June 18, 1946. P. KOST 2,402,252

BOX SPRING

Filed March 3, 1943 2 Sheets-Sheet 1

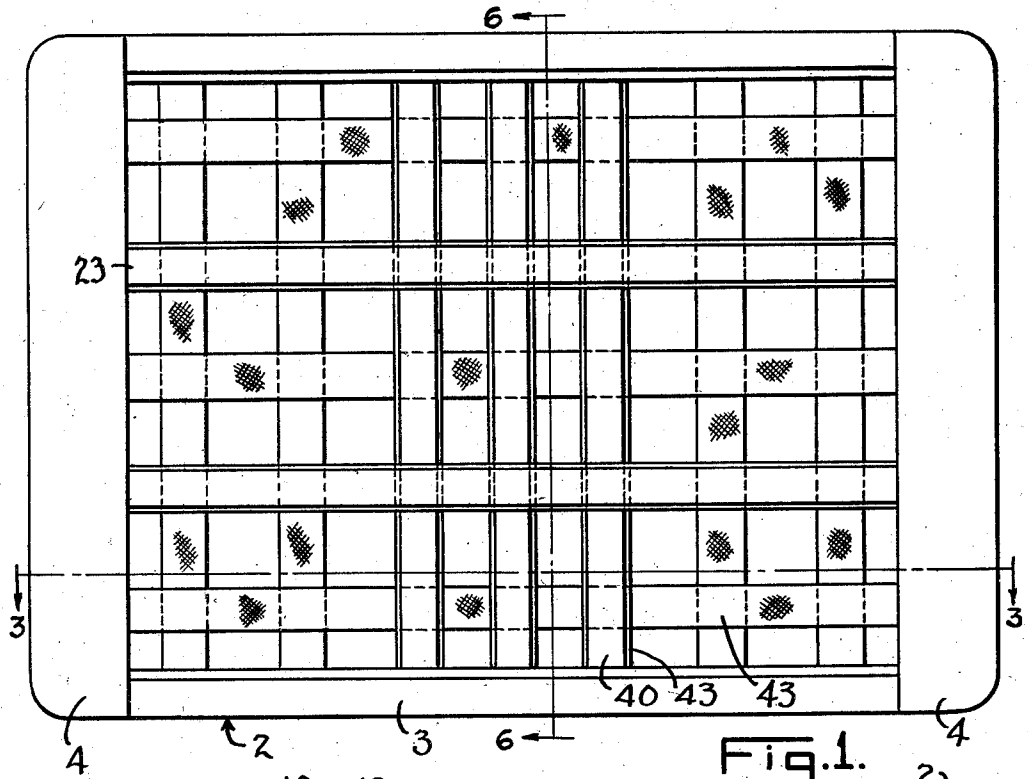


Fig. 1.

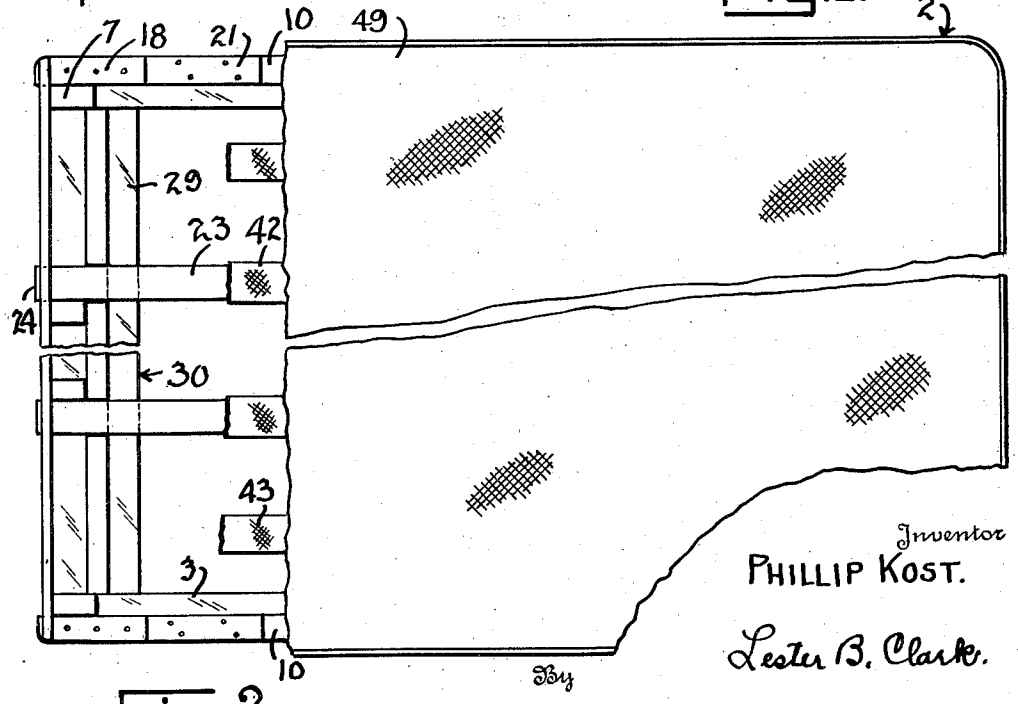


Fig. 2.

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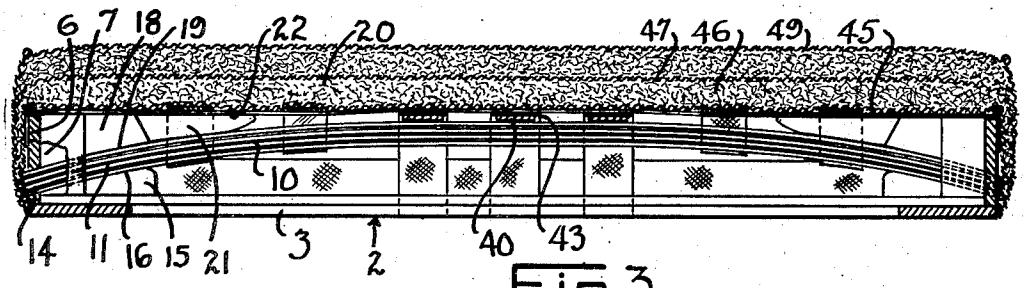


Fig. 3.

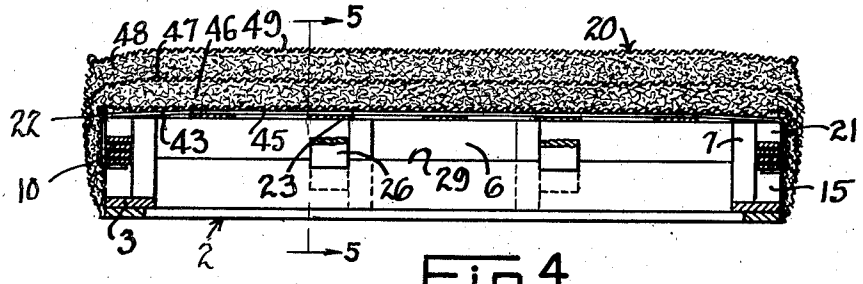


Fig. 4.

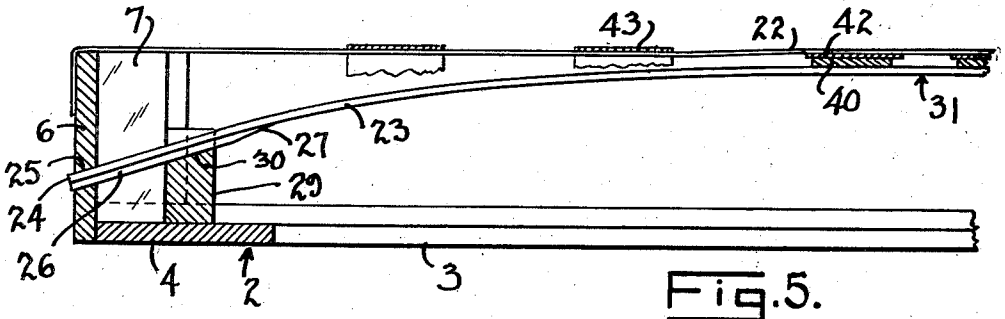


Fig. 5.

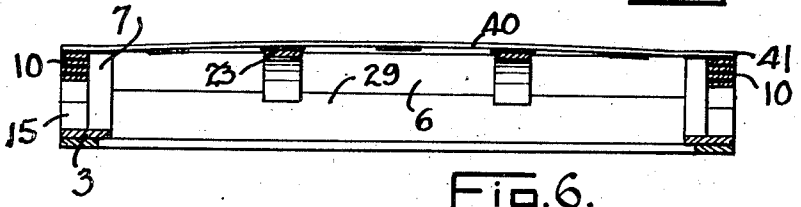


Fig. 6.

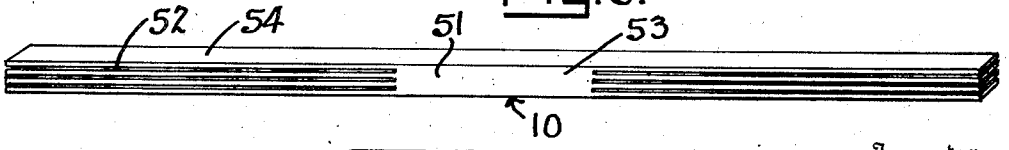


Fig. 7.

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UNITED STATES PATENT OFFICE

2,402,252

BOX SPRING

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2 Claims. (Cl. 5—351)

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The invention relates to a non-metallic box spring or cushion support for beds, furniture, seats and the like.

It is one of the objects of the invention to provide a non-metallic box spring and pad or mattress construction which may be used in various locations to give a spring support.

It is another one of the objects of the invention to provide a box spring having resilient edge structure in the form of a flexible arm so that comfort may be obtained when one is seated on the edge thereof.

Another object of the invention is to provide a laminated construction for a box spring side arm.

Another object of the invention is to provide a bowed slat construction for a side arm support in a box spring or cushion.

Another object of the invention is to provide a non-metallic box spring having a frame and longitudinal and cross slat members which will serve as springs in supporting an overlying pad.

Another object of the invention is to make up a non-metallic bed spring of slats and webbing which are crossed so as to provide a supporting surface for a pad or mattress.

Another object of the invention is to provide longitudinal spring-like slats which are positioned in an arch configuration so as to act as a supporting structure in a spring or cushion.

Another object of the invention is to provide a non-metallic spring made up of slats and webbing arranged so as to support a load in a uniform position and which may be covered with suitable cotton and ticking to present a neat and pleasing appearance.

Another object of the invention is to provide a side construction for box springs including a bowed slat side arm in combination with wedge and filler block surmounted by an edge strip so as to form a resilient side edge for the box spring.

Another object of the invention is to provide an overlapping slat construction made of wood and fabric webbing in the manufacture of a non-metallic box spring.

Other and further objects of the invention will be readily apparent when the following description is considered in connection with the accompanying drawings wherein:

Fig. 1 is a bottom plan view looking up under the box spring in which the invention has been incorporated.

Fig. 2 is a top plan view looking down on the box spring and mattress with certain portions broken away to illustrate the assembly of the parts.

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Fig. 3 is a longitudinal vertical section taken on the line 3—3 of Fig. 1 and illustrating all of the parts as they are arranged.

Fig. 4 is a transverse sectional view taken across the construction of Fig. 3 at about the three-quarter point.

Fig. 5 is an enlarged broken detailed section taken on the line 5—5 of Fig. 4.

Fig. 6 is a section taken on the line 6—6 of Fig. 1.

Fig. 7 shows a modified construction of the slat arrangement used in assembling the side arm.

In Fig. 1 a frame or box for a spring has been shown at 2 and while a box spring construction for a bed has been illustrated in the drawings and will be described in detail herewith, it is to be understood that this may be made in any size or configuration, such as a construction which would be suitable for various types of furniture, such as divans, chairs and the like, or it may be used in automobile cushions or other locations where a flexible and comfortable non-metallic spring is desired.

This frame 2 is made up of the side base pieces 3 and the end base pieces 4 which are rigidly fixed together, as best seen in Figs. 3, 4 and 5.

The corner construction is seen in Fig. 5 as having the end rail 6 extending upwardly from the base 2 and has the corner blocks 7 fixed to the base end 4 and to the end rail 6.

It should be particularly noted that there is no rigid side rail comparable with the rigid end rail 6.

In lieu of a rigid side rail, however, a flexible side arm 10 is best seen in Fig. 3. This side arm is made up of a plurality of slats 11 which are of a length at least equal to the length of the box or frame 2. Each of these slats will have a layer of suitable fabric which is well known in the furniture industry, glued or otherwise fastened to the upper surface thereof. Then a plurality of these slats, four of which are seen in Fig. 3, will be fastened together at their mid points by nails or otherwise. When these slats are thus assembled, they will then be positioned in a suitable jig and arched to the desired angle so as to form a bow-like structure. As an overall illustration with a normal length bed, it has been found that the arch shall be approximately 6¾" in height.

Naturally the bowing of these slats causes the ends of the top slat to pull in slightly as compared with the other due to the flexing action obtained

by the assembly. The bowing action causes each slat to press against the other to form a spring-like assembly. When the slats are thus bowed, the ends of all of the slats will be fastened together by nails and glue so that a composite bow-like spring is provided.

As seen in Fig. 3 this spring will then be positioned along the side of the box and above the base side piece 3. The end rail 6 as seen in Fig. 3 as having an opening 14 therein thru which the ends of these slats or the side arm as a whole may project. In order to suitably support this side arm in bowed position and to obtain the maximum spring action, a wedge block 15 having a tapered surface 16, is fitted in on top of the side piece 3 and underneath the extreme ends of the arm, also seen in Fig. 3. In this manner the arm is rigidly fixed at its ends so as to form an arched construction, which will have a considerable amount of flexibility or resiliency.

A flexible side arm construction of this sort is desirable so as to form a soft, flexible edge for the box spring. In the past the box spring has usually been provided with rigid end and side rails which were quite uncomfortable when one was seated on the edge of the bed. With the present construction, however, no rigid side or edge rail is provided but the flexible arm is substituted therefor.

In order to provide a straight, smooth edge which will afford a pleasing appearance and present a uniform thickness for the construction, the filler blocks 18 have been cut and fitted so as to have a lower curved surface 19 to fit the upper surface of the arm construction 10, and to also fill in to the top of the end rail 6, as best seen in Fig. 3. This filler block 18, however, cannot extend for too great a distance away from the end of the mattress, because when the load is applied to the side arm, it will flex downwardly and prevent a downward movement of the cotton pad portion 20 which forms the upper surface of the construction. To accommodate this curvature when a load is applied at the intermediate portions of a construction, a movable end block 21 forms the outer terminus of the filler block 18. This block can be affixed to the upper surface of the arm assembly 10 by gluing or otherwise, so that it will move down with the arm and to an extent, pivot about the end of the rigidly fixed portion 18 of the filler block. This filler block, will itself, be affixed to the top of the side arm 10.

To complete this arrangement an edge strip 22, extends from one end rail 6 to the other and passes along above the side arm 10. These filler strips are in the form of a half-round molded filled fabric which will support considerable weight.

The intermediate construction is best seen in Figs. 2, 5 and 6 where the longitudinal spring slats 23 are provided. Fig. 2 shows two such slats but of course any desired number may be provided. These slats are of spring-like wood and will be bowed as best seen in Fig. 5. This bowing of these slats is obtained by positioning the end 24 in an opening 25 in the end rail and putting a reinforcing brace 26 therein, which terminates at 27 so as to form a fulcrum about which the slat will move in its resilient action. In order to obtain the desired bow of the slat 23, the wedge member 29 is shown as having been positioned adjacent the end of the construction. This wedge member may be a 2 x 4 having a beveled upper surface 30, which will be of the same inclination as is desired of the slat at a short distance from

the end of the box spring. This wedge block will be driven toward the end of the box spring construction and these intermediate slats 23 until the desired elevation near the center as at 31, is obtained. This elevation will preferably be the same or slightly more than the side arm elevation, as seen in Fig. 3. This cross bow action is seen in detail in Fig. 6.

In effect this provides a sort of cantilever construction, wherein the greatest curvature is directly above the point 27 where the spring slat is reinforced. The slats of the type here shown may be of oak, hickory or elm approximately 3" wide and ¼" thick. If desired these slats may have a layer of suitable fabric webbing glued or otherwise affixed thereto so as to give stability to the construction.

If desired the supporting member or leaf 26 may be slipped underneath the slat 23 after it has been positioned and driven home into the position shown in the drawing so as to provide a suitable bow to the spring leaf. This webbing may be carried around under the edges of the leaves and other members of construction, if desired, so as to present a neat and pleasing appearance.

Figs. 5 and 6 show cross slats 40, a number of which may be provided. These cross slats are of the same material and construction as the longitudinal slats but they will extend from the upper edge 41 of each of the side arms 10 across the intermediate slats 23 and will be slightly bowed as seen in Fig. 6. Each of these slats will be provided with a suitable webbing material as best seen in Fig. 5. This webbing is there shown at 42.

The side arms, the longitudinal slats and the cross slats form the principal foundation or spring structure. In order, however, to form a surface which will suitably support the cotton pad 20, Fig. 1 shows that intermediate strips of webbing material 43 have been drawn across and over the frame work of the slats, the end rails 6, and the filler blocks 18 and 19, as well as the edge support strip 22. All of the webbing will be either glued directly to the slats on which it rests or securely glued and tacked or otherwise fastened to the end rails 6 or the side strip 22 and carried around underneath the edge of the base frame 2 if necessary.

Figs. 3 and 4 show that a lining material 45 has been next passed over the assembly which has thus been provided. This lining 45 serves as a support for the first layer 46 of the cotton pad 20. An intermediate lining 47 is next provided and then the upper layer of cotton 48 and the covering or ticking 49 is next positioned.

This upper covering may be of any suitable pattern, weight or type so as to present a neat and pleasing appearance. Figs. 3 and 4 show that the first layer of cotton material 46 has been carried around the edge strip 22 so as to form a slight pad over the outer edge of that strip and the side arm 10.

Fig. 7 shows a modified form of the side arm 10, wherein a stick or timber 51 has been formed with slits 52 therein, extending inwardly from the ends but of a length to leave the solid central portion 53 of the stick. Any desired number of these slits 52 can be provided so as to form the slat portions 54 which will be more or less flexible. When this member is bowed, as seen in Fig. 3, the central portion will be held firmly together without other fastening. The webbing

can be positioned in the slits 52 so as to avoid squeaking or noise when the arm is flexed. The end portions can then be affixed as has been described in connection with the preceding type of side arm.

While the side arm construction of a plurality of strips has been specifically described as for the sides, it is intended that this construction can be used for either or both the intermediate or the cross support construction.

Broadly the invention contemplates a simple and economical box spring, pad and cushion which as not metallic parts thereof except for such tacks as may be used. The parts are firmly glued together with a suitable waterproof glue and primarily it is intended to furnish a box spring having a flexible edge structure so as to eliminate the rigid edge rail that is present in box springs.

What is claimed is:

1. A non-metallic box spring construction including a spring frame having side and end rails, a flexible arched side arm structure disposed above each side rail and including a plurality of flexed wooden slats anchored together at the top of the arch and adjacent the ends and connected to said frame, a series of longitudinal spring slats extending from end rail to end rail and anchored thereto, a plurality of cross slats overlying said spring slats and anchored to the side arms, a plurality of longitudinal and transverse cross strips of fabric webbing arranged upon and spaced between said slats so as to provide a flexible surface, a fabric lining on said webbing, a cotton mat on said lining, and a ticking cover extending over said mat and enclosing the side and end rails of said frame whereby a flexible edge non-metallic box spring is provided.

2. In a wooden box spring for beds, furniture and chairs, a frame, a plurality of bowed wooden slats, means to anchor said slats at the ends thereof to maintain the slats in said bowed position, cross slats disposed transversely of said first slats, a pad and covering means for said frame and slats, a side edge member supported at its ends on said frame and upon said cross slats to define a straight edge which is flexible, said frame having upstanding rigid end rails, and a filler block upon the bowed side edge slats to additionally support said side edge member.

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