May 17, 1966 M. LEVINE 3,251,074

BASE FRAME FOR SPRING ASSEMBLIES

Filed Sept. 17, 1964

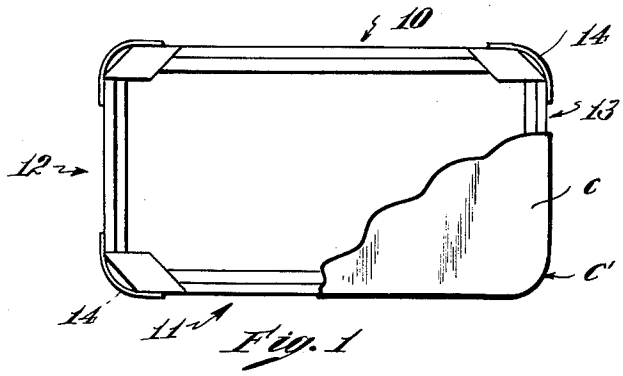


Fig. 1

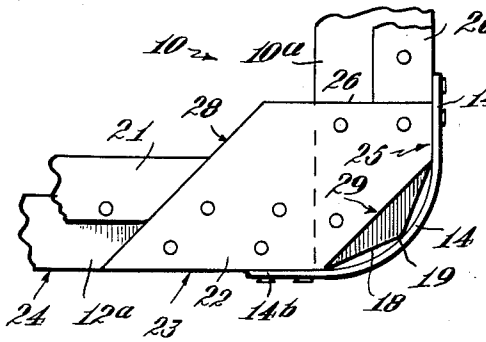


Fig. 3

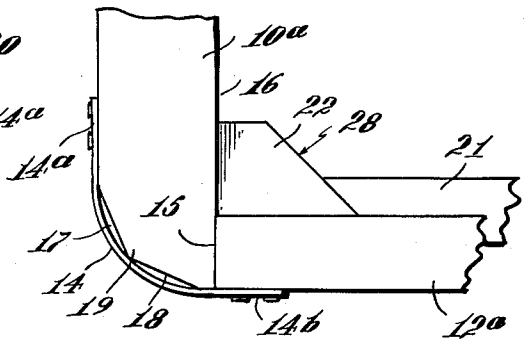


Fig. 4

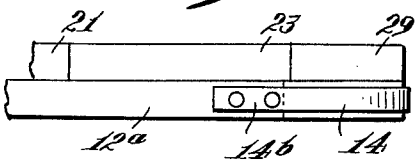


Fig. 5

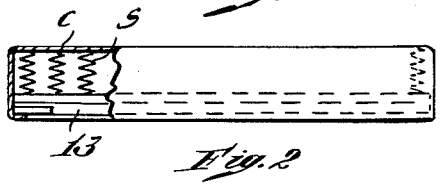


Fig. 2

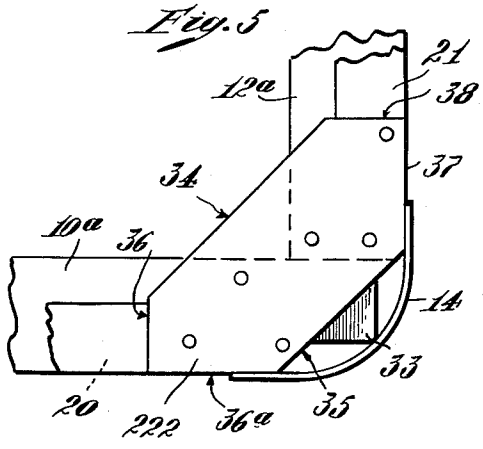


Fig. 6

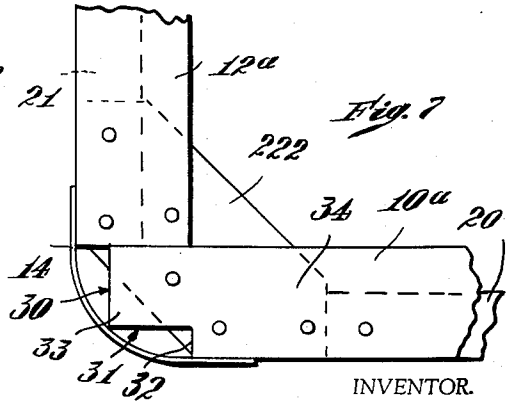


Fig. 7

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BASE FRAME FOR SPRING ASSEMBLIES

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5 Claims. (Cl. 5—282)

This invention pertains to a base frame for supporting a spring assembly, for example for use in the seat of a chair or in a box spring. Such base frames are usually of wood and, in order to accomplish the desired function, the frame must be rigid and provide a substantially plane upper surface on which the spring assembly may rest. In the majority of instances, the frame is rectangular and to insure the requisite rigidity comprises two plies or layers, each comprising at least four pieces of wood, for example ¾ of an inch in thickness and varying in width from approximately 2 inches to approximately 4 inches according to the particular use and size of the frame, the pieces which constitute adjacent sides of the frame being united by appropriate means at the several corners.

The spring assembly which is supported by the frame, when embodied in a seat or box spring, is usually housed in a casing of textile material, soft leather, or sheet plastic, whose lower margins are turned in about the frame and secured to the undersurface of the latter. Customarily, such a casing is designed to have arcuate corners so that it may fit snugly about the springs at the corners of the spring assembly as well as for the sake of good appearance, and thus it becomes desirable to form the base frame with arcuate corners of a curvature to fit snugly within the corners of the casing.

The principal object of the present invention is to provide a corner construction for such a wooden frame which may be made cheaply, employing straight saw cuts only and with a minimum waste of material, and to provide a corner, including a metal reinforce strip which is so curved as to fit within the arcuate corner of the casing, and which is adequately buttressed by the wood of the frame. A further object is to provide a frame having a corner construction which, while easy and inexpensive to manufacture, imparts great strength and rigidity to the frame.

Other and further objects and advantages of the invention will be pointed out in the following more detailed description and by reference to the accompanying drawings wherein:

FIG. 1 is a small scale, diagrammatic plan view of a frame embodying the present invention, omitting the spring assembly, showing one corner housed in a casing which is broken away;

FIG. 2 is an end elevation of the frame of FIG. 1, with the casing broken away to show the spring assembly mounted on the frame;

FIG. 3 is a fragmentary plan view, to larger scale than FIG. 1, showing a preferred corner construction;

FIG. 4 is a bottom view of the corner shown in FIG. 3;

FIG. 5 is an edge elevation of the corner shown in FIGS. 3 and 4;

FIG. 6 is a plan view illustrating a modified corner construction; and

FIG. 7 is a bottom view of the corner of FIG. 6.

In the embodiments of the invention herein disclosed, each corner is reinforced by a piece of metal, for example a strip of hard, stiff steel approximately 8 inches in length, ½ inch in width and 1/16 of an inch in thickness,

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whose midportion is bent to an arc of 90°. The straight end portions of the strip are secured, as by means of screws or nails, to the respective frame members which intersect at the corner. It is obvious that were adjacent frame members to meet in a mitered joint at the corner, such an arcuately curved reinforce member, if or a curvature of any substantial radius, could not be applied to the frame without deformation and thus it becomes necessary to make the frame corner of a special construction rather than a conventional miter joint. While it would, of course, be possible to saw the corner of the frame to an arcuate curvature so that the curved edge thus provided would fit snugly within the bent metal strip, such an operation would be expensive and, in fact, impractical since the manufacturer of such articles must keep expense at a minimum. On the other hand, in order that the curved strip may receive support intermediate its ends so that it will not be deformed by blows or pressure, it is desirable that some part of the wooden frame engage the inner surface of the curved portion of the strip intermediate the points where it is connected to the frame.

Referring to the drawings and, in particular, to FIGS. 1 and 2, there is shown a frame, according to the present invention, which may, for example, be the base frame of a box spring, although the spring is omitted in FIG. 1. The frame, as shown, comprises parallel side rails **10** and **11** and parallel end rails **12** and **13**, these rails being arranged to form a rectangle and of such dimensions as to provide a support for a spring assembly S (FIG. 2), for example such as is shown in the patent to Levine, No. 2,910,114, dated October 27, 1959, which will rest upon the plane horizontal surface provided by the assembled rails.

At C there is indicated a casing, for example of textile fabric, such as is commonly comprised in a box spring, which covers and conceals the spring assembly S and whose lower margin will be turned in to underlie the supporting frame to which the margin would be secured, for example, by tacks or other equivalent fasteners. In devices of this type, as above suggested, the spring assembly is usually constructed so that at the corners the spring assembly is arcuate in horizontal section and the casing or cover C is, for the same reason, so designed as to provide arcuate corners C^1, as shown in FIG. 1. In order that the frame may conform to the curved corner C^1 of the casing, the frame, according to the present invention, is provided with curved corners and to avoid the necessity of shaping the frame proper to such a curvature while, at the same time, providing reinforcement for the frame, there is provided at each corner a reinforce member **14** (FIGS. 1, 3 and 4), here shown as consisting of a length of metal ribbon, for example steel, having the substantially straight end portions **14***a* and **14***b* (FIGS. 3 and 4) which are secured by suitable fasteners, for example nails or screws, to parts which constitute the frame proper, while the intermediate portion of this reinforce strip **14** is bent to an arc of 90° curvature.

Referring more particularly to FIGS. 3, 4 and 5, which illustrate a preferred arrangement, the side rail **10** of the frame is shown as consisting of a length **10***a* of wood which may, for example, be of the order of 2¾ of an inch in width and ⅝ of an inch thick, while the corresponding end rail comprises a length **12***a* of wood which may, for example, be of the order of 1⅝ of an inch in width and of the same thickness as the member **10***a*. The end of the part **12***a*, as shown at **15** (FIG. 4), is cut square, that is to say, at right angles to the side edges of

the part 12*a*, and this square-cut end 15 abuts snugly against the rectilinear inner edge 16 of the member 10*a*.

The end of the member 10*a* is cut by rectilinear saw cuts at 17 and 18, making an angle, for example, of 135° with each other to define an angular portion at 19 constituting a buttress element which engages the inner surface of the curved portion of the reinforcing element 14, approximately at the midpoint of the arc formed by this curved portion. This contact of the end portion 19 of the rail member 10*a* with the inner surface of the reinforce member provides support for the latter, thus preserving it against deformation resultant from accidental blows or pressure. The parts 10*a* and 12*a* of the several rails collectively constitute a lower ply for the frame, but in addition to these parts the frame comprises an upper ply, indicated, for example, in FIG. 3, as including an elongate piece 20 of wood overlying the member 10*a* of the lower ply and fixedly secured to the latter as by means of nails or screws, the upper ply also comprising parts 21, each overlying a corresponding part 12*a* of the lower ply and fixedly secured to the latter. The members 20 and 21 are shorter than the corresponding members 10*a* and 12*a* of the lower ply and at each corner the upper ply comprises a block 22 made, for example, from a length of wood of 4 inches in width, having the parallel side edges 28 and 29, and which is cut by straight saw cuts 23 and 26 parallel to each other, and a third saw cut at 25 defining an edge at right angles to the edge made by the cut 26. The part 20 is provided with a square-cut end which abuts the edge 26 of the block 22, while the part 21 is cut at an angle of approximately 45° to fit snugly against the edge 28 of the block. The block as thus arranged extends diagonally and is united to the members of the lower ply by nails or screws, thus imparting great rigidity to the frame. It will be noted that the edge 29 of the block 22 extends diagonally across the arc defined by the reinforce member 14 so that, in the completed frame, the curved portion of the reinforce strip 14 (which, as here disclosed), is less in vertical dimension than the depth of the lower ply of the frame alone, defines the effective contour of the corner of the frame and thus the frame is of a shape to fit within the cover C and to impart to the cover, where it extends downwardly about the frame, a smooth and pleasing curvature.

Referring to FIGS. 6 and 7, which illustrate a corner construction of slightly modified form, the parts designated by the numerals 10*a* and 20 correspond to the similarly numbered parts in FIGS. 3 and 4, while the parts 12*a* and 21 correspond to the similarly numbered parts in FIGS. 3 and 4. In the arrangement of FIGS. 6 and 7, the end of the part 10*a* is shaped, by straight cuts at 30 and 31 intersecting at a right angle, to form the buttress element 33 which engages the inner surface of the reinforce member 14, the cut at 31 being intersected by a cut 32 at right angles to the cut 31 and to the adjacent edge 34 of the member 10*a*.

The upper ply of the frame comprises members 20 and 21 (FIG. 6) which overlie and are secured to the parts 10*a* and 12*a* respectively, and at each corner there is a diagonally arranged block 22, made from a length of wood having the parallel edges 34 and 35. This block is cut off from a length of wood by straight saw cuts at 36 and 36*a* intersecting at a right angle, and by other saw cuts at 37 and 38 also intersecting at a right angle, the cuts 36 and 38 providing surfaces for contact with the square-cut ends of the members 20 and 21. The block 22 is secured by fasteners, for example nails or screws, to the underlying parts of the lower ply. As shown in FIG. 6, the edge 35 of the block 22 extends diagonally across the arcuate portion of the reinforcing member 14 so that the reinforcing member, alone, actually defines the corner of the frame which is contacted by the casing C.

By the construction above described, it is made possible, while concomitantly providing adequate reinforcement for a corner of the frame, to produce a corner construction such that a smoothly rounded corner results without the necessity of cutting the wood of the frame itself to an arcuate shape, the only saw cuts required being simple straight cuts.

While desirable embodiments of the invention have been herein disclosed by way of example, it is to be understood that the invention is broadly inclusive of any and all modifications falling within the scope of the appended claims.

I claim:

1. A base frame for supporting a spring assembly, said frame comprising wooden side and end rails and a single, metal reinforce member uniting a side and end rail at each corner, respectively, of the frame, the reinforce member being a strip of stiff metal having substantially straight end portions which are secured by fasteners to the side and end rails, respectively, the intermediate portion of the reinforce member being curved to a 90° arc, the vertical dimension of the reinforcing member being substantially less than the depth of the frame proper, the reinforcing member being located below the midheight of the frame proper, and, alone, imparting a curved contour to the corner, the end of one, at least, of said rails having intersecting rectilinear surfaces defining an angular buttress which contacts the inner surface of the reinforce member approximately at the midpoint, only, of said arc.

2. A base frame according to claim 1, further characterized in that each rail comprises upper and lower plies, the straight end portions of the reinforce member engaging and being fixed to the material constituting the lower of said plies, and the upper ply including blocks which extend diagonally across each respective corner without contacting the arcuate portion of the reinforcing member, and means fixing said blocks to the material of the lower ply.

3. A base frame according to claim 1, which comprises upper and lower plies, the lower ply consisting of four elongate pieces of wood disposed in the same plane and arranged to form a rectangle, the reinforcing members being secured to the edges of the pieces constituting said lower ply, and the upper ply also comprising four elongate pieces of wood, each of lesser length than those constituting the lower ply, the upper ply comprising blocks, each extending diagonally across one, respectively, of the corners of the frame, but without contacting the concavely curved portion of said reinforce member, and fastener means uniting the members which constitute the upper ply to the members which constitute the lower ply.

4. A base frame according to claim 1, further characterized in that the rectangular edge surfaces of the rails of the lower ply which define the angular buttress intersect at an angle of approximately 135°.

5. A rectangular base frame for the spring assembly of a box spring which comprises a casing whose corners are arcuate and whose lower margins extend down and about the frame and are secured to the lower surface of the frame, said frame comprising wooden rails and means uniting adjacent rails at each of the four corners of the frame, the means for uniting the rails comprising reinforcing elements, each consisting of a ribbon of hard steel whose end portions are substantially straight and whose intermediate portion is curved to a 90° arc on a radius approximating that of the curved corner of the casing, means fixedly securing the end portions of each reinforcing element to the edges of adjacent rails, respectively, the vertical dimension of the reinforcing element being substantially less than the depth of the frame proper and the reinforcing element being located below the midheight of the frame proper and presenting a smoothly curved, arcuate outer surface for engagement with the inner surface of the curved corner of the casing, the frame proper, above the reinforcing element, being so shaped that it does not contact the casing so that the arcuate portion of the reinforcing element, alone, im-

parts the external shape to the corner of the frame, while the material of the casing contacts said arcuate portion of the reinforcing element.

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