

June 16, 1942.

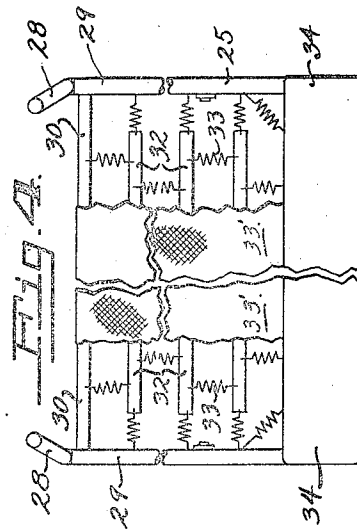
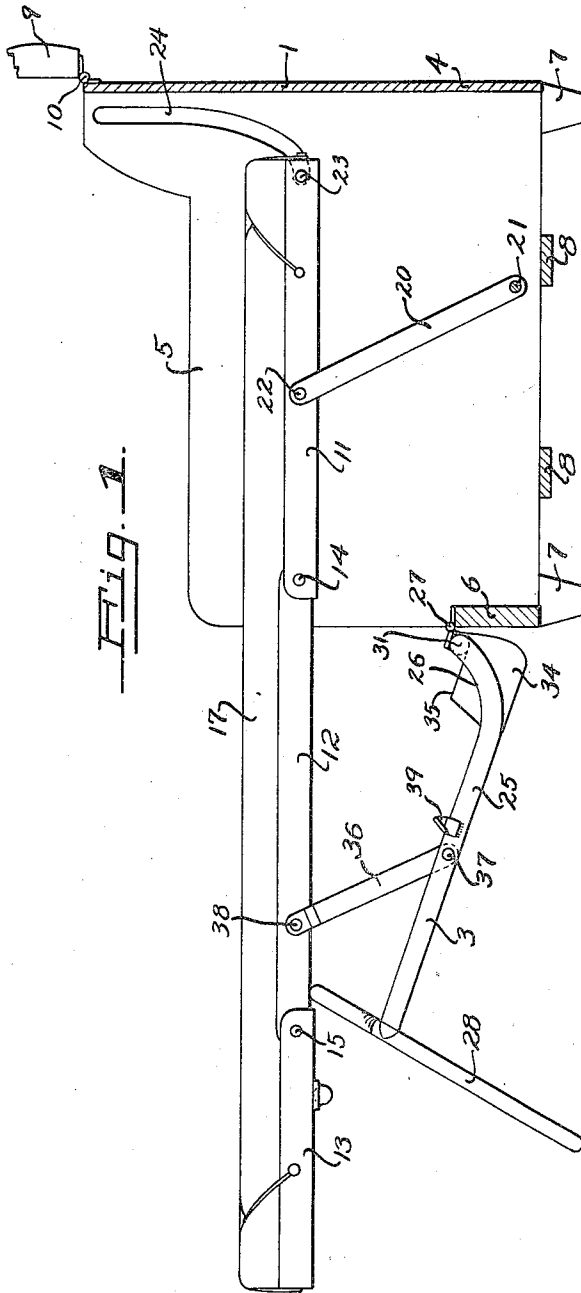
J. D. BELL

2,286,948

CHAIR BED

Filed Aug. 13, 1941

2 Sheets-Sheet 1



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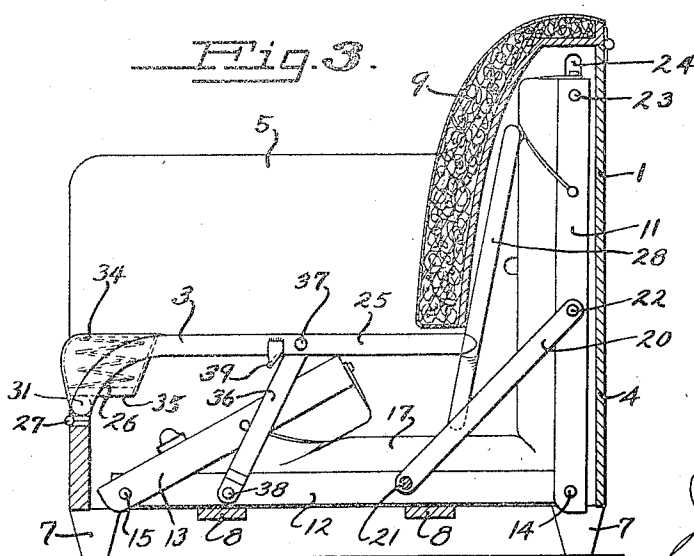
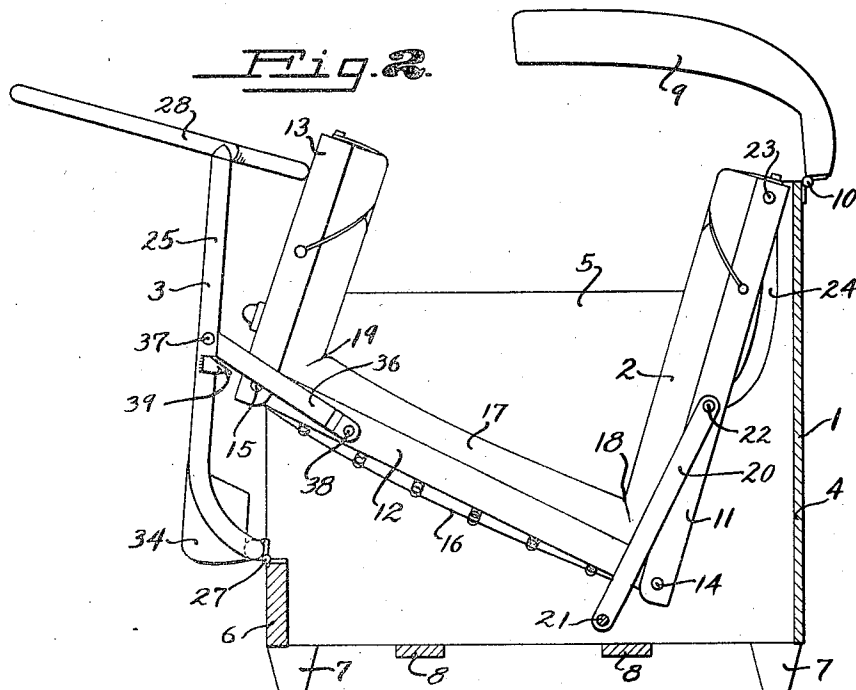
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2 Sheets-Sheet 2



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2,286,948

CHAIR BED

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Application August 13, 1941, Serial No. 406,639

11 Claims. (Cl. 5—13)

The present invention relates to improvements in chair beds, and has particular reference to apparatus of the character described that may be readily converted from a bed to a chair and vice versa from a chair to a bed.

The present application is a continuation in part of my co-pending application, Serial Number 361,059.

In the co-pending application, it was proposed to use a main frame, a foldable mattress frame adapted for accommodation within the main frame when folded, an independent seat deck adapted to overlie the folded mattress and link connections whereby the seat deck could be moved to an inverted position in front of the main frame and by such movement would operate to unfold the mattress.

In the present invention, it is proposed to provide certain improvements and refinements establishing closer cooperative relationship between the seat deck and the mattress frame, and providing greater clearance for the mattress during the unfolding operation.

Further objects and advantages of my invention will appear as the specification proceeds and the novel features of the same will be fully set forth in the claims hereto appended.

The preferred form of the invention is illustrated in the accompanying drawings, forming part of this application, in which:

Figure 1 shows a vertical longitudinal section through my chair bed, in bed position;

Figure 2, a similar section through my chair bed in an intermediate position;

Figure 3, a similar section through my chair bed in chair position; and

Figure 4, a plan view of a seat deck used in my invention.

While I have shown only the preferred form of my invention, I wish to have it understood that various changes or modifications may be made within the scope of the claims hereto attached, without departing from the spirit of the invention.

My chair bed comprises in its principal parts, a main frame 1, a foldable mattress 2 and a seat deck 3. The main frame may be of any suitable form, and as here shown, comprises a back 4, side members 5, and a front rail 6, the back and the sides and the front forming a rectangular box adapted to accommodate the folding mattress.

The main frame may be provided with suitable legs 7, and bottom slats 8 to support part of the mattress frame. It also has an upholstered chair

back 9 hinged to the upper edge of its back, as at 10, the chair back being adapted to move into normal chair-back position, as shown in Figure 3, so as to conceal a portion of the folded mattress frame, and being also adapted to be swung out of the way, as shown in Figure 2, so as to give clearance for the unfolding of the mattress.

The mattress 2 consists of three rigid sections 11, 12 and 13, hinged together, as at 14 and 15, suitable webbing 16 spanning the frame sections, and upholstery 17 uniformly covering the three frame sections, so as to form a uniform sleeping surface when the frame is unfolded, as in Figure 1.

The upholstery is made in such a manner that it will readily fold over the hinges 14 and 15, as shown at 18 and 19.

In this connection it should be observed that the mattress generally is of the same construction as described in my co-pending application Ser. No. 202,480, and contains springs arranged to collapse over the hinges, so as to allow of the folding operations, but at the same time placed under compression so as to yieldingly aid in unfolding the mattress.

The entire mattress may be accommodated in folded condition, in the main frame, with the rear section 11 disposed in upright position in the back of the frame, the intermediate section 12 resting in the bottom of the frame on the slats 8, and the front section 13 turned over backwards on the intermediate section.

When in this position, as illustrated in Figure 3, the back is supported by a pair of links 20 having their lower ends pivoted to the main frame, as at 21, and their upper ends pivoted to the back, as at 22, intermediate the height of the latter. The upper end of the back is further supported by means of a pair of pins 23 projecting laterally therefrom into slots 24 provided in the sides of the main frame, the slots being substantially vertical in their upper ends and curving forward in their lower ends, as shown particularly well in Figure 1.

The seat deck 3 comprises a horizontal frame 25 curving downwardly at its forward end, as at 26, and pivoted to the top of the front rail, as at 27. Handles 28 project upwardly from the rear of the frame 25 and rest against the rear mattress section when the frame 25 occupies a horizontal position.

The specific construction of the seat deck, which is intended to be very thin, so as to occupy little room, is illustrated particularly in Figure 4, according to which the frame 25 includes two

parallel side bars 29, a rear bar 30, and a front bar 31 connecting the side bars. The space between these bars is occupied by additional bars 32 having a plurality of springs 33 connecting the latter bars with one another and with the frame 25. Suitable cloth material, such as canvas is stretched across the frame, as at 33'.

At the extreme front of the seat deck, I provide a cushion strip 34 which extends much more deeply than the remainder of the seat deck, and includes conventional coiled spring construction resting on a horizontal slat 35 supported by the front bar 31.

The seat deck is connected to the intermediate frame section 12 of the mattress by means of a pair of links 36 pivoted to the seat section intermediate the length thereof, as at 37, and to the intermediate mattress section at a point 38 lying substantially midway between the front and the center of the mattress section.

The links 36 are dimensioned to maintain the seat deck in substantially parallel relation to the mattress frame 12 in normal chair position, as shown in Figure 3. A pry member 39 is provided forwardly of each link 36 on the seat deck frame so as to prevent the links 36 from swinging downwardly when the seat deck is swung upward on its pivot 27. A slight amount of play is left, however, between the links 36 and the pry members 39 to allow the links 36 to properly function during the initial inverting movement.

In operation, beginning with the position of Figure 3, the operator first swings the upholstered back 9 upward in the manner shown in Figure 2, and then pulls forward on one of the handles 28. This causes the seat deck to swing forward on the hinge 27 in the manner indicated in Figures 1 and 2, until the extreme ends of the handle strike the floor. During this movement, the links 36 swing the intermediate frame section 12 upward and forward, through the intermediate position of Figure 2 until it reaches the final horizontal position of Figure 1.

The intermediate frame section pulls forward the lower end of the back section 11 during this movement, and the latter section is guided by the links 20, and the slots 24, into a position of horizontal alinement with the intermediate section, as shown in Figure 1.

The front section 13 may then be turned forward on its hinge 15 to complete the bed.

It should be particularly noted that, in the position shown in Figure 3, the upper edge of the front section 13 is pressed downwardly by the seat deck, so as to place the mattress upholstery under compression, and that the front section extends above the bottom of the cushion strip 34.

It should further be noted that, due to the action of the links 36 and the pry members 39, the pivot 15 at the front of the intermediate frame section 12, is raised to a considerable height above the front rail 6 when crossing the vertical plane of the latter, so as to give ample clearance for the operation as illustrated in Figure 2, the pivot 15 rises a considerable distance above the normal height of the seat deck and above the horizontal plane of the pivot 37 when the seat deck is in chair position.

I claim:

1. In a chair bed, a main frame having a front rail, a mattress comprising three sections including a back section, an intermediate section and a front section with hinged connections between the same, means for mounting the mattress

within the main frame with the back section in an upright position, the intermediate section projecting forwardly therefrom in horizontal position and the front section leaning backward from the front edge of the intermediate section and a relatively thin seat deck having its front supported on the front rail and having an intermediate portion resting on the front section of the mattress for pressing the latter upon the intermediate section.

2. In a chair bed, a main frame having a front rail, a mattress comprising three sections including a back section, an intermediate section and a front section with hinged connections between the same, means for mounting the mattress in the main frame with the back section in upright position, the intermediate section projecting forwardly therefrom in horizontal position and the front section leaning backward from the front edge of the intermediate section and a relatively thin seat deck having its front hinged to the front rail and having an intermediate portion resting on the front section of the mattress, the said mounting means including link connections between the back section and the main frame and between the seat deck and the intermediate section, and guide means for the upper end of the back section, the said link connections and guide means being operable to move the intermediate section and the back section into a position of horizontal alinement when the seat deck is swung forward on its front pivot.

3. In a chair bed, a main frame having a front rail, a mattress comprising three sections including a back section, an intermediate section and a front section with hinged connections between the same, means for mounting the mattress in the main frame with the back section in upright position, the intermediate section projecting forwardly therefrom in horizontal position, and the front section leaning backward from the front edge of the intermediate section and a relatively thin seat deck having its front hinged to the front rail and having an intermediate portion resting on the front section of the mattress, the said mounting means including link connections between the back section and the main frame and between the seat deck and the intermediate section, and guide means for the upper end of the back section, the said link connections and guide means being operable to move the intermediate section and the back section into a position of horizontal alinement when the seat deck is swung forward on its front pivot, a pry member for the link connection between the seat deck and the intermediate frame, the front pivot for the seat connection and the last-mentioned link connection being positioned and arranged for cooperation with the pry member in lifting the front edge of the intermediate section above the normal height of the seat deck when the said front edge crosses the vertical plane of the front rail.

4. In a chair bed, a main frame having a front rail, a mattress comprising a back section and a second section with a hinged connection between the same, means for mounting the mattress on the main frame with the back section in an upright position and the second section projecting forwardly therefrom in horizontal position, a seat deck disposed over the second section and having its front edge hinged to the front rail, the said mounting means including link connections between the back section and the main frame and between the seat deck and the second mattress section, and guide means for the upper

end of the back section, the said link connections and guide means being operable to move the second section and the back section into a position of horizontal alinement when the seat deck is swung forward on its front pivot, a pry member for the link connection between the seat deck and the second frame section, the front pivot for the seat connection and the last-mentioned link connection being positioned and arranged for cooperation with the pry member in lifting the front edge of the second section above the normal height of the seat deck when the said front edge crosses the vertical plane of the front rail.

5. In a davenport bed, a housing having a front rail, an invertible seat frame hinged to the said rail, the seat comprising a thin flat seating deck and a deep front member projecting substantially downwardly from the plane of the deck to the front rail, a foldable mattress frame, the said frame comprising three webbed sections hinged together and positioned within the housing and made for holding and compressing a mattress within the housing, one section being arranged vertically in the rear of the housing and supported thereby, a second section horizontally in the bottom of the housing and a third section being pivotally connected to the front end of the second section and extending on a slant rearwardly and upwardly and substantially above the bottom plane of the said deep front member and being held by the seat from tipping up when compressing the mattress, a lifting link having its upper end pivotally connected to the upper margin of the seat, and its lower end to the forward end portion of the second section, the said seat being operable by the inverting movement to lift the front of the second section and to move the pivotal connection between it and the third section forward over the front rail, the said pivotal connection, before crossing the vertical plane of the front rail during the latter operation being raised by the said link above the normal horizontal plane of the pivotal connection between the link and the seat to give clearance room to the mattress section webbing in its movement over the front rail.

6. In a chair, a frame, a seat deck, means for supporting the seat deck in the frame horizontally, a relatively narrow upholstered cushion strip complete in itself, and means for mounting the same in front of the seat deck, with the top of the cushion strip substantially on a level with the top of the seat deck, and its bottom substantially below the bottom plane of the said deck.

7. In a housing for a folding bed, an invertible seat hinged to the housing for forming a lid to the latter, the said seat having a thin deck rear portion and a resilient heavy front portion, and a front rail on the said seat for supporting the bottom of the heavy portion on a plane below the plane of the thin deck portion.

8. In a sofa bed, a main frame, a pair of companion handle bars pivotally supported therein in spaced and parallel relation to one another and near the front edge of the same for swinging movement between substantially horizontal

positions in the frame and forward of the frame, and a narrow and deep cushion strip mounted on the handles adjacent their pivotal support to form a resilient front edge for a seat when the handles are positioned within the frame, the cushion strip being operable by the handles to be swung outside the frame for clearing the frame to give access to the lower portion thereof.

9. In a sofa bed, a main frame, a pair of companion handle bars pivotally supported therein in space and fixed relation to one another, and near the front edge of the frame for swinging movement between substantially horizontal positions within the frame and forward of the frame, and a narrow and deep cushion strip mounted on the handles adjacent their pivotal support to form a resilient front edge for a seat when the handles are positioned within the frame, the cushion strip being operable by the handles to be swung outside the frame for clearing the frame to give access to the lower portion thereof, the cushion strip comprising a rigid supporting strip, a single row of spiral springs supported thereon, a padding overlying the springs, and a cover overlying the padding and secured to the supporting strip.

10. In a sofa bed, a main frame, a pair of companion handles pivotally supported thereon near the front edge of the frame for swinging movement between substantially horizontal positions within the frame and forward of the frame, a narrow and deep cushion strip mounted on the handles over their pivotal support to form a resilient front edge for a seat when the handles are positioned within the frame, a thin seat deck supported by the handles behind the cushion strip and on a level with the top of the latter to form the remainder of the seat, the bottom of the seat deck being considerably higher than that of the cushion strip to afford greater clearance underneath the seat, and the cushion strip and the seat deck being operable by the handles to be swung outside the frame to give access to the space underneath the seat.

11. In a sofa bed, a main frame, a pair of companion handles pivotally supported thereon near the front edge of the frame for swinging movement between substantially horizontal positions within the frame and forward of the frame, a narrow and deep cushion strip mounted on the handles adjacent the pivotal support to form a resilient front edge for a seat when the handles are positioned within the frame, a thin seat deck supported by the handles behind the cushion strip and on a level with the top of the latter to form the remainder of the seat, the bottom of the seat deck being considerably higher than that of the cushion strip to afford greater clearance underneath the seat, and the cushion strip and the seat deck being operable by the handles to be swung outside the frame to give access to the space underneath the seat, and the handles having extensions projecting upward behind the seat deck when the latter is in seat position and serving as supporting legs for the seat when the latter is in inverted position.

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