of said M-shaped reinforcing device are arcuately shaped and integral with said leg and disposed along the leg so that the plane of said projections is parallel to the longitudinal axis of said leg.

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