March 2, 1943. H. HOPKES 2,312,411

UNIT BOX SPRING AND MATTRESS

Filed July 7, 1938 2 Sheets-Sheet 1

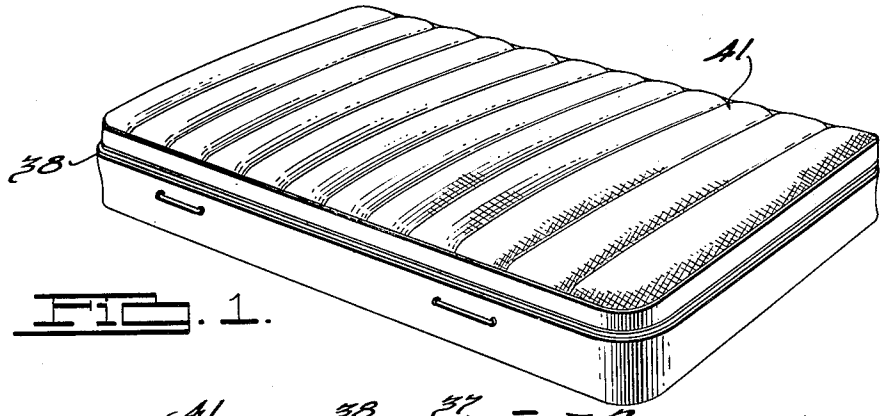


FIG. 1.

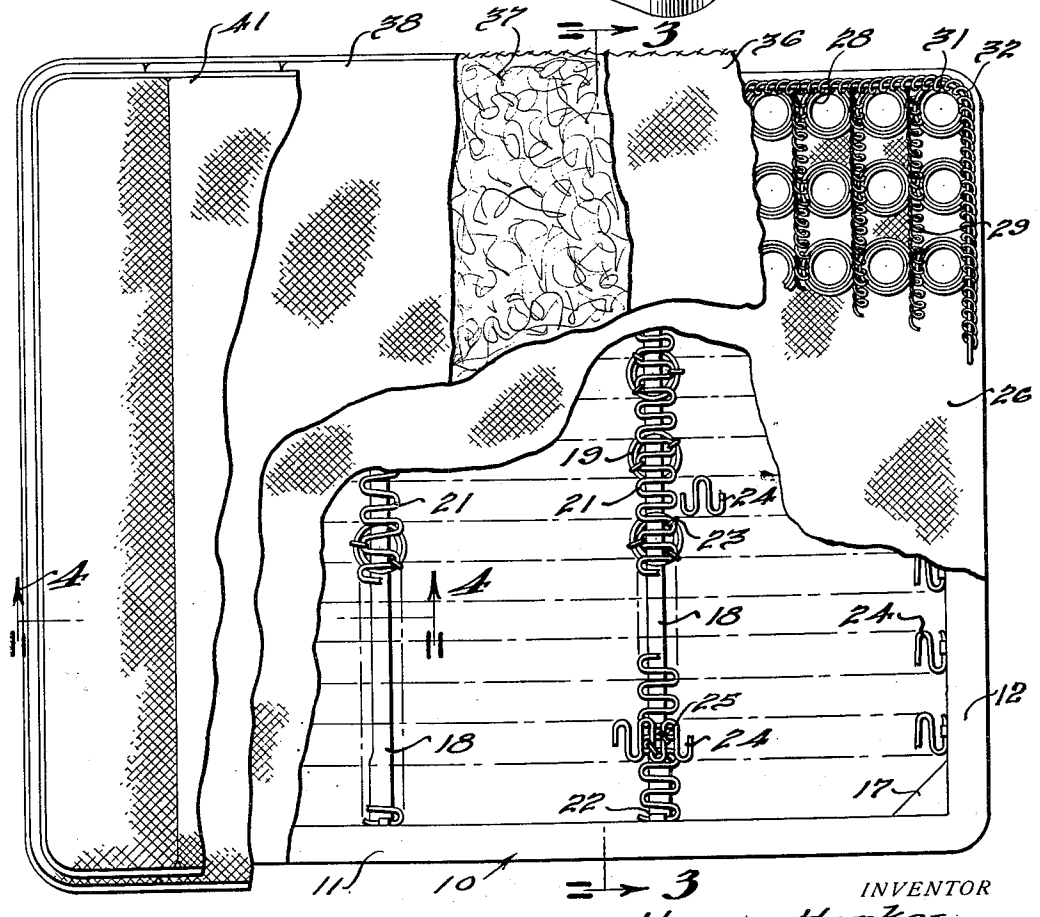


FIG. 2.

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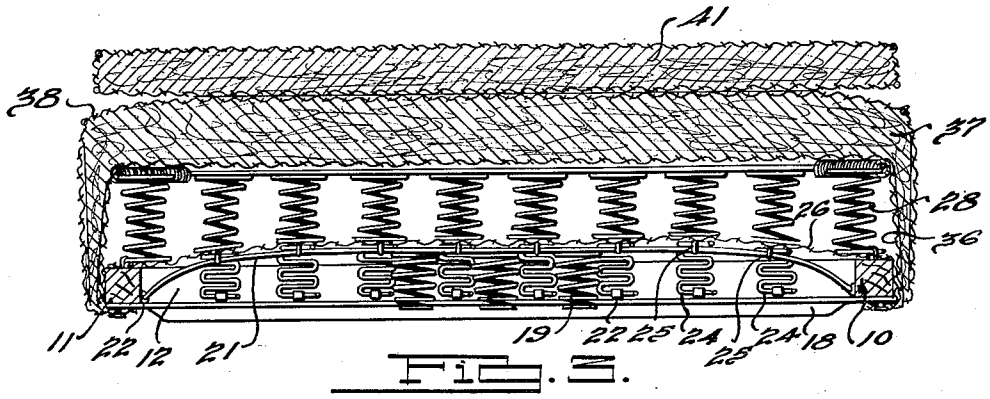


Fig. 3.

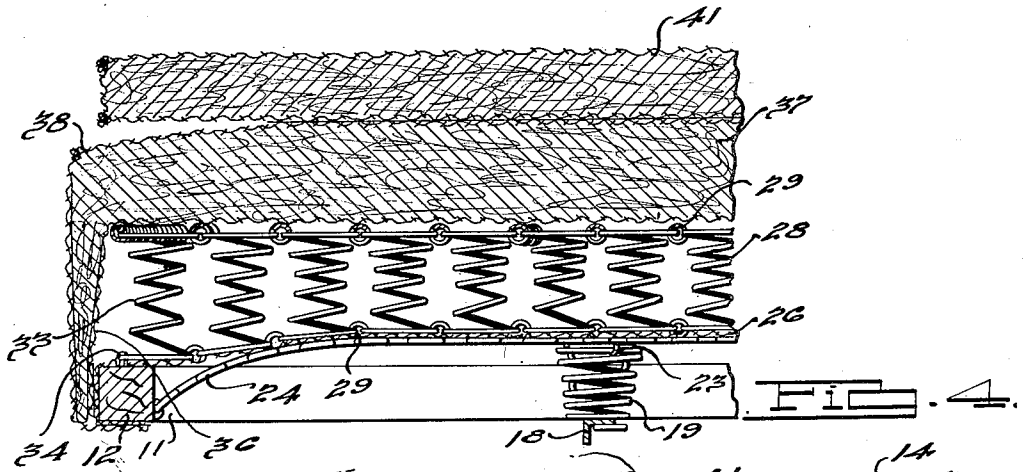


Fig. 4.

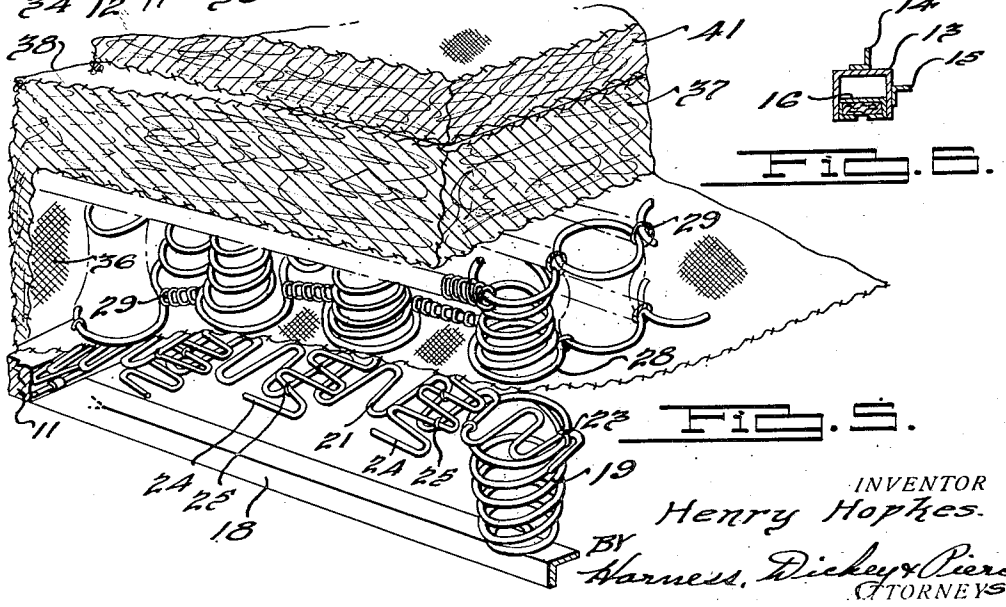


Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE

2,312,411

UNIT BOX SPRING AND MATTRESS

Henry Hopkes, Grosse Pointe, Mich., assignor to No-Sag Spring Company, Detroit, Mich., a corporation of Michigan

Application July 7, 1938, Serial No. 217,933

4 Claims. (Cl. 5—351)

My invention relates to matttresses, and particularly to a unit box spring mattress having a bottom spring surface upon which a coil spring assembly is disposed.

Heretofore, it has been the practice in the art to provide separate mattresses and box springs for beds, couches, and the like, each of which are separate units. The box spring embodied a frame having coil springs covered with a suitable trim material. The mattresses usually included a coil spring assembly having padding material on the top and bottom and was covered with suitable trim material, preferably the same type as employed on the box spring assembly. The cost of both of the elements was substantially the same. Not only is the cost of the two units materially reduced to substantially the price of one, when combined, but a softer, more sanitary and desirable unit is provided thereby. The top and sides only of the unit are covered so that air may circulate freely from the underside of the assembly through the entire structure. The single pad on the top of the assembly is readily aired and penetrated by the sun when exposed to its rays. A separate thin pad of cotton or similar material may be placed on the top of the unit box spring mattress, which, being light, is easily handled so that it may be removed and turned when desired.

The assembly embodies a frame of wood, metal, or the like, having a portion which receives the tacks for securing the trim material, and provided with means for fastening the spring elements thereto. If a metal frame is employed, suitable types of anchoring means for the springs may be welded or pressed therefrom while a suitable tacking strip may be riveted, welded or otherwise secured thereto. The frame is rectangular in shape and preferably provided with cross braces disposed transversely to its longitudinal dimension. Coil springs are preferably mounted on the cross braces and sinuous spring strips of the type illustrated and described in the Kaden Patent No. 2,002,399, under which the assignee is an exclusive licensee, are secured to the frame parallel to the bracing elements and attached to the tops of the coil springs. Longitudinally extending sinuous spring strips interconnect the transverse end members of the frame and are attached to the transversely disposed sinuous strips. The spacing of the longitudinally disposed sinuous spring strips is such as to have each strip mate with each row of coil springs of the spring assembly which is to be mounted thereover. Burlap or similar material is drawn over the spring strips and about the edges of the frame and tacked thereto. The burlap or similar material prevents metal to metal contact between the springs of the spring assembly and the sinuous spring strips.

The spring assembly is of conventional form, embodying a number of coil springs disposed in rows with the marginal row of springs both laterally and transversely of the assembly being of greater length since these springs rest on and are secured to the frame element. Suitable padding and trim material is placed upon the coil spring assembly with the ends thereof drawn downwardly and over the frame and tacked thereto.

Accordingly, the main objects of my invention are; to provide a unit box spring and mattress of a thickness no greater than a conventional mattress or box spring; to form a unit box spring and mattress with the underside thereof open to permit air to freely circulate through the thin top pad; to provide a rigid border frame for a unit box spring mattress interconnected by braces which support coil springs, which in turn support sinuous spring elements disposed parallel to the cross braces which form resilient supporting means for longitudinally extending sinuous springs forming a spring surface in the nature of a box spring; to provide a frame with a spring surface over which suitable material is provided and over which a coil spring assembly is mounted to form the spring assembly of a unit box spring and mattress; and in general, to provide a unit box spring mattress having desired resiliency and reduced height, which is entirely open to the air, all of which is simple in construction and economical of manufacture.

Other objects and features of novelty of my invention will be either specifically pointed out or will become apparent when referring, for a better understanding of my invention to the following description taken in conjunction with the accompanying drawings, wherein:

Figure 1 is a perspective view of a unit box spring and mattress, with a separate pad thereon, embodying features of my invention;

Fig. 2 is a broken plan view of the structure illustrated in Fig. 1;

Fig. 3 is a sectional view of the structure illustrated in Fig. 2, taken on the line 3—3 thereof;

Fig. 4 is a sectional view of the structure illustrated in Fig. 2, taken on the line 4—4 thereof;

Fig. 5 is an enlarged broken sectional view in perspective of the spring and pad assembly shown in the foregoing figures; and,

Fig. 6 is a sectional view of a frame element showing a modified form thereof.

The unit box spring mattress combines the

spring elements of a separate box spring and those of an inner spring mattress in a single unit. The box spring portion of the assembly embodies a rigid rectangular frame 10 comprising longitudinally extending elements 11 and transversely extending elements 12, which are herein illustrated as being made of wood. It is to be understood that the invention is not limited to the employment of a wood frame since a metal frame could be substituted therefor. The metal frame would be provided with suitable anchoring means, either pressed out unit portions of the frame elements, or tabs or strips may be welded thereto by which the spring strips are anchored. Such a frame section is illustrated in Fig. 6 wherein the downwardly presented channel elements 13 forming the frame are provided with suitable tabs 14, or strips having tabs 14 thereon, welded to the web and a side flange of the channel element. A tacking strip 16 of conventional form is welded or otherwise secured across the channel opening.

The frame of wood, illustrated in Fig. 3, has reinforcing corner blocks 17 glued, nailed, screwed, or otherwise secured thereto to provide rigidity for the corners. Interjacent the ends of the longitudinally disposed frame members 11 angular cross braces 18 are provided which are secured thereto in any suitable manner. Coil springs 19 rest on and are fixed to the cross braces while sinuous spring strips 21 are disposed parallel to the cross braces 18 and are secured by staples, clips, or other means 22 to the frame elements 11. The strips are secured by hog rings 23 to the tops of the coil springs 19. The transversely disposed spring strips 21 supported on the tops of coil springs 19 provide a spring support for longitudinally disposed sinuous spring strips 24 which are secured to the transverse frame elements 12 by the staples or clips 22. The spring strips 24 are secured to the transverse spring strips 21 by hog rings 25. The spacing of the strips 24 is such as to have the strips aligned with the rows of springs provided in the spring assembly to be referred to hereinafter.

Over the spring surface thus provided a sheet of burlap or similar heavy fiber material 26 is disposed having the ends drawn over the frame member and tacked or otherwise secured thereto. The sheet 26 prevents metal contact between the spring strips 21 and 24 and the elements of the spring assembly, to prevent squeaks from occurring therebetween. The frame and spring strip assembly has all of the desirable qualities of a box spring, and in addition the sinuous spring strips provide a spring surface substantially in the plane of the frame 10, providing an assembly which is only slightly thicker than the frame.

The coil spring assembly embodies rows of coil springs 28 which are secured together by coil springs 29 at the top and bottom in the conventional manner. A coil spring 31 at the marginal edge of the spring assembly is coiled about a border wire 32 to provide a stiff but resilient top marginal edge to the assembly, which is also conventional. The marginal coil spring 33 are of greater length than the central coil springs so as to rest directly upon the frame elements 11 and 12. The springs 28 and 33 of the assembly are retained in exact predetermined relation to each other by the coil springs 29 which prevent lateral and longitudinal shifting. The assembly is placed upon the sheet of burlap or other material 26 and retained in desired position thereon by anchoring means herein illustrated as by staples 34 which secure the marginal springs 33 to the frame. As pointed out hereinabove, the strips 24 are so spaced as to be disposed directly beneath a row of coil springs 28 to provide direct support therefor. The anchoring of the marginal coil springs 33 directly to the frame retains the rows of the coil springs 28 in fixed position relative to the spring strips 24 while the coil springs are retained relative to each other in the rows.

Suitable sheet material 36 and a pad of cotton or similar material 37 is placed over the spring assembly and along the sides thereof, over which the outer trim material 38 is disposed. The materials are stretched over the frame 10 and are tacked or otherwise secured.

A pad 41, of conventional form, may be employed with my combination box spring and mattress to provide additional softness thereto and to also provide an element which may be reversed when desired since the unit box spring mattress always remains in the same position

My unit box spring mattress is entirely open at the bottom, permitting free circulation of air through the single pad, which is built in the unit. The pad being thin is readily penetrated by the sun when exposed to its rays and the sheet of material 26 separating the springs prevents the accumulation of dust and particles about the spring assembly or on the underside of the pad. It will be apparent to anyone skilled in the art that by selecting the desired number of cross braces 18, the coil springs 19 and the size of the wire used in the construction of the sinuous spring strips 21 and 24, that any desired resiliency can be provided in the box spring portion of the unit assembly so that comfort and rest can be provided thereby. Not only is the construction of the assembly flexible to provide desired comfort and rest, but the sanitary features provided thereby are important and desirable. The unit box spring and mattress materially reduces the cost when substituted for the separate box spring and mattress conventionally employed.

While I have described and illustrated but a single embodiment of my invention, it will be apparent to those skilled in the art that various changes, omissions, additions, and substitutions may be made therein without departing from the spirit and scope of my invention, as set forth in the accompanying claims.

What I claim is:

1. A box spring mattress embodying a frame of rectangular shape, transversely disposed members interconnecting the longitudinal sides of said frame, coil springs mounted on said members, a sinuous spring strip disposed parallel to each of said members and secured to the tops of said springs, longitudinally disposed sinuous spring strips connected to the transverse end members of the frame and to said transversely disposed strips, noise preventing means disposed over said strips, a coil spring assembly mounted on said strips and frame, said assembly embodying a plurality of coil springs mounted in rows and fastened to each other against longitudinal and lateral shifting, and means for securing the marginal coil springs of said assembly to the side and end members of said frame.

2. A box spring mattress embodying a frame of rectangular shape, transversely disposed members interconnecting the longitudinal sides of said frame, coil springs mounted on said

members, a sinuous spring strip disposed parallel to each of said members and secured to the tops of said springs, longitudinally disposed sinuous spring strips connected to the transverse end members of the frame and to said transversely disposed strips, noise preventing means disposed over said strips, a coil spring assembly mounted on said strips and frame, said assembly embodying a plurality of coil springs mounted in rows and fastened to each other against longitudinal and lateral shifting, and means for securing the marginal coil springs of said assembly to the side and end members of said frame, the rows of coil springs being aligned with the longitudinally extending spring strips.

3. A box spring mattress embodying a frame of rectangular shape, transversely disposed members interconnecting the longitudinal sides of said frame, coil springs mounted on said members, a sinuous spring slip disposed parallel to each of said members and secured to the tops of said springs, longitudinally disposed sinuous spring strips connected to the transverse end members of the frame and to said transversely disposed strips, noise preventing means disposed over said strips, a coil spring assembly mounted on said strips and frame, said assembly embodying a plurality of coil springs mounted in rows and fastened to each other against longitudinal and lateral shifting, means for securing the marginal coil springs of said assembly to the side and end members of said frame, a pad disposed upon said coil spring assembly, and trim material covering said pad and assembly.

4. A box spring mattress including, in combination, a frame of rectangular shape, a transverse brace spanning the longitudinal sides of said frame, a coil spring mounted on said brace, a sinuous spring strip secured to the longitudinal frame elements and to said spring, spaced longitudinal spring strips joined to the transverse frame elements and to the first said sinuous strip to form a spring surface within said frame, and a unit spring assembly mounted on said spring surface and frame and fixed thereto when secured to said frame.

HENRY HOPKES.