

Aug. 4, 1964

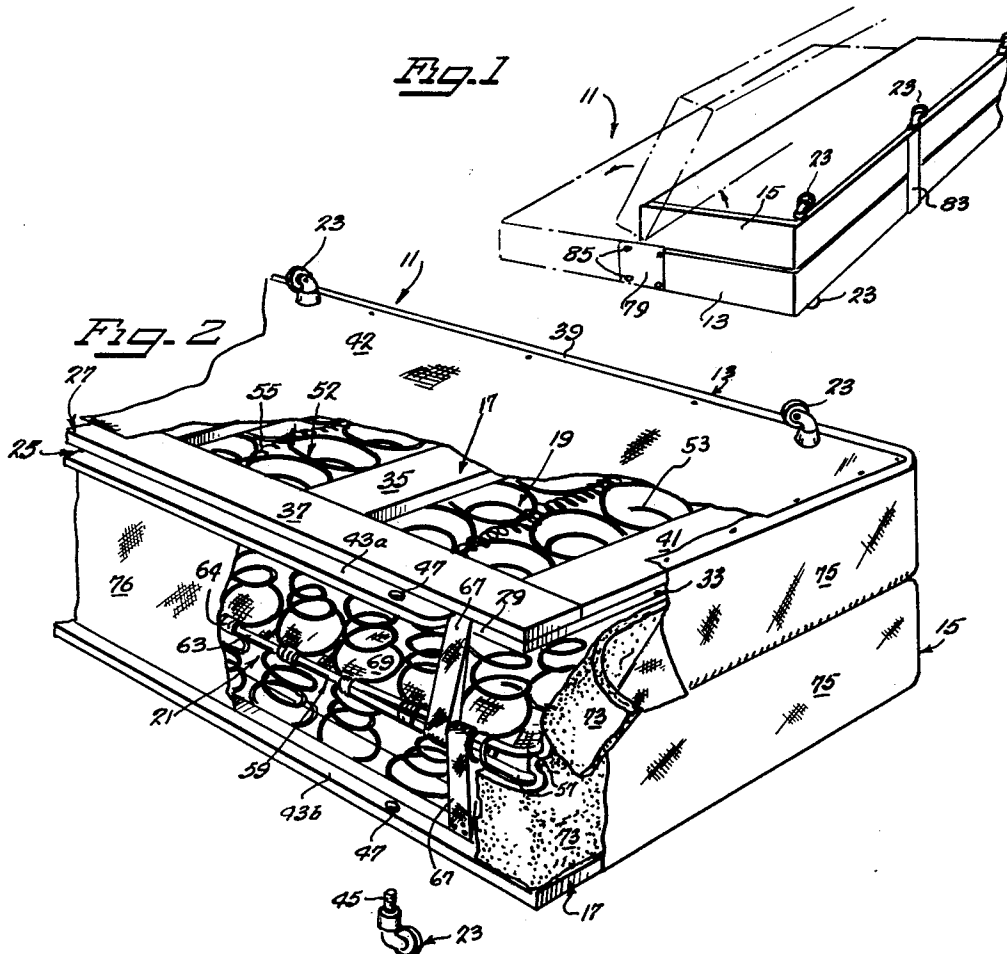
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3,142,848

BED CONSTRUCTION

Filed Dec. 19, 1962

2 Sheets-Sheet 1



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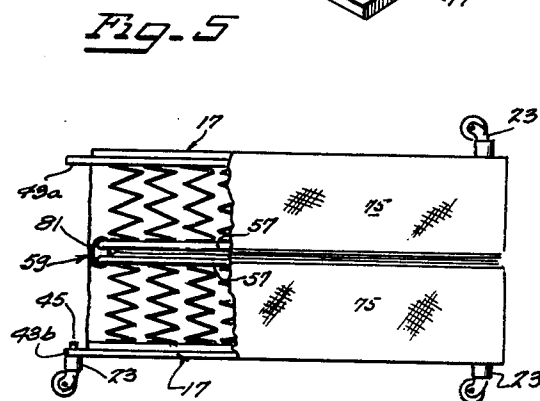
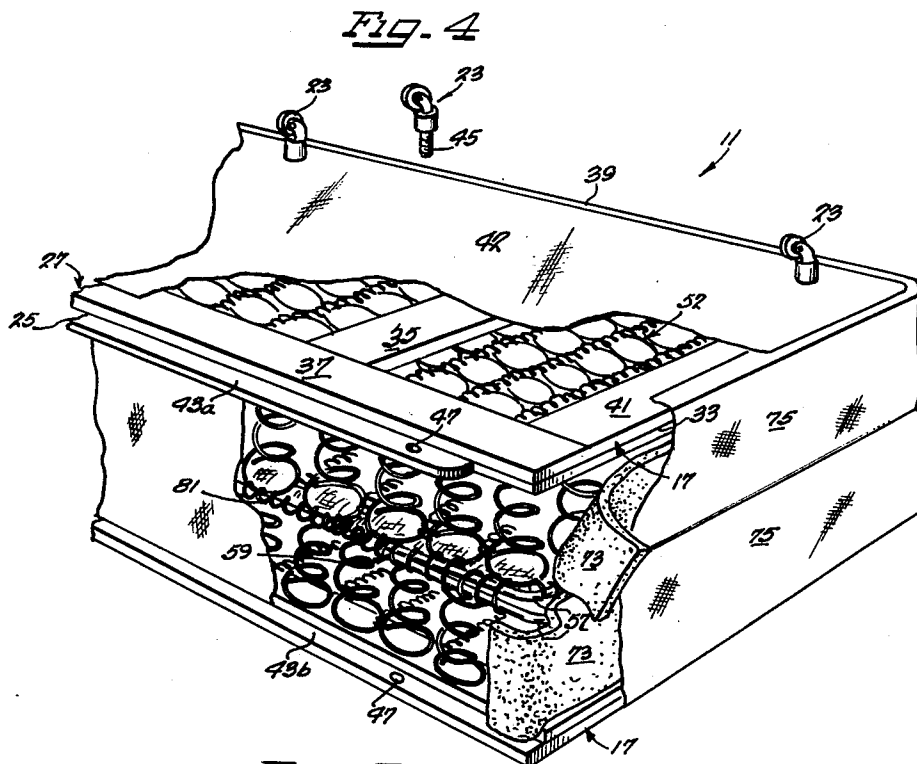
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BED CONSTRUCTION

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Filed Dec. 19, 1962, Ser. No. 245,773

5 Claims. (Cl. 5-174)

This invention relates to box springs and other bed units having a rigid component. More particularly, the invention relates to a box spring or similarly constructed bed unit which may be folded to facilitate transfer and storage.

Difficulty is frequently encountered in moving bed units through narrow passageways and stairways, particularly the narrow winding passageways and stairways found in many older buildings. Frequently, however, such passageways and stairways constitute the only practical access to the room in which the bed unit is to be placed.

A mattress can occasionally be maneuvered through a narrow area because of its relatively flexible construction, but box springs, which conventionally include a rigid component in the form of a wooden platform, are substantially unyielding in this regard and great difficulty frequently attends their transportation. This difficulty has been compounded in recent years by the introduction of bed units of greater than average length and width, i.e., the so-called "king-size" mattresses and box springs.

The principal object of the present invention is to provide a box spring or similar bed unit which may be folded to facilitate transportation and storage.

Another object of the invention is to provide an improved foldable box spring which is locked in an open or unfolded condition by support means, such as legs or casters, which are fastened to the unit and by means of which the unit is supported.

A further object of the invention is to provide a foldable box spring construction having a unique hinging means about which the sections of the box spring may rotate in moving between an open and a folded position.

Other objects and advantages of the invention will become apparent with reference to the following description and the accompanying drawings.

In the drawings:

FIGURE 1 is a perspective view of a foldable bed unit showing various of the features of the invention, the unit being illustrated in each a folded, a semi-folded, and an unfolded position;

FIGURE 2 is a fragmentary partially broken-away perspective view of one embodiment of the bed unit of FIG. 1 as it appears in the folded position;

FIGURE 3 is a partially broken-away end view of the bed unit of FIG. 2 as it appears in an open or unfolded position;

FIGURE 4 is a partially broken-away fragmentary perspective view of an alternate embodiment of the bed unit shown in FIG. 1, as the unit appears in the folded position; and

FIGURE 5 is a partially broken-away end view of the bed unit of FIG. 4.

Very generally, the foldable bed unit 11 shown in the drawings is a box spring and comprises a pair of juxtaposed bed sections 13 and 15, each of which includes a rigid frame 17 and a resilient cushion construction 19 sup-

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ported on the frame. Means 21 are provided for interconnecting the sections for hinged movement about an axis disposed adjacent the upper surfaces of the cushion constructions 19 and in generally parallel relation to the planes of the frames, and support means 23 are provided which are engageable with the frames of each of the sections when the sections are in the open position to lock the sections in this position.

In the illustrated embodiments, the sections 13 and 15 are of a size and shape as would be created by a cutting plane passing vertically through the central longitudinal axis of a conventional box spring, thereby providing the sections with adjacent longitudinally extending sides. Of course, sections such as would be formed by certain other cutting planes also fall within the scope of the invention.

The axis about which the sections 13 and 15 are hinged lies on the aforementioned cutting plane near the upper surface of the unit and permits relative swinging movement of the sections between an open or sleeping position, in which position the frames of the sections are generally co-planar (FIG. 3), and a folded position (FIGS. 2 and 4) in which the upper surfaces of the sections are in substantially face-to-face contact.

Referring now more specifically to the construction of each of the sections 13 and 15, the frame 17 comprises a platform preferably formed of wood of sufficient thickness and strength to render it rigid under normal load-bearing conditions. The platform is essentially flat so as to lie substantially within a single plane, and its outer corners, i.e., the corners of the platform which are outermost when the unit is unfolded, are rounded for both appearance and safety.

The platform of the illustrated embodiments is formed of two layers 25 and 27 of wood board. The first or innermost layer 25 (the top layer when the box spring is in an unfolded condition) has a rectangular configuration and includes a longitudinal inner side member 29, an outer side member (not shown) transverse end members 33, and spaced-apart slats 35 extending transversely between the side members and intermediate the end members 33 to provide a surface upon which the resilient cushion construction 19 may be supported. The outer layer 27 of the platform, i.e., the lower-most layer when the bed unit is in the open position, comprises essentially inner and outer side members 37 and 39 and end members 41. The lower surface of the platform 17 is covered with a sheet 42 of cloth to prevent dust from entering the interior of the resilient cushion.

In order to insure the stability of the bed unit, and in addition render it capable of being readily folded and unfolded, the unit has been constructed so that when it is in the open or unfolded position with the support means 23 secured in place, it is effectively locked in this position. The support means, however, are easily detached so as to render the unit readily foldable.

Accordingly, the bed unit 11 is so constructed that the adjacent side edges of the platforms 17, i.e., the inner edges, will be disposed adjacent to one another when the unit is in an unfolded position and, when the sections are in such a position, will assume an overlapping relationship. Each of the support means 23 serves to maintain the edges of the platform in the overlapping position and, hence, maintains the bed unit in the unfolded position.

More specifically, the section 13 includes a tongue 43a

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which projects outwardly from the inner edge of the inner side member 29 of the upper layer 25. The section 15 includes a mating tongue 43b which projects outwardly from the inner edge of the side member 37 of the lower layer 27. The tongues, which project toward one another, are therefore disposed at different levels when the bed unit is in the unfolded position and will thus overlap one another in that position. Preferably, the tongues are formed so as to be integral with the side members 29 and 37 respectively.

As previously mentioned, the overlapping portions or tongues 43 of the platforms 17 are maintained in an overlapping relationship by the support means 23 which are shown in the illustrated embodiments as wheeled casters but which may, of course, be short rigid legs or the like. The casters or legs 23 are preferably provided with a threaded shank 45 to facilitate attachment to the bed unit, which attachment is accomplished by providing the tongues 43 with holes 47 at spaced intervals along their length, three such holes having been found to be satisfactory. The holes 47 are adapted to receive a shank 45 of one of the casters 23, and are positioned such that, when the tongues are in an overlapping position relative to one another, each of the holes of one of the tongues aligns with one of the holes of the other tongue. The holes themselves are provided with a threaded bushing 49 which serves to retain the shank 45 in place.

It will be seen, therefore, that when the shank 45 of a support means 23 is disposed within the aligned holes 47 of the tongues 43, the tongues 43 are interlocked and the sections 13 and 15 are effectively maintained in the unfolded position. The locking of the bed unit in this position is thus rendered relatively simple and can be performed quickly without the use of tools. Also, the locking is effected automatically when the shank 45 is inserted in place and is not dependent upon the measurements or judgment of a worker who is unfamiliar with the assembly operation. The unit may be easily rendered foldable, however, merely by removing the shanks 45 from the holes 47 of the tongues.

Castors 23 are also provided adjacent each of the outer longitudinal edges of the bed unit, and the side members 39 are provided with holes 51 having therein threaded bushings (not shown) as was the case with the holes 47 of the tongues 43.

The resilient cushion construction 19 shown in the illustrated embodiments is similar to that of the conventional box spring and, with regard to the embodiment shown in FIGS. 2 and 3, comprises a spring construction 52 formed of a series of hour-glass type coils 53 arranged in longitudinal and transverse rows. The coils 53 are secured to the platform 17 as by nails or staples (not shown) and are interconnected with one another by transversely extending helical tie wires 55 which engage the end convolutions of the coils. A border wire 57 extends along the length of each of the end and the outer side edges of each section, but along only the end portions of the inner side edge of the sections. The wire is preferably secured to the top convolution of each of the peripheral coils of the spring construction 52 as by clips or hog rings (not shown), and serves to maintain the outer edge of the spring construction in a desired shape.

It will be noted that each of the sections 13 and 15 includes a separate platform 17, a separate spring construction supported on the platform 17, and a separate border wire 57. The sections are interconnected adjacent their lower surfaces when in the unfolded position by the interconnection of their platforms 17 by the support means 23, and adjacent their upper surfaces by means of a hinge 59 when in either the folded or unfolded position. As will be seen shortly, an upholstery which covers the spring construction and platform also serves to interconnect the sections adjacent their upper surfaces.

Referring specifically to the embodiment shown in FIGS. 2 and 3, the hinge 59 comprises a bar or rod 63

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which extends substantially the length of the inner side of each of the sections, and which is fastened by clips 64 to the top convolution of each coil in the innermost row of springs of each section, each clip thereby serving to interconnect the bar and a pair of springs. Each of the ends of the bar 63 is secured by a wire helical 65 to the adjacent ends of the border wire 57, the helicals not only serving to connect the rod 63 to the border wires 57, but also to connect the border wires with one another. Straps 67 secured to the inner edge of the side members 29 of the platform 17 are looped about the connection between the rod 63 and border wires 57 and serve to determine the position of the rod relative to the platforms, especially when the unit is folded (FIG. 2). The straps also serve to define a journal within which the rod and border wire will rotate.

The hinge 59 thus provides a fixed axis about which the sections may pivot, as defined by the bar or rod 63. The bar is itself fixed relative to the sections themselves by means of its attachment to the inner rows of springs of the spring constructions 52, which springs are themselves held in place by virtue of their interconnection with the remaining coils of the spring constructions. The straps 67 and border wires 57, to which the rod 63 is also connected, also serve to maintain the rod in position.

The sections 13 and 15 of the bed unit 11 are interconnected not only by the hinge 59 but also, as previously mentioned, by means of the overall upholstery of the unit which includes (FIGS. 2 and 3) a netting or scrim sheet 69 which extends across and overlies the upper surfaces of the spring constructions of both sections, and a padding layer 71 of felt or the like which overlies the entire scrim sheet. The padding layer 71 includes overhanging side portions 73 which pad out the sides of the unit, the side portions 73 being split along a plane passing through the hinge axis to permit the unit to fold.

The padding layer is then covered with an envelope of outer ticking which includes a top sheet 74 and side panels 75, the outer edges of which side panels are tacked or stapled to the lower surface of the platform. The side panels 75 of the outer ticking, like the side portions 73 of the padding layer, are split along a plane passing through the hinge axis, and are preferably folded inwardly so as to cover the ends of the inner sides of each section of the unit. To further enhance the appearance of the unit when in the folded position, a layer of scrim sheet 76 is provided over the open inner faces of each of the sections, as seen in FIG. 2.

It will be noted, therefore, that the sections 15 and 17 of the unit are interconnected not only by the hinge 59, but also by means of a continuous top layer of netting 69, padding 71, and top ticking 74, these layers forming a fold adjacent the hinge 59 when the unit is folded. In overall appearance, therefore, the unit resembles a conventional box spring, especially insofar as the provision of a continuous top surface is concerned. The provision of a continuous padded top surface also insures that the hinge 59 will be essentially imperceptible to an occupant of the bed.

As previously mentioned, the sides 73 and 75 of the padding 71 and ticking 74 are split to permit the unit to be folded and unfolded about the hinge axis. This split tends to leave a slight gap in the vicinity of the hinge axis when the unit is in the unfolded position. To conceal this gap, a flap 79 is provided (FIG. 1) which is stitched to the ticking adjacent the edge of the top layer 75 and which hangs down and is snapped to the lower surface of the platform. When it is desired to fold the unit, the flap is merely unsnapped. It should be understood, however, that when the unit folds on a central longitudinal axis, the gap previously referred to will, in most cases, be hidden by the head board and foot board of the bed.

The alternate embodiment of the invention, as shown in FIGS. 4 and 5, includes the platform 17, the spring construction 52, and border wires 57 of the embodiment of FIGS. 2 and 3. However, the hinge 59 is of a some-

what different construction and includes a helical tie wire 81 which is looped around the ends of the border wire and secures them to the top convolutions of the endmost of the inner row of springs. The helical wire 81 also interconnects the top convolutions of the inner row of springs to one another throughout the length of the row. The bed unit 11 of the alternate embodiment is padded and closed in a manner similar to that of the preferred embodiment.

The foldable bed unit thus described is preferably shipped to the consumer in the unfolded or open condition, and is preferably maintained in such condition by retaining bolts (not shown) which are inserted through the holes 47. If, upon arrival of the unit at the site of use, such as the home of the consumer, it becomes apparent that difficulty will be encountered in navigating narrow passageways or stair wells with the unit in the open position, the bolts occupying the holes 47 can be removed and the unit folded. The unit may subsequently be set up by inserting the shanks 45 of a pair of casters 23 in the holes 47 of the tongues 43 to again lock the unit in the open position, and by inserting the shanks 45 of similar casters in the holes provided adjacent the periphery of the platform.

Occasionally, of course, it will not be necessary to fold the unit when delivering it and, in such cases, the unit is set up by removing the retaining bolts and replacing them with the shanks 45 of casters 23. Casters 23 are, of course, also mounted in the holes adjacent the periphery of the platform.

When the unit is folded, it is preferably maintained in such condition by means of a releasable strap 83 (FIG. 1) held in place by snap fasteners 85.

An improved bed unit construction has thus been shown and described which is capable of being folded so as to thus make it convenient to store or handle, and easier to transport through narrow passageways and stairways.

Various of the features of the invention believed to be novel are set forth in the following claims.

What is claimed is:

1. A foldable bed unit comprising a pair of juxtaposed bed sections each of which includes a rigid frame and a resilient cushion construction supported on the said frame, means interconnecting the said sections for hinged movement about an axis disposed adjacent the upper surface of said cushion constructions and generally parallel to the planes of said frames, said sections being swingable about said axis between an open position in which said sections are disposed with their frames in generally co-planar relation and a folded position in which said sections are disposed with their upper surfaces in substantially face-to-face contact, the edges of said frames which are adjacent to each other when said sections are in said open position being formed so as to assume an overlapping relationship, and removable leg means secured to said frames of said sections, at least one of said leg means including means insertable into the said overlapping portion of each of said frames when said sections are in said open position so as to lock said sections in said open position.

2. A foldable bed unit comprising a pair of juxtaposed sections each of which includes a rigid bottom frame and a resilient cushion construction supported on the said frame, means interconnecting the said sections for hinged movement about an axis disposed adjacent the upper surfaces of said cushion constructions and generally parallel to the planes of said frames, said sections being swingable about said axis between an open position in which said sections are disposed with their bottom frames in generally co-planar relation and a folded position in which said sections are disposed with their upper surfaces in substantially face-to-face contact, the edges of said bottom frames which are adjacent to each other when said sections are in said open position being formed so as to assume a vertically overlapping relationship, each of said overlapping edge portions being provided with a hole extending generally normal thereto, the holes of said edge portions

being aligned with one another when bed sections are in said open position, and removable leg means secured to said frames of said sections, at least one of said leg means including a shank adapted to occupy said holes of said overlapping edge portions so as to maintain said portions in an overlapping relationship and lock said sections in said open position.

3. A foldable bed unit comprising a pair of juxtaposed bed sections each of which includes a rigid platform formed so as to define substantially a single plane and a resilient cushion construction supported on the said platform with its lower surface in engagement therewith, means interconnecting the said sections for hinged movement about an axis disposed adjacent the upper surfaces of said cushion constructions and in generally parallel relation to the planes of said platforms, said sections being swingable about said axis between an open position in which said sections are disposed with their platforms in generally co-planar relation and a folded position in which said sections are disposed with their upper surfaces in substantially face-to-face contact, the edges of said platform which are adjacent to each other when said sections are in said open position being provided with a projecting tongue portion, said tongue portions of said sections being positioned so as to vertically overlap each other when said bed sections are in said open position, each of said tongues being provided with a hole extending generally normally thereto, the holes of said tongues being aligned with one another when said bed sections are in said open position, and removable leg means secured to said platforms of said sections, at least one of said leg means including a shank adapted to occupy said holes of said tongues so as to maintain said tongues in an overlapping relationship and lock said sections in said open position.

4. A foldable bed unit comprising a pair of juxtaposed bed sections, each section including an inner side disposed adjacent the inner side of the other section, each section including a rigid frame and a resilient cushion construction supported on the said frame, each of said cushion constructions comprising an inner spring assembly including a plurality of coil springs arranged in longitudinal and transverse rows including an inner row extending along the said inner side of the sections, a border wire at least partially encircling said inner spring assembly and including end portions extending along the said inner side of the sections, a wire helical interconnecting said end portions of said border wire of one of said sections with the adjacent end portions of the border wire of the other of the sections and with the coils of the inner rows of coil springs, said wire helical also connecting the coils of the inner row of one section with the coils of the inner row of the other section, said wire helical thereby providing a hinge for permitting relative swinging movement of said sections between an open position in which said sections are disposed with their frames in generally co-planar relation and a folded position in which said sections are disposed with their upper surfaces in substantially face-to-face contact, and removable leg means secured to said frames of said sections, at least one of said leg means including means engageable with each of said frames when said sections are in said open position so as to lock said sections in said open position.

5. A foldable bed unit comprising a pair of juxtaposed bed sections each of which includes a rigid frame and a resilient cushion construction supported on said frame, each of said cushion constructions including an inner spring assembly having a row of coil springs disposed along the edge of said section which is adjacent the other section, a border wire at least partially encircling said inner spring assembly and including end portions extending along the inner side of the sections, a straight rod disposed intermediate said edge rows of coil springs, means connecting said rod to said edge rows of coil springs and also to said end portions of said border wire, said rod defining an axis about which said sections are swingable between an open position in which said sections are dis-

posed with their frames in generally co-planar relation and a folded position in which said sections are disposed with their upper surfaces in substantially face-to-face contact, the adjacent edges of said frames being formed to lie in overlapping relationship when said sections are disposed in the open position, and removable leg means secured to said frames, at least one of said leg means being adapted to interlock said sections when said sections are in said open position.

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