

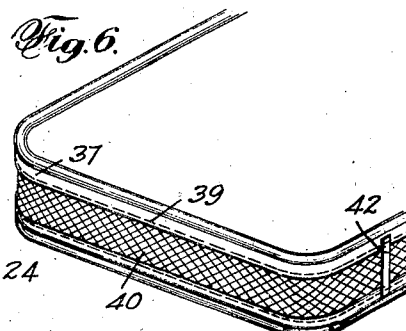
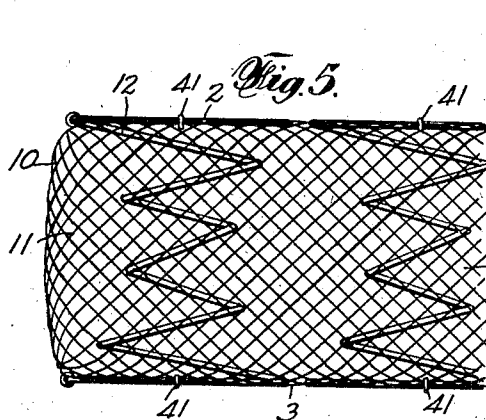
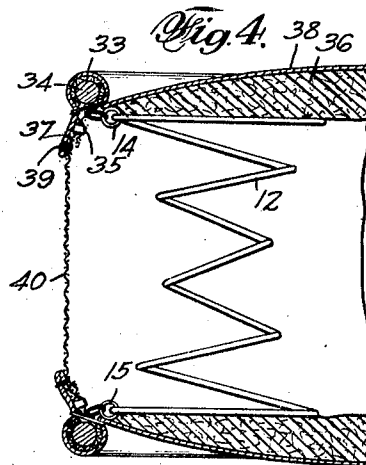
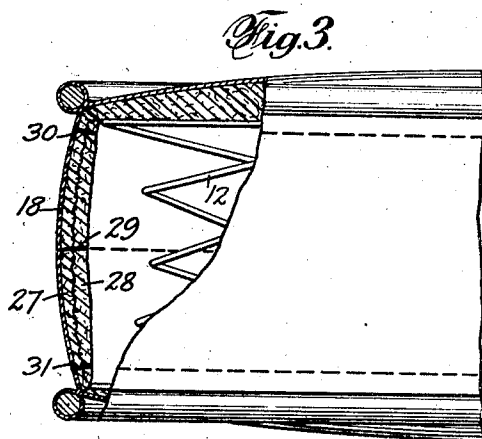
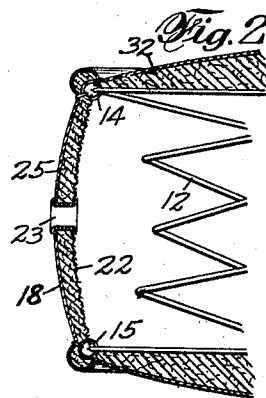
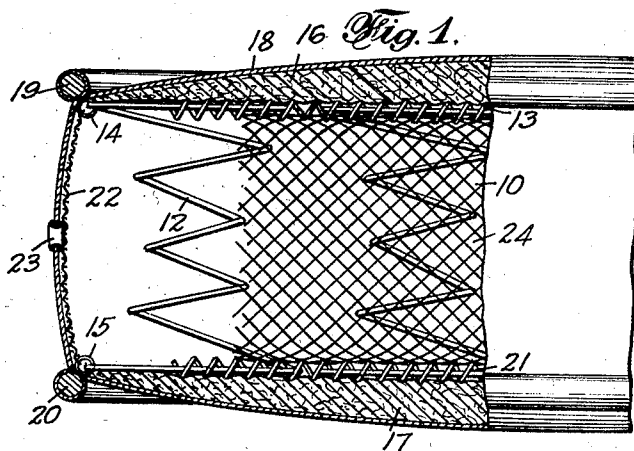
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SPRING EDGE MATTRESS OR CUSHION

Filed June 27, 1938



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SPRING EDGE MATTRESS OR CUSHION

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This invention relates to mattresses and cushions, and particularly to the means for maintaining the side and end edge portions thereof against permanent distortion under the stresses of use. Mattresses and cushions, even when supplied with inner spring units, tend to become permanently deformed at the peripheral edge portions thereof because the springs of the unit cannot be arranged near enough to the side and end surfaces of the mattress or cushion to maintain the padding and covering at said surfaces in their proper initial positions, so that the padding tends to work its way inwardly toward the springs and thereby to remove the supporting effect thereof from said surfaces, and to permit the surfaces to collapse.

My invention therefore contemplates the provision of comparatively inexpensive extensible and compressible means for adequately reinforcing and stiffening the end edge surfaces and side edge surfaces of the mattress or cushion regardless of whether or not padding is there employed, said means being readily attachable to the spring structure and being durable and effective.

My invention further contemplates the use of suitable wire mesh fabric for the side and end walls of a mattress or cushion, preferably in conjunction with an inner spring unit, to expand and contract with the corresponding lateral expansion and contraction of the mattress or cushion and thereby to maintain said walls in their proper sizes and shapes even after considerable use.

My invention further contemplates the provision of walls on a spring structure, formed of wire mesh fabric, and serving as a barrier against inward displacement of the padding arranged outside of said walls, if such padding is used, or serving alone and without covering as the sole side and end wall means.

The various objects of the invention will be clear from the description which follows and from the drawing, in which,

Fig. 1 is an elevation partly in section of one form of a cushion or mattress to which my invention has been applied and wherein no side padding is employed.

Fig. 2 is a fragmentary vertical section of a modified form of the same in which side padding is used.

Fig. 3 is a similar view of another modified form of the same wherein the reinforcing metallic fabric at the side and end surfaces is held between two layers of padding.

Fig. 4 is a similar view of a modified form of the same wherein the metallic reinforcing fabric is bent around the roll edge of the cushion or mattress, and is used as the upright wall without any padding.

Fig. 5 is a similar view of another modified form of the same wherein the metallic fabric is held to the springs by suitable clips or rings at intervals.

Fig. 6 is a perspective view partly broken away of a cushion or mattress similar to that shown in Fig. 4 wherein the covering of the side and end edge surfaces is omitted.

In the practical embodiment of my invention which I have shown by way of example, the metallic fabric or wire mesh 10 is arranged in upright position at the side and end edges of the structure and between the upper and lower surfaces thereof. Said fabric is woven in strip form of suitable thin springy wires 11, the individual wires being arranged in sinuous form throughout the fabric with the crest 2 and the troughs 3 of the sinuous curves arranged at the edges of the strip and forming a selvage. The width of the metallic strip 10 is preferably substantially equal to the thickness of the spring structure, though it will be understood that the strip may be compressed or expanded, if necessary, to the required width, said strip being readily compressible and expansible transversely. The metallic strip 10, when compressed, tends to bulge outwardly thereby maintaining the proper flat or convex edge on the spring structure instead of the concave edges or surfaces ultimately produced in an ordinary mattress structure after repeated compression thereof. The strip 10 may be used with or without padding and with or without a covering therefor, as will hereinafter appear.

In the form of the mattress shown in Fig. 1, the usual coil springs 12 are secured together in rows by means of the helical springs 13, 14, 15 and 21 customarily used for that purpose to produce an inner spring unit. The unit is shown as covered by the padding 16 on its upper surface and the padding 17 at its under surface, the whole being enclosed in the casing 18 at the corners of which is secured the roll edging 19, 20. The metallic mesh or wire fabric 10 is arranged between the upper and lower helical springs 13 and 21, that is, between the top and bottom of the spring structure in substantially upright position and is held in place by the helicals.

Preferably, the upper and lower edges of the mesh are secured in place at the same time that the coil springs are secured together by said

helical springs, the spring 13, for example, being wound around part of the upper coils of the springs and at the same time wound through the interstices between the individual wires at the upper edge of the wire mesh 10, the wires of said mesh being sufficiently yieldable or displaceable to permit the spring to be wound therebetween. Similarly, the lower edge of the mesh is secured to the lower coils of the coil springs by the helical 21 at the same time that said helical is wound around the lowermost coils of the coil springs. The mesh being bendable, it may readily be bent at the corners of the mattress to form the end edge surface 22 forming a continuation of and at substantially right angles to the side edge surface.

As shown in Fig. 1, the padding at the sides of the mattress may be omitted and the casing 18 arranged directly outside of and in face-to-face relation to the mesh. If desired, the mesh may additionally be held to the casing by suitable ventilating eyelets 23 of the usual type passing through the casing and the mesh.

When the mattress is compressed, the mesh 10 is also compressed, the individual wires thereof assuming a more flattened form and partly closing the interstices 24 therebetween. When the mattress is released from its compressive stress, the coil springs 12 return the mattress to its original expanded and unstressed form and expand the mesh 10 to its initial position. Said mesh 10, 22, suitably stiffens and enforces the side and end edges of the mattress and sufficiently resists inward pressure thereon to prevent objectionable concavity of said end and side edges, and also serves to maintain the mattress for a long time and even under long use in its proper form particularly at the side and end edges thereof, thereby avoiding the objection to edge padding which tends to move inwardly and to permit said side and end edges to become concave.

As shown in Fig. 2, the separate roll edging 19, 20 may be omitted, and suitable padding as 25 inserted between the casing 18 and the mesh 10, 22. If desired, the padding 32 may be arranged around the marginal helicals 14 and 15 to form a suitable roll edge, though it will be understood that the roll edge may be entirely omitted, if desired. The eyelet 23 serves to secure the mesh, padding and casing together and permits the circulation of air through the interior of the mattress.

As illustrated in Fig. 3, instead of arranging the mesh at the inner surface of the padding, said mesh may be prearranged between two layers as 27, 28 of the padding and stitched to the padding by suitable stitching 29. The mattress may then be finished in the usual manner, additional stitching as 30, 31 being employed, if desired, to secure the padding and the mesh at its edges to the casing.

As shown in Figs. 4 and 6, the greater part of the wire mesh comprising the side and end edge surfaces of the mattress may be left uncovered, unpadded and exposed, the padding being confined to the top and bottom surfaces of the mattress and to the corners thereof, regardless of the manner in which said mesh is secured to the inner spring unit of the mattress. In said Fig. 4, however, I have shown a modified form of the means for attaching the mesh in place. In this form of the invention, the upper edge portion 33 of the mesh is bent around a core 34 of suitable material such as twisted paper roll edging, the bent-over portion being secured to the body por-

tion of the mesh by suitable means such as the clips or staples 35. The padding 36 is arranged at the top and bottom of the spring structure. The casing 38 covers the padding and the bent portion 33 of the wire mesh and extends partly down the side and end edges as at 37. Said casing 38 is suitably stitched in place to the wire mesh around its preferably doubled back peripheral edge, as at 39. The bottom surface of the mattress is similarly completed thereby leaving the larger portion 40 of the wire mesh exposed and uncovered. In this form of my invention, the interior of the mattress is visible through the upright mesh walls 40 and the entire interior is readily ventilated through the interstices of said mesh. The round wire of the mesh being free from any protuberances or projections cannot catch upon any sheeting or other material customarily used for covering the mattress when in use but provides a sanitary and well ventilated mattress of economical construction, dispensing with the necessity for ventilating eyelets, but permitting the use of the customary straps 42 for turning the mattress.

In that form of the invention shown in Fig. 5, the wire mesh 10 is secured in an economical manner at its upper and lower edges to the end coils of the springs 12 and by the so-called wire "hog" rings 41 or other suitable fastening means arranged at spaced intervals, the helicals being thereby dispensed with.

It will be understood from the above that the wire mesh may be conveniently secured to any of the usual forms of inner spring units customarily used for mattresses and cushions to form resilient protecting and reinforcing edge and end surfaces thereof. It will further be understood that any of the means customarily employed for holding the parts of a spring structure together such as rings, clips, helical springs or even stitching may be used for securing the upper and lower edges of the wire mesh in place, and finally it will be understood that the wire mesh may be covered or uncovered, or padded or unpadded, as may be found desirable for the special purposes for which the mattress is designed.

While I have shown and described certain specific embodiments of my invention, I do not wish to be understood as limiting myself thereto, but intend to claim the invention as broadly as may be permitted by the state of the prior art and the scope of the appended claims.

I claim:

1. In a spring structure provided with a series of coil springs having enlarged end coils and with metallic means for securing the end coils of the springs in place in the structure, side and end walls on the structure comprising a strip of woven wire mesh fabric having a width of substantially the height of the structure and consisting of a plurality of resilient interwoven wires each having spaced rounded bends therein at the edges of the strip said wires being substantially straight between the adjacent bends thereof, and means securing the rounded bends of the strip to the peripheral edges of the structure, said means passing through the strip.

2. In a cushion or mattress, a spring structure comprising a series of coil springs, helical springs joining the end coils of the coil springs, side and end walls on the structure including a metallic strip of transversely compressible and extensible fabric having comparatively wide interstices therein and comprising comparatively thin sinusoidal interwoven wires, means including said helical

springs securing marginal portions of the strip in upright position in the structure, padding on the upper and lower faces of the structure and covering material for said padding.

3. In a cushion or mattress, a spring structure comprising a series of coil springs, helical springs joining the end coils of the coil springs, side and end walls on the structure including a metallic strip of transversely compressible and extensible fabric having interstices therein and consisting of interwoven sinuous wires, the marginal portions of the strip being secured in upright position in the structure to said helical springs, padding at the upper and lower faces of the structure and covering material on said padding, the peripheral edges of said covering extending past the corner edges of the structure and terminating adjacent the edge portions of said strip to expose the greater part of the strip.

4. In an inner spring unit, upright coil springs, substantially upright side and end walls on the unit arranged outwardly of said springs and comprising transversely extensible and compressible metallic interwoven wire mesh, the wires of said mesh being comparatively thin and comparatively widely spaced apart and having rounded bends forming a selvage at the edges of the strip, and means securing said mesh in place in the unit to compress the mesh on the compression of the springs and to extend the mesh on the release of the springs, said means passing through the mesh at said bends and being connected to edge portions of the unit adjacent the bends.

5. In a mattress, an inner spring unit, padding at the top of the unit, similar padding at the bottom of the unit, a covering over each of the paddings, and exposed side and end surfaces on the mattress comprising wire mesh secured to the unit and to the coverings and compressible and expansible with the springs of the unit, the top padding covering terminating at the side and end surfaces above the middle of said surfaces and the bottom padding covering terminating below the middle of said surfaces.

6. In an inner spring unit insertable as a whole into a cushion casing, upright coil springs, metallic means for securing said springs in place in the unit, protective compressible and extensible walls at the sides and ends of the unit comprising substantially upright metallic fabric of interwoven sinuous wires, and means engaging the upper and lower edges of the fabric at spaced intervals for securing said metallic fabric to adjacent parts of the unit.

7. In an inner spring unit, upright coil springs, compressible and extensible side and end walls comprising substantially upright metallic fabric of interwoven sinuous wires, and helical springs passing through the edge portions of the fabric and around end coils of the upright springs.

8. In a spring structure forming the inner spring unit of a cushion or mattress, a marginal wall comprising a strip of wire mesh fabric consisting solely of interwoven resilient wires of sinuous form extending between the edges of the strip and between the upper and lower corner edges of the structure, and fastening means passing through the edges of the strip and through adjacent portions of the structure to constrain the strip to be reduced in width on the compression of the structure and to expand in width on the release of the structure from compressive stress, said strip protecting the unit from the entrance thereinto through said wall of substantial quantities of extraneous matter and maintaining the

marginal wall of the unit in its initial shape and size and against inward displacement.

9. A mattress comprising an inner spring unit including a series of coil springs having enlarged end coils, top and bottom padding on the unit, a cover on the padding, a continuous strip of metallic interwoven wire mesh fabric of a height substantially that of the unit and forming at least a part of the side walls and end walls of the mattress, and means passing through and securing the upper and lower longitudinal edge portions of the strip to adjacent parts of the mattress.

10. A mattress comprising an inner spring unit including coil springs having enlarged end coils, foraminous edge and end walls in said mattress substantially enclosing the edges and ends of said unit and comprising a continuous strip of metallic mesh consisting solely of a plurality of thin wires of the same diameter and material, each of said wires extending in sinuous form throughout the width of the strip at an angle of approximately 45°, said wires crossing to form substantially square interstices between adjacent wires of such dimensions as to permit relative movement of the wires through substantial distances sufficient to take up normal compression of the spring unit under the stresses of use, and means passing through the upper and lower edges of the strip and adjacent parts of the mattress for securing the strip in upright position in the mattress.

11. In a padded spring structure, a series of coil springs arranged in rows and each having end coils of greater diameter than the intermediate coils thereof, padding means covering said end coils and extending around the side walls and end walls of the structure and covering at least the peripheral edge portions of said side walls and end walls and including padding material and covering material, a strip of metallic wire fabric arranged at the end walls and side walls of the structure inside of said covering material and spaced outwardly from the intermediate coils of the marginal springs a greater distance than the spacing thereof from the end coils of said springs, and means passing through the wire fabric and through the covering material securing said material to said fabric and maintaining said material and fabric in place in the structure.

12. In a padded spring structure, a series of coil springs each having end coils of greater diameter than the intermediate coils thereof, said springs being arranged in rows, padding means covering said end coils and substantially enclosing the springs and including padding material and covering material, and means arranged at the side and end walls of the structure and extending between the end coils and spaced outwardly from the intermediate coils of marginal springs of the structure a greater distance than the spacing thereof from said end coils for preventing permanent collapse and distortion of the end walls and side walls of the structure, said means comprising a foraminous strip of metallic wire mesh, said marginal springs normally stretching said mesh laterally, and means passing through the edge portions of the mesh and connected to adjacent portions of the spring structure and securing the mesh in substantially upright position in the structure.

13. In a cushion or mattress structure, an inner member comprising a spring unit, padding on each horizontal face of the member, a covering member for the padding, side and end walls on

the structure including a substantially vertical strip of metallic wire fabric consisting of interwoven sinuous wires spaced to provide interstices therebetween, said covering member covering at least the edge portions of the fabric, and horizontally arranged fastening means passing through the edge portions of the fabric and through at least one of said members and securing the fabric to adjacent portions of the member.

14. In a cushion or mattress structure, an inner member comprising a plurality of coil springs each having end coils of greater diameter than the intermediate coils thereof, side and end walls on the structure including a strip of metallic wire mesh, a covering member on the inner member covering the end coils, said covering member covering also at least the edge portions of the mesh, and fastening means connecting said edge portions of the mesh to at least one of said members.

15. In a spring structure adapted to be inserted as a unit into a casing, upright coil springs secured together, side and end walls on the struc-

ture each including a continuous strip of woven wire mesh, coextensive in length and width with that of said walls and having lateral bends therein at the junctures of said side walls with the end walls, and means engaging the upper and lower edges of the strip and passing therethrough and through adjacent parts of the structure to secure said edges in place in the structure.

16. In a polygonal spring structure forming the inner spring unit of a cushion or mattress, a series of upright coil springs and upright marginal walls resisting deformation of the side and end edge surfaces of said unit and including a continuous transversely extensible and compressible strip of metallic fabric secured at its edges to the end coils of the marginal springs, said strip having a lateral bend therein at each of the corners of the structure, said strip comprising sinuous wires having edge bends forming a selvage on the strip, each of the wires passing completely across the strip at an angle of approximately 45°, all of said wires being of the same diameter and material.

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