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CORNER REINFORCEMENT FOR AN UPHOLSTERED ARTICLE

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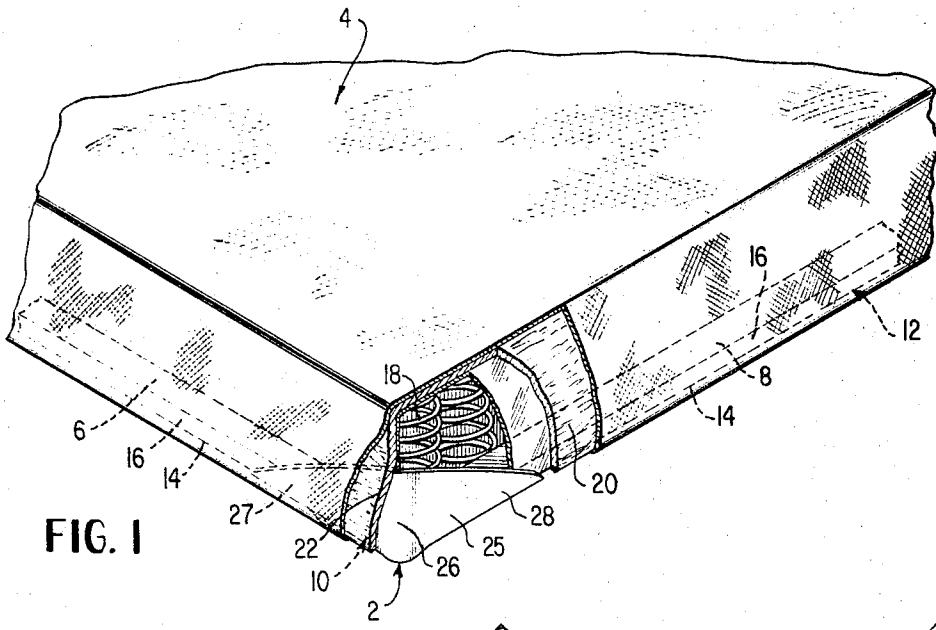


FIG. 1

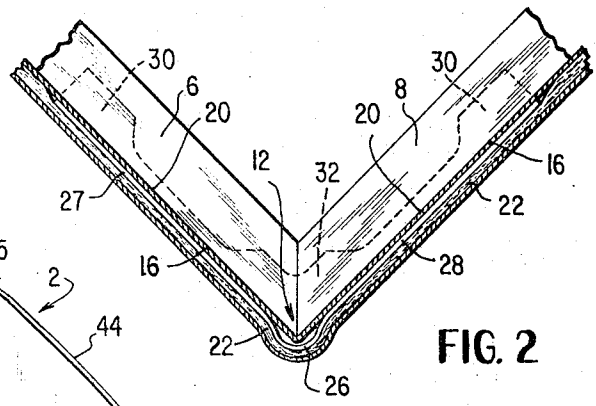


FIG. 2

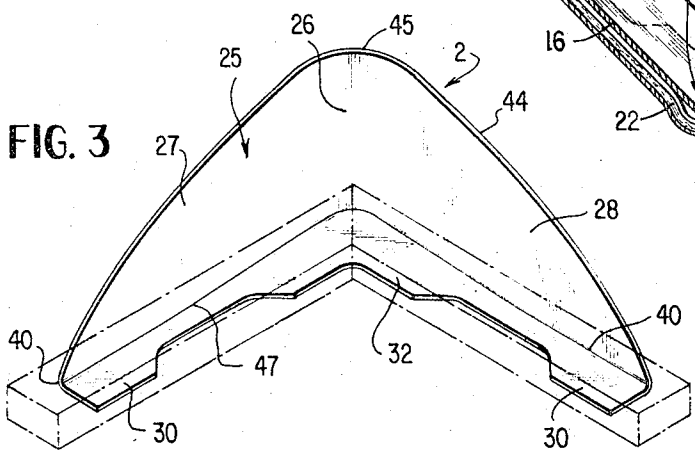


FIG. 3

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CORNER REINFORCEMENT FOR AN UPHOLSTERED ARTICLE

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ABSTRACT OF THE DISCLOSURE

A corner reinforcement for an upholstered article of the type including a frame having at least one corner defined by two intersecting, mutually inclined, elongate rigid frame members. The corner reinforcement includes a self-supporting member extending around one corner of the frame with the member having flexible wall means overlapping the frame adjacent the corner and extending vertically from a base surface of the frame to a point spaced above the frame. The wall means is resiliently deflectable in response to external forces applied to edge means of the member. The edge means is spaced above the frame corner. Upholstered portions of the article overlie and enclose the wall means on a side thereof remote from the frame.

This invention relates to upholstered articles. In particular the invention relates to a corner reinforcement intended to protect an upholstered article, such as a box spring, from damage at its corners.

Conventional box springs usually include a four cornered, rectangular, rigid frame housing a plurality of coil springs. It is common to provide an inner layer of fabric to enclose the springs and an outer layer of relatively soft padding material overlying the inner layer, both layers being secured to the outside of the frame at various points by nailing or the like.

In such a construction, a problem may arise due to chafing of the soft padding material on the corners of the frame which are usually both hard and relatively sharp. This problem may be further accentuated if, as is common, the frame members are formed from rough sawn wood. Such chafing may be encountered in a particularly acute form during commercial shipment of the box spring when it may be subjected to such deleterious circumstances as sustained travel vibration, on-edge stacking and the normal hazards of loading and unloading. These circumstances, either singly or in combination, frequently result in extensive damage to the padding of the box spring before it reaches its destination.

Another problem associated with a frame having sharp corners is that it may not be possible to secure the padding material about the corners of the frame in such a manner as to provide smooth exterior surfaces at the corners of the box spring as is desirable for reasons of appearance. Additionally, as the padding material chafes, the padding at the corners may become progressively loosened thereby leading to an unattractive sagging effect at the corners of the box spring. Further sagging problems may arise if the frame members are of less vertical extent than the thickness of the box spring, in which event the unsupported portions of the padding may sag inwardly of the box spring.

A further problem associated with box springs of the construction described may arise due to the tendency of the various tensile forces exerted on the inner layer of

fabric during use to be concentrated at the corners of the box spring. Such tensile forces, acting over a period of time, may be sufficient to cause the fabric to become ripped at the various points at which it is nailed to the frame, adjacent the corners. In this event, the inner layer of fabric may become loosened, thereby degrading its ability to distribute the weight of a mattress overlying the box spring evenly to the springs thereof with a consequent loss of comfort in use.

Although the above problems have been particularly described with regard to box springs, it will be appreciated that similar problems arise in many other upholstered articles of the type including rigid frame members.

In recognition of the problems described above, it is therefore a general object of the invention to provide a corner reinforcement for an upholstered article such as a box spring which substantially obviates or minimizes problems such as those mentioned.

It is a particular object of the present invention to provide a corner reinforcement for a box spring which minimizes chafing of the box spring padding at the corners of the mattress frame.

It is another object of the invention to provide a corner reinforcement for a box spring so constructed as to facilitate the provision of smooth padded corners on the box spring.

It is still another object of the invention to provide a corner reinforcement which minimizes sagging of the box spring padding at the corners of the box spring.

It is a final object of the invention to provide a corner reinforcement for a box spring of the type including a frame housing a plurality of coil springs and an inner fabric layer enclosing the springs secured to the frame, wherein loosening of the inner layer of fabric at the corners of the frame is effectively minimized.

These objects are accomplished in accordance with a preferred embodiment of the invention by a corner reinforcement intended for use in combination with an upholstered article such as a box spring. The upholstered article is of the type including a frame having a plurality of corners, each corner of which is defined by two intersecting, mutually inclined elongate frame members. The frame members include base surfaces lying in a common base plane and flat side surfaces facing outwardly of the frame and generally perpendicular to the base plane. The upholstered article further includes a layer of padding material having portions thereof overlying the outer side surface of the frame members.

In its most general aspects, the corner reinforcement comprises a self-supporting member extending around the corner of the frame. The member has flexible wall means which are resiliently deflectable in response to external forces applied to edge means of the member. The edge means are spaced from the frame corner and disposed within an upholstered portion of the upholstered article.

In another aspect of the invention, the member comprises a sheet possessing qualities of resiliency and limited flexibility. The sheet is curved arcuately about an axis of curvature generally perpendicular to the base plane with the sheet interposed between the frame members and adjacent portions of the padding material to prevent chafing thereof on the corner of the frame. The resiliency of the sheet material permits limited flexural deformation of the curved portion of the sheet in response to external impacts on the padding which provides an additional "cush-

ion" protecting the padding against the effects of external impacts.

Another aspect of the invention resides in the use of the corner reinforcement in combination with a box spring of the type described which further includes an inner layer of fabric enclosing a plurality of coil springs housed within the frame. The inner layer of fabric, adjacent a corner of the frame, is positioned between the outside of the frame members and the corner reinforcement. In this manner continuous gripping support for the inner fabric is provided so that the fabric is maintained taut at the corners despite tensile forces exerted on the fabric.

In a further significant aspect of the invention the corner reinforcement extends axially above the upper edges of the frame members to prevent sagging of the padding material inwardly of the box spring.

A preferred embodiment of the invention is illustrated in the accompanying drawings in which:

FIGURE 1 is a perspective view, partially in cross section, of a box spring provided with a corner reinforcement according to the present invention;

FIGURE 2 is a top, sectional view of a portion of the box spring provided with a corner reinforcement shown in FIGURE 1; and

FIGURE 3 is a perspective view of the corner reinforcement according to the present invention showing the flanges.

Referring to FIGURE 1 of the drawings, a corner reinforcement **2** according to one preferred embodiment of the invention, is shown in position on a conventional box spring **4**. The box spring **4** is of the type including at least one elongate, longitudinal frame member **6** connected at one longitudinal extremity **3** to a transverse frame member **8** to define a right angle corner **10** of a rectangular base frame **12**. The frame members **6** and **8** are of rectangular cross section including horizontal flat base surfaces **14** and vertical flat side surfaces **16**. Positioned within the base frame **12** and extending upwardly therefrom is the usual springing **18** including a plurality of coil springs. An inner fabric layer **20** is positioned over and about the springing **18** and secured to the outside of the base frame **12**. An outer layer of padding material **22** separate from and overlying the inner layer **18** is also secured to the base frame **12**.

The corner reinforcement **2** includes a self-supporting sheet-like member **25** of uniformly thick, resilient material curved adjacent its mid-point about a vertical axis generally perpendicular to the base plane to define a rounded central portion **26** of the sheet **25**. The member **25** is provided at its peripheral extremities with flat vertically extending wall portions **27** and **28**. In position on the frame **12** of the box spring, the wall portions **27** and **28** abut the longitudinal and transverse frame members **6** and **8** respectively on the flat vertical side surfaces **16** thereof. The central portion **26** (see FIGURE 2) provides a smooth, resiliently deformable, radiused surface by which the padding **22** may be held out of contact with the rigid, relatively sharper corner **12** defined by the frame members **6** and **8**. The corner reinforcement **2** is secured to the base surfaces **14** of the frame members **6** and **8** by inwardly directed flanges **30** and **32** secured to the lower extremity of the sheet **25** adjacent the peripheral extremities and the central portion **26** thereof respectively. Portions of the inner fabric layer **20** are positioned between the frame members **6** and **8** and the corner reinforcement **2** so as to provide a continuous gripping support for the inner fabric layer at the corner of the frame.

Referring in more detail to FIGURE 3, the corner reinforcement **2** comprises a unitary structure which in the preferred embodiment is formed by molding, although it will be appreciated that other methods of construction may be employed. The reinforcement **2** may be of any suitable material possessing limited flexibility and in the preferred embodiment is formed from polyethylene. However, it will be appreciated that other suitable materials such as high impact polystyrene or the like may be utilized.

The previously mentioned member **25** which is of generally sheet-like form is curved adjacent its mid point about a vertical axis with the wall portions **27** and **28** acutely inclined at generally a right angle. When the corner reinforcement **2** is positioned on the frame, the wall portions **27** and **28** are overlying and immediately adjacent the side faces **16** of the frame members. The central portion **26** is bent to a radius substantially greater than the thickness of the sheet **25** so as to provide a relatively generously curved, outer surface about the corner of the box spring which prevents chafing of the padding **22** on the corner of the frame. In addition, the flexible properties of the sheet **25** permit it to undergo resilient deformation when subjected to external impact so as to relieve part of the stresses produced in the padding by the impact with the result that damage to the padding is further reduced.

The sheet **25** includes a lower edge **40** lying generally in the plane of the base surfaces **14** of the frame members **6** and **8** and an upper edge **44** spaced vertically from the lower periphery **40**. The upper edge **44** is of generally arcuate configuration having a peak **45** of maximum vertical displacement from the lower periphery **40** at the central portion **26**. The upper edge **44** intersects the lower edge **40** at each of the peripheral extremities of the sheet **25**. The curved configuration of the upper edge **40** minimizes chafing of the padding material on the upper edge of the corner reinforcement itself as it extends outwardly from the peak. The sheet **25** at the central portion **26** extends along and about the vertical side surfaces **16** of the frame members so as to provide additional support for the padding **22** at the corners of the box spring in the area above the frame members **6** and **8**. This construction prevents sagging of the padding **22** inwardly at the corners and at the same time prevents chafing of the padding **22** along the upper edges of the vertical side surfaces **16** of the frame members.

To reduce the possibility of chafing along the lower edges of the side surfaces **16** of the frame members, the sheet **25** adjacent its lower periphery **40** is provided with a peripherally extending curved portion **47**. The curved portion **47** is curved inwardly from the sheet **25** into the base plane of the frame.

To secure the corner reinforcement **2** to the frame members **6** and **8**, the previously mentioned flanges **30** and **32** are provided. Each of the flanges **30** comprises a flat tab lying in the base plane of the frame and extending continuously inwardly from the lower peripheral edge **40** of the sheet **25** adjacent one peripheral extremity thereof. The flange **32** also lies in the base plane of the frame and extends continuously about the central portion **26** inwardly from the lower periphery **40**, thereby stiffening the corner reinforcement. The flanges **30** and **32** are secured to the base surfaces **14** of the frame members **6** and **8** by staples. Other elongate connectors or other forms of connection, such as screws, adhesive bonding, and the like may be utilized.

A portion of the previously mentioned inner fabric layer **20** adjacent the corner **12** of the frame lies between the corner insert **2** and the frame members **6** and **8** and extends downwardly over the vertical side surfaces **16** and beneath the base surfaces **14** thereof. In this position, relatively large areas of the inner layer of fabric **20** are gripped against the adjacent surfaces of the frame members by the flanges **30** and **32** and by the inner surfaces of the walls **27** and **28** of the corner reinforcement with the result that a particularly secure and evenly distributed support for the inner fabric **20**, which minimizes loosening thereof at the corners of the mattress, is provided.

In utilizing a corner reinforcement for a box spring constructed in accordance to the present invention, it will

be seen that chafing of the padding on the box spring frame is effectively minimized.

Moreover, the resilient nature of the sheet permitting flexural deformation thereof in the region of the curved central portion provides a cushioning effect to absorb external impacts directed to the padding and reduce damage thereto.

Additionally, the support provided by the corner insert above the frame members at the corners prevents sagging of the padding material in an unattractive manner at the corners of the box spring. Another advantage of the construction described is the manner in which it permits a particularly smooth and attractive corner to be provided on the box spring.

Further significant advantages of the corner reinforcement are derived from the manner in which the inner fabric layer enclosing the springs is provided with large areas of gripping support at the corners of the frame. such areas of support minimize the possibility that the inner fabric layer will become loosened from the frame in use of the box spring.

Although the invention has been described with particular reference to its use in combination with a box spring, it will be appreciated that the invention is not restricted to such an environment but may be utilized in conjunction with other rigid frame upholstered articles such as chairs, settees, couches and the like.

It will be appreciated that the terms upper and lower as used to describe portions of the corner reinforcement are merely employed to indicate relative positioning of such portions with respect to one another and are not intended as a limitation.

Although the invention is described with reference to one preferred embodiment, it will be apparent to those skilled in the art that additions, deletions, modifications, substitutions, and other changes not specifically illustrated in the preferred embodiment may be made which will fall within the purview of the appended claims.

I claim:

1. In an upholstered article of the type including a frame having at least one corner, the corner being defined by two intersecting, mutually inclined, elongate rigid frame members, a corner reinforcement comprising:

a self-supporting member extending around one corner of said frame, said member including:

a resilient sheet overlapping said frame adjacent said corner extending vertically from a base surface of said frame to a point spaced above said frame, said resilient sheet being resiliently deflectable in response to external forces,

edge means spaced above said frame corner; and

upholstered portions of said article overlying and enclosing said resilient sheet on a side thereof remote from said frame.

2. A corner reinforcement in accordance to claim **1**, the upholstered article additionally including a plurality of springs within and extending upwardly of said frame, wherein said member extends upwardly above said frame to a lesser extent than do the box springs.

3. A corner reinforcement in accordance to claim **1** wherein said edge means comprises vertically spaced upper and lower edge means,

said upper edge means being of curved configuration and having a peak spaced at a maximum distance from said lower edge means adjacent said corner of the frame.

4. In a box spring of the type including a box spring frame having a plurality of corners, each corner being defined by two intersecting, mutually inclined, elongate frame members, the frame members including base surfaces lying in a common base plane, each frame member further including a flat, side surface facing outwardly of the frame and lying in a plane generally perpendicular to the base plane, the box spring further including a layer of padding material having portions overlying the outer side surfaces of the frame members, a corner reinforcement comprising:

a resilient sheet of limited flexibility curved arcuately about an axis of curvature generally perpendicular to the base plane of the box spring frame, said sheet including two generally flat wall portions, each said wall portion positioned adjacent a peripheral extremity of said sheet and lying in a plane perpendicular to the base plane of the box spring frame, said wall portions being adapted to abut adjacent portions of the outer side surfaces of two intersecting frame members defining a corner of the frame;

a plurality of peripherally spaced flanges secured to one axial edge of said sheet extending inwardly therefrom lying generally in the base plane of the box spring frame, said flanges adapted to abut the base surfaces of the two intersecting frame members defining the corner of the frame; and

means for securing said flanges to the base surfaces of the two intersecting frame members with said sheet interposed between the frame members and adjacent portions of the padding material to prevent chafing thereof on the corner of the frame.

5. A corner reinforcement in accordance to claim **4** wherein:

said sheet is of uniform thickness, said sheet being curved about a radius substantially greater than the thickness of said sheet.

6. A corner reinforcement in accordance to claim **4** wherein the outer side surface of the frame members of the box spring includes upper edges spaced vertically above the base plane of the frame and,

wherein the padding material includes an additional portion extending vertically above the upper edges of the side surfaces of the frame members,

wherein said sheet includes portions of said sheet adjacent the corner of the frame extending vertically within a substantial part of the additional portion of the padding material above the frame members.

7. A corner reinforcement in accordance to claim **4** wherein one of said flanges extends continuously from one said wall portion to the other said wall portion of said sheet about the curve therein to increase the rigidity of said corner reinforcement.

8. A corner reinforcement in accordance to claim **4** wherein said wall portions and said flanges comprise an integral rigid structure.

9. A corner reinforcement in accordance to claim **4** further including:

a peripherally extending, radiused portion adjacent said one axial extremity of said sheet, said radiused portion curving from said sheet into the base plane of the box spring frame.

10. A corner reinforcement in accordance to claim **4** wherein the box spring is of the type further including spring means within the frame and an inner fabric layer enclosing the spring means,

wherein portions of the inner fabric layer extend between the outside and base surfaces of the intersecting frame members and adjacent portions of said corner insert.

11. A corner reinforcement for a box spring of the type including a box spring frame having a plurality of corners, each corner being defined by two intersecting, mutually inclined, elongate frame members, the frame members including base surfaces lying in a common base plane, each frame member further including a flat side surface facing outwardly of the frame and lying in a plane generally perpendicular to the base plane; said corner reinforcement comprising:

a substantially self-supporting resilient sheet of limited flexibility, said sheet being defined by two mutually inclined wall portions having generally flat outer surfaces, said wall portions adapted to overlie the side surfaces of two intersecting frame members defining a corner of the box spring frame:

a central portion integral with, intermediate and extending continuously between said wall portions, said central portion having an outer surface, curved about an axis parallel to the outer surfaces of said wall portions, said sheet being of uniform thickness in a direction perpendicular to said outer surfaces of said wall and said central portions, said central portion being curved about a radius substantially greater than said thickness of said sheet; and

means on one axial edge of said sheet for securing said sheet to the base surfaces of two intersecting frame members about the corner defined by the frame members.

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