April 27, 1948. S. A. KELLY, JR., ET AL 2,440,515

CONVERTIBLE BERTH OR BED-LOUNGE AND LIKE DEVICES

Filed Jan. 29, 1946 3 Sheets-Sheet 1

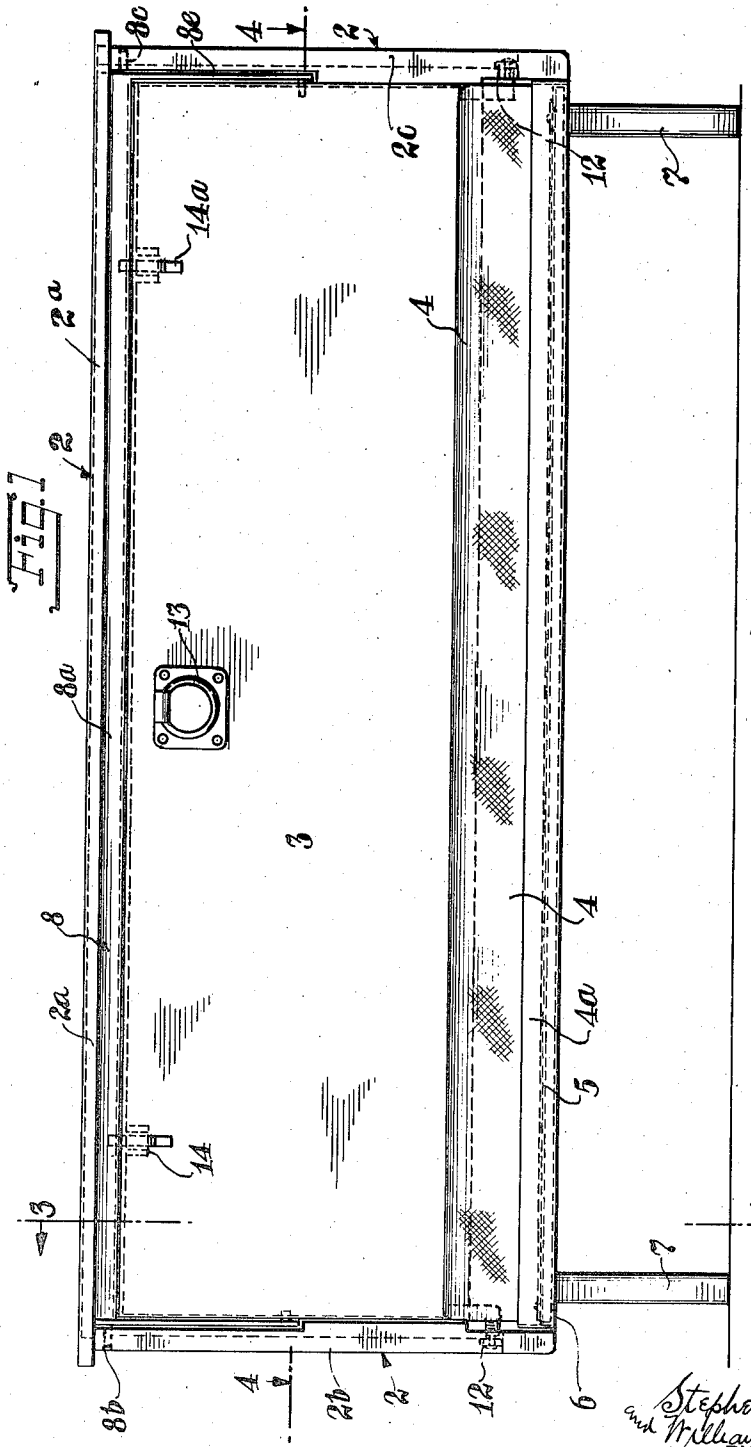


FIG. 1

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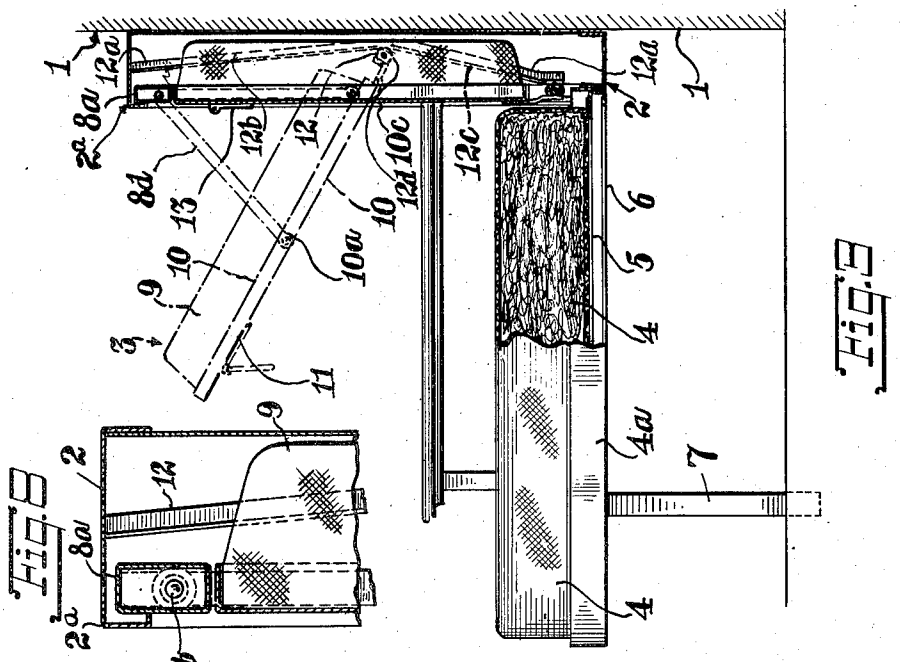


Fig. 8

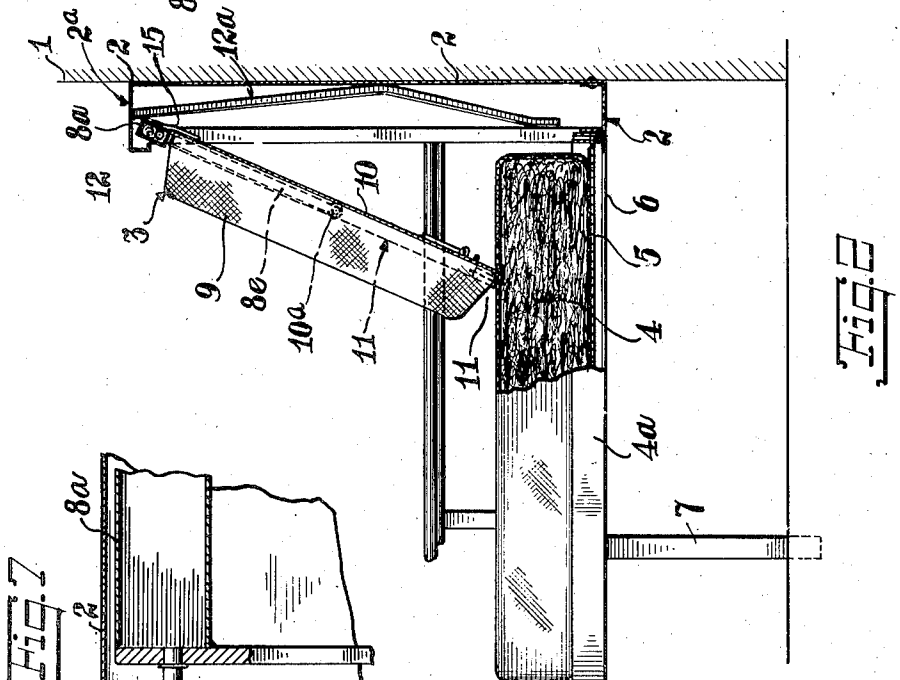


Fig. 2

Fig. 7

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Fig. 5

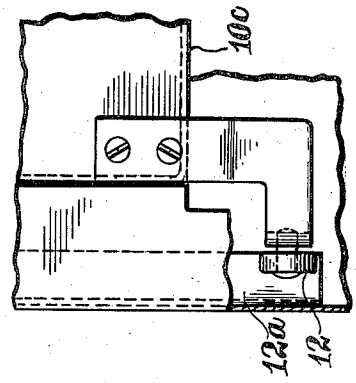


Fig. 6

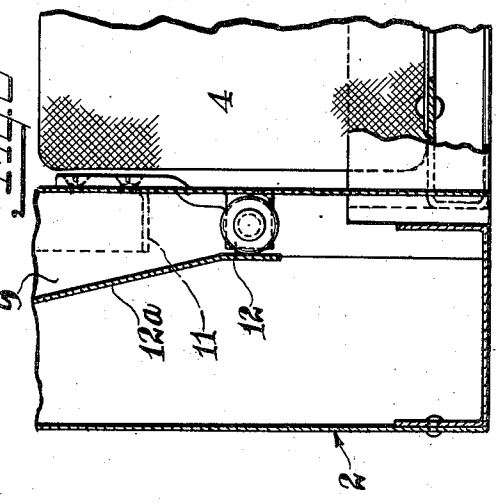
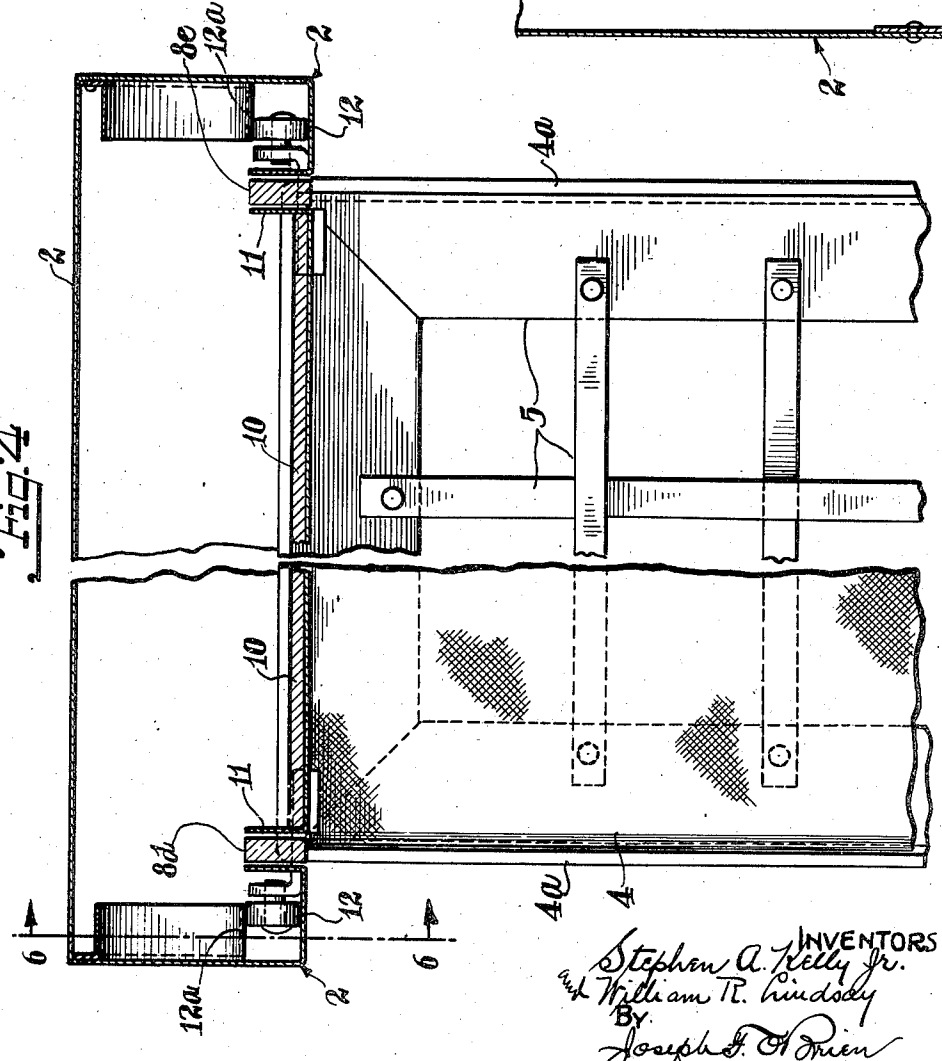


Fig. 4



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CONVERTIBLE BERTH OR BED LOUNGE AND LIKE DEVICES

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Application January 29, 1946, Serial No. 643,986

6 Claims. (Cl. 5—59)

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This invention relates to improvements in convertible berths or bed-lounges and like devices.

Our invention comprises an improvement in lower berths or beds having seat-back members to enable conversion from berths or beds to lounges and vice versa.

In constructing convertible articles of the type under consideration, great difficulty is encountered in maintaining slightly lines and proper proportions in the dual positions of the article or device, and heretofore unsightliness and improper proportions in one position or use have been sacrificed to provide such features in the other position or use. Thus, folding bed-lounges provided with such back members have, when converted into a bed, either caused the lounge-back to be elevated and retained in elevated position and thus to leave a gaping opening in a housing for the back member or the lounge-back has been mounted on horizontal rails to slide to the rear of a deep cavity, thus making necessary a wide or thick housing for the lounge-back as well as leaving a gaping opening therein in the bed-forming position of the device.

One of the objects of our invention is to produce a combination berth-lounge that will be instantaneously convertible from a comfortable substantially full-size bed to a comfortable backed lounge and vice versa by a simple balanced movement of the lounge seat-back and will produce, in both bed-forming and lounge-forming positions, articles of neat appearance and structural stability.

Another object of our invention is to provide a comfortable, neat and sightly bed or berth of substantially conventional full width which may be instantaneously convertible into a comfortable lounge by combining with the bed a lounge back composed of a low seat-back housing and a seat-back having a novel balanced extension movement from a position within said low housing at on side edge of the bed to a position extending over said edge of the bed to form a lounge of comfortable, neat and sightly appearance and may, by a similarly balanced reverse movement, reconvert said lounge into said comfortable, neat and slightly bed or berth.

Another object of our invention is, in a device of the character specified, to provide a lounge back member having a seat-back which, in open position, is invertible to extend over the mattress of the bed or berth, and is provided with an upholstered surface on one face for contact with the back of the user and thus to produce a comfortable lounge, while in folded position, said lounge seat-back will be inverted in the opposite direction and stowed away in compact condition in a low housing outside one edge thereof to increase the bed area and preferably will provide a neat, hard surface for the side of the bed that is cleansable and sanitary.

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Another object of our invention is, in a device of the character specified, to provide a lounge back member having a seat-back which, in its convertible movement from bed-forming to lounge-forming position, is invertible and reversible, and, when so inverted and reversed, is adapted to project forwardly into a lounge-forming position and when moved in the opposite direction is retracted and again inverted and reversed to form, in bed-forming position, a compact, completely closed housing outside the bed area and at one side thereof.

Still another object of our invention is, in a device of the character specified, to provide a supporting back member and a seat-back having an upholstered surface on one side face and a hard surface on the other side face, said back member comprising a housing and said dual-surfaced seat-back being mounted in said housing and adapted, in bed-forming position, to completely close the same and to present one of said dual surfaces outwardly, said supporting back member or housing being arranged at one side edge of the bed mattress, whereby the bed mattress will be completely unobstructed and its full area presented for use, and to utilize a conversion movement of said dual-surfaced seat-back which will invert and project the same forwardly to reverse the surfaces and reduce the distance between such seat-back and the outer edge of the mattress so as to present an outwardly-facing upholstered back support in a comfortable lounge in which the bed area is reduced to lounge proportions, and by an opposite converting movement to cause said seat-back to be retracted within said housing and again inverted and reversed to increase the bed area or space and to present the other of said dual seat-back surfaces which will preferably be formed of hard material and arranged in substantially a vertical plane extending coincidentally with the inner edge of the bed mattress.

With these and other objects in view, the invention comprises the combination of members and arrangement of parts so combined as to coact and cooperate with each other in the performance of the functions and the accomplishment of the results herein contemplated, and comprises in

one of its adaptations the species or preferred form illustrated in the accompanying drawings, in which:

Fig. 1 is a view in side elevation of our improved berth or bed lounge with the lounge-forming seat-back in closed or folded position to provide full bed area;

Fig. 2 is a section on the line 3—3 of Fig. 1 showing the lounge-forming seat-back projected into open position;

Fig. 3 is a view similar to Fig. 2 showing the lounge-forming seat-back being retracted and in partly folded position;

Fig. 4 is a fragmentary section substantially on the line 4—4 of Fig. 1 looking in the direction of the arrows and showing the seat-back in closed or folded position with the mattress or cushion seat partially broken away to show the spring;

Fig. 5 is an enlarged view of the guiding roller for one edge of our improved foldable seat-back;

Fig. 6 is an enlarged fragmentary view on the line 6—6 of Fig. 4 looking in the direction of the arrows; and

Figs. 7 and 8 are fragmentary views at right angles to each other of one corner of the seat-back mounting.

Referring now to these drawings, 1 comprises a wall or bulkhead of a room to which is preferably securely fastened a supporting member 2 for a seat-back 3 of our convertible bed and lounge unit. The supporting member 2 may be fastened to the wall 1 in any suitable manner and, as shown, comprises a housing for the seat-back 3 which is dual-surfaced and when folded into bed-forming position comprises the outer face of the housing 2 and is invertible and extensible or projectable from said bed-making position shown in Fig. 1 to the lounge-forming position of Fig. 2 to produce, with the combined mattress and bed, a lounge with one of said dual-surfaces comprising an upholstered or pillowed lounge-seat-back, and a bed with the other surface preferably of a hard, sanitary and readily cleansable material at the side edge thereof.

In the embodiment shown, the bed comprises a suitable mattress 4 and mattress-supporting means, such as the mattress holder 4a which is supported on a bed spring 5 arranged in a frame 6 which, if the device is used as a berth, is supported at the inner edge by the bulkhead 1, and at the outer side or edge is provided with suitable bed legs 7. The stationary housing 2 for the seat-back 3 is positioned, as shown, at the inner or bulkhead side edge of the mattress, and in the form of our invention shown comprises a rectangular box-like structure, open at its front face, and extending vertically from a plane near the base or bottom of the mattress upwardly and along the said inner edge of the mattress to a suitable height above said mattress to provide a housing for the seat-back 3 and a stationary back or supporting member for our convertible bed-lounge having a relatively low top rail 2a below which, in accordance with our invention, the seat-back 3 may be projected or extended to provide, in combination with the mattress, a cushion-backed lounge and may be retracted to produce a bed or berth with an unobstructed mattress or bed of an area increased over the lounge area, and with a different and preferably hard surface presented.

In the device illustrated, the stationary housing or box member 2 is provided with an internally-pivoted fork-shaped frame 8 having a body portion 8a, the opposite ends of which are pivoted at 8b—8c to the inside surfaces of the end walls 2b—2c of the housing 2. The said body portion 8a preferably extends along the upper edge of the housing and in the closed bed-forming position of the device forms a partial closure of the front face of the housing, and has projecting therefrom at opposite ends radially-extending arms 8d—8e within which frame is pivoted, intermediate its top and bottom edges, the seat-back 3. In the preferred construction of our device, the seat-back 3 is, as above indicated, dual-surfaced and, as shown, comprises a demountable upholstered pillow member 9 mounted in a metal holder pan 10. The holder pan 10 is pivoted intermediate its top and bottom edges to the outer ends of the arms 8d—8e and has a pivotal movement which permits inversion of the pan so that the transverse or horizontal edges thereof change positions with each other. The bottom surface of the pan 10 is formed of sheet metal and preferably provides a hard metallic surface at one side face of the seat-back 3 and thus comprises one of the dual-surfaces of said seat-back 3. The other side face of the pan 10 is provided with holder members 11 for the demountable pillow 9, the outer surface of which comprises the other surface of said dual-surfaced seat-back member 3.

In the embodiment shown, the pan 10 is pivoted at 10a—10b intermediate its top and bottom or transverse edges to the ends of the arms 8d—8e and is invertible and reversible within said arms of the swinging frame. In said preferred embodiment shown, one of the transverse edges of the pan 10 and, as shown, the lower edge of 10c, is provided with guide rollers 12 adapted, during the pivotal movement above specified from open to closed position and vice versa, to roll along tracks 12a arranged within the stationary supporting housing 2 and preferably of angular form, having inclined upper and lower portions meeting at the middle thereof to facilitate movements of the roller therealong in opposite directions. The seat-back 3 is also preferably provided at one side surface near the upper transverse edge thereof with a manipulating handle 13 adapted, when the device is in closed position, to be grasped and pulled by the user, in order to pivot or swing the seat-back 3 into open lounge-forming position. When the seat-back 3 is thus swung into open, lounge-forming position the handle 13 will be positioned at the rear of the seat-back out of sight. A pair of latching devices 14, 14a are preferably provided at the upper transverse edge of the seat-back or pan to lock the same in its closed bed-forming position and these latches are, of course, released prior to the pulling of the handle 13 to open or swing the seat-back on its pivots.

The pan 10 is, as aforesaid, provided with a demountable pillow 9 and the outer surface thereof is upholstered in any suitable way to produce a proper lounge-seat. Obviously, in movement from closed position, the rollers 12 roll upwardly along the tracks 12a till they reach the upper end thereof, whereupon the pan will be inverted and reversed and at the same time projected forwardly over the bed mattress into lounge-forming position. When the seat-back is swung pivotally in the opposite direction, the rollers 12 will move along the track in the opposite direction to cause the reversing and inverting of the seat-back member and the retraction thereof into the housing to provide a hard wall surface at one side of the bed to increase the area

thereof over that obtained when the seat-back is in lounge-forming position.

In the preferred embodiment of our invention, one end of the seat-back pan is provided with a limiting-stop member 15 adapted, in a couch-forming position, to engage the body portion 8^a of the fork-shaped member 8 to limit the extension movement of the said seat-back.

The provision of straight inclined portions 12^b—12^c of the tracks 12^a which meet at the middle portion 12^d enable the seat-back to be stopped and held or retained in an intermediate position such as shown in Fig. 3 and thus to raise the edge of the seat-back and facilitate the making-up of the bed at the adjacent edge thereof.

Having described our invention, we claim:

1. A convertible bed-lounge embodying, in combination, a bed-mattress, a mattress-supporting structure for holding the mattress in horizontal position, a lounge-back housing having a top rail positioned at conventional lounge-back height and extending along one side edge of the said mattress-supporting structure in a vertical plane, a pair of arcuately-swinging arms pivotally mounted at their upper ends to said housing and having their lower ends movable in the arc of a circle from a position parallel with said housing to a position over said mattress and mattress-supporting structure, and a dual-surfaced lounge-seat back having a pivotal connection between its upper and lower edges with the outer ends of said arcuately-swinging pivoted arms, said seat-back being pivotally-movable and invertible in said arcuately-swinging arms and extensible therewith over a portion of the said mattress and mattress-supporting structure to present one of said dual surfaces outwardly and with said mattress to produce a lounge and also being reversely invertible into retracted position to present the other of said dual surfaces outwardly in substantial alignment with said housing out of contact with said mattress to clear the surface thereof for use as a bed.

2. A convertible bed-lounge embodying, in combination, a bed-mattress, a mattress-supporting structure for holding the mattress in horizontal position, a lounge-back housing having a top rail positioned at conventional lounge-back height and extending along one side edge of the said mattress-supporting structure in a vertical plane, a pair of arcuately-swinging arms pivotally mounted at their upper ends to said housing and having their lower ends movable in the arc of a circle from a position parallel with said housing to a position over said mattress and mattress-supporting structure, and a dual-surfaced lounge-seat back having a pivotal connection between its upper and lower edges with the outer ends of said arcuately-swinging pivoted arms, said seat-back being pivotally-movable and invertible in said arcuately-swinging arms and extensible therewith over a portion of the said mattress and mattress-supporting structure to present one of said dual surfaces outwardly and with said mattress to produce a lounge and also being reversely invertible into retracted position to present the other of said dual surfaces outwardly in substantial alignment with said housing out of contact with said mattress to clear the surface thereof for use as a bed, said pair of pivoted arcuately-swinging arms having at the top edges thereof a connecting-bar to produce with said arms an arcuately-swinging forked member, said connecting-bar being adapted to reinforce said arms, to form a stopping element for said seat-back in extensible lounge-forming position and to provide a filler-strip at the top of the housing in bed-forming position.

3. A convertible bed-lounge embodying, in combination, a bed-mattress, a mattress-supporting structure for holding the mattress in horizontal position, a lounge-back housing having a top rail positioned at conventional lounge-back height and extending along one side edge of the said mattress-supporting structure in a vertical plane, a pair of arcuately-swinging arms pivotally mounted at their upper ends to said housing and having their lower ends movable in the arc of a circle from a position parallel with said housing to a position over said mattress and mattress-supporting structure, and a dual-surfaced lounge-seat-back having a pivotal connection between its upper and lower edges with the outer ends of said arcuately-swinging pivoted arms, said seat-back being pivotally-movable and invertible in said arcuately-swinging arms and extensible therewith over a portion of the said mattress and mattress-supporting structure to present one of said dual surfaces outwardly and with said mattress to produce a lounge and also being reversely invertible into retracted position to present the other of said dual surfaces outwardly in substantial alignment with said housing out of contact with said mattress to clear the surface thereof for use as a bed, said housing being provided internally with a track and one transverse edge of said seat-back being provided with a guiding roller adapted to roll on said track and to guide the extending and retracting movements of the seat-back during inversion thereof.

4. A convertible bed-lounge embodying, in combination, a bed-mattress, a mattress-supporting structure for holding the mattress in horizontal position, a lounge-back housing having a top rail positioned at conventional lounge-back height and extending along one side edge of the said mattress-supporting structure in a vertical plane, a pair of arcuately-swinging arms pivotally mounted at their upper ends to said housing and having their lower ends movable in the arc of a circle from a position parallel with said housing to a position over said mattress and mattress-supporting structure, and a dual-surfaced lounge-seat-back having a pivotal connection between its upper and lower edges with the outer ends of said arcuately-swinging pivoted arms, said seat-back being pivotally-movable and invertible in said arcuately-swinging arms and extensible therewith over a portion of the said mattress and mattress-supporting structure to present one of said dual surfaces outwardly and with said mattress to produce a lounge and also being reversely invertible into retracted position to present the other of said dual surfaces outwardly in substantial alignment with said housing out of contact with said mattress to clear the surface thereof for use as a bed, said housing being provided internally with a track and one transverse edge of said seat-back being provided with a guiding roller adapted to roll on said track and to guide the extending and retracting movements of the seat-back during inversion thereof and stop means projecting from the ends of said lounge seat-back opposite to the said roller to limit the pivotal movement of the seat-back in said arms.

5. A convertible bed-lounge embodying, in combination, a bed-mattress, a mattress-supporting structure for holding the mattress in horizontal position, a lounge-back housing having a top rail

positioned at conventional lounge-back height and extending along one side edge of the said mattress-supporting structure in a vertical plane, a pair of arcuately-swinging arms pivotally mounted at their upper ends to said housing and having their lower ends movable in the arc of a circle from a position parallel with said housing to a position over said mattress and mattress supporting structure, and a dual-surfaced lounge-seat-back having a pivotal connection between its upper and lower edges with the outer ends of said arcuately-swinging pivoted arms, said seat-back being pivotally-movable and invertible in said arcuately-swinging arms and extensible therewith over a portion of the said mattress and mattress-supporting structure to present one of said dual surfaces outwardly and with said mattress to produce a lounge and also being reversely invertible into retracted position to present the other of said dual surfaces outwardly in substantial alignment with said housing out of contact with said mattress to clear the surface thereof for use as a bed, said housing being provided internally with a track and one transverse edge of said seat-back being provided with a guiding roller adapted to roll on said track and to guide the extending and retracting movements of the seatback during inversion thereof, said track being composed of two straight portions inclined rearwardly within the casing and meeting intermediate the ends of said track to facilitate the movement of the roller in opposite directions thereon, and to provide a stop point in the reversible movement to enable facile making-up of the bed.

6. A convertible bed-lounge embodying, in combination, a bed-mattress, a mattress-supporting structure for holding the mattress in horizontal position, a lounge-back housing having a top rail positioned at conventional lounge-back height and extending along one side edge of the said

mattress-supporting structure in a vertical plane, a pair of arcuately-swinging arms pivotally mounted at their upper ends to said housing and having their lower ends movable in the arc of a circle from a position parallel with said housing to a position over said mattress and mattress-supporting structure, and a duel-surfaced lounge-seat back having a pivotal connection between its upper and lower edges with the outer ends of said arcuately-swinging pivoted arms, said seat-back being pivotally-movable and invertible in said arcuately-swinging arms and extensible therewith over a portion of the said mattress and mattress-supporting structure to present one of said dual surfaces outwardly and with said mattress to produce a lounge and also being reversely invertible into retracted position to present the other of said dual surfaces outwardly in substantial alignment with said housing out of contact with said mattress to clear the surface thereof for use as a bed, means on said lounge-seat-back for latching the same in bed-forming position, and handle means on one face of said lounge-seat-back to permit ready manipulation thereof.

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