June 30, 1964 S. J. PIAZZA 3,138,805

BED-WHEELCHAIR

Filed April 11, 1961 2 Sheets-Sheet 1

Fig. 1.

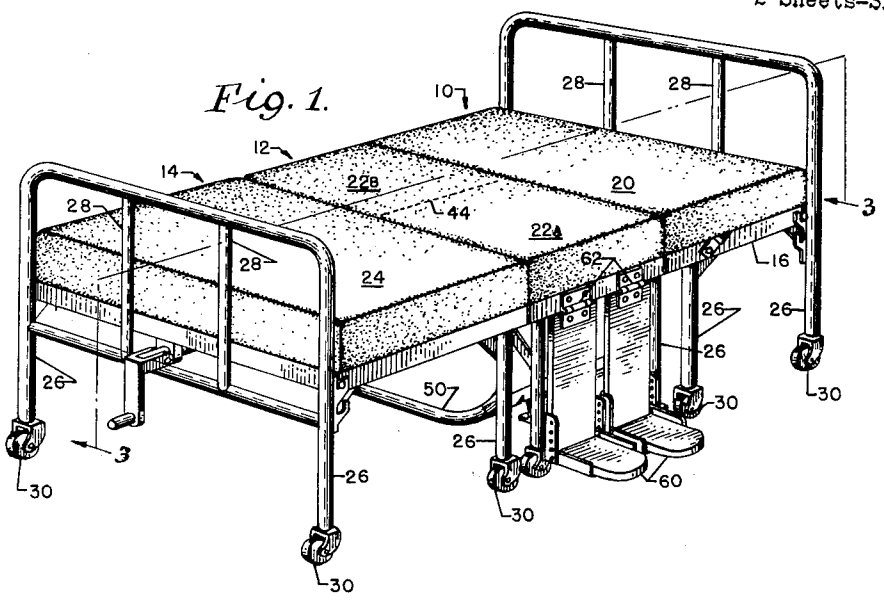
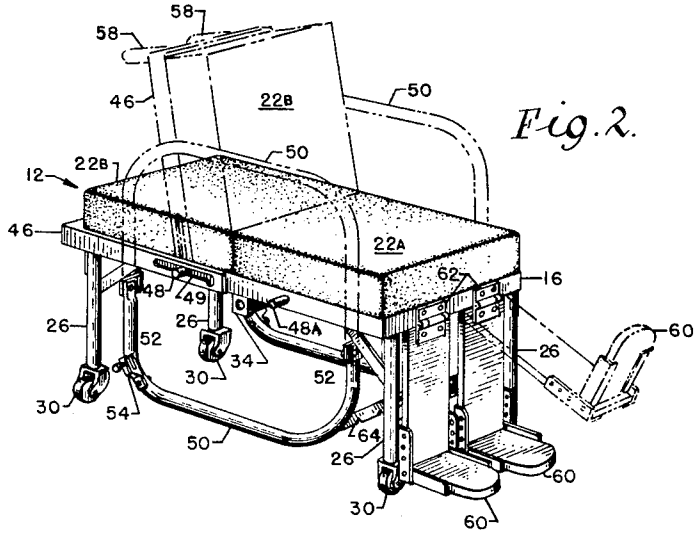


Fig. 2.



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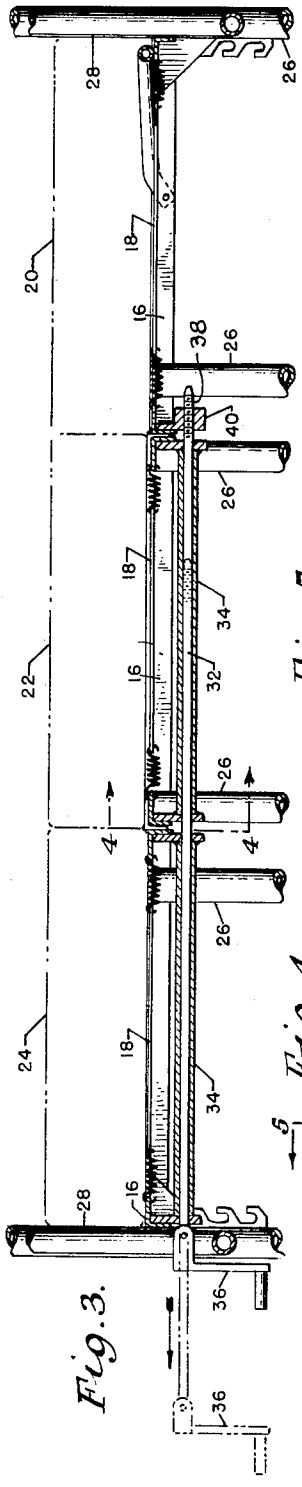


Fig. 3.

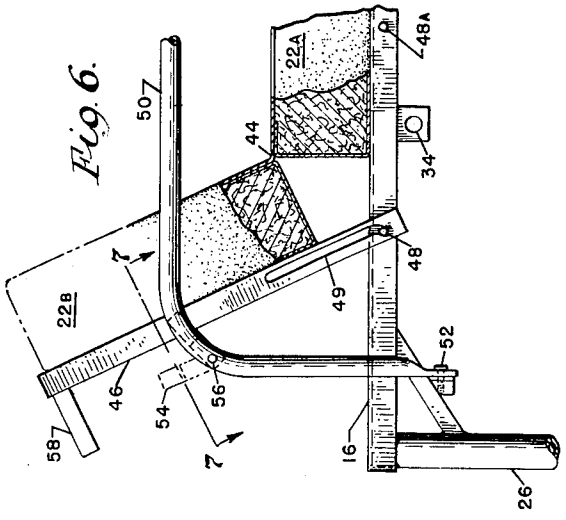


Fig. 6.

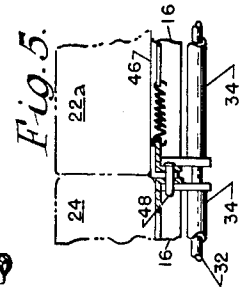


Fig. 5.

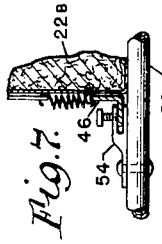


Fig. 7.

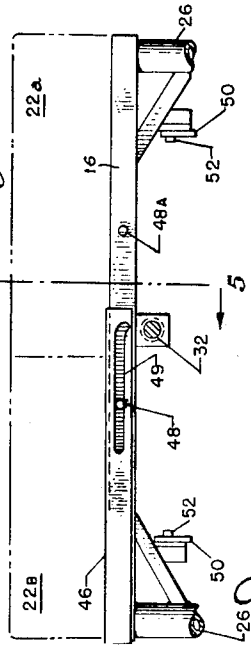


Fig. 4.

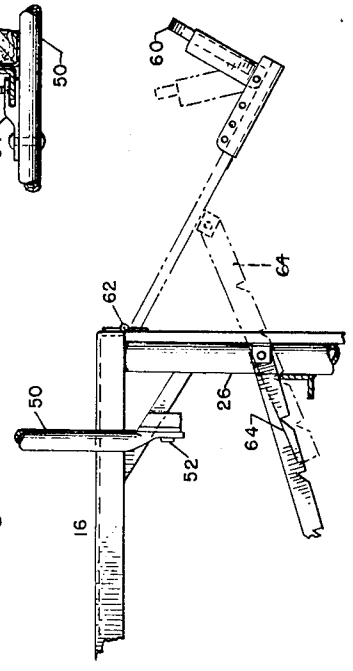


Fig. 8.

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3,138,805

BED-WHEELCHAIR

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Filed Apr. 11, 1961, Ser. No. 102,236
6 Claims. (Cl. 5—60)

This invention relates to invalid furniture, and more particularly to an improved convertible bed-chair device such as may be readily adapted alternatively to either bed or wheelchair use while being occupied by the patient.

A primary object of the invention is to provide an improved device as aforesaid which is convertible with improved facility and without requiring the occupant to be lifted or to step out of the furniture piece.

Another object is to provide an improved device as aforesaid whereby the patient may with utmost ease shift his body between alternative use positions of the device.

Another object is to provide an improved device as aforesaid which is of simple and rugged design and relatively inexpensive to manufacture.

Another object is to provide an improved device as aforesaid which may be operated by the nurse or attendant with improved ease and facility.

Other objects and advantages of the invention will appear from the specification hereinafter and the accompanying drawing of an exemplary form of the invention wherein:

FIG. 1 is a top perspective view of a device of the invention, shown as being set up for bed use.

FIG. 2 is a corresponding view showing the device arranged for use in chair form.

FIG. 3 is a fragmentary sectional view on enlarged scale, taken along line 3—3 of FIG. 1.

FIG. 4 is a fragmentary sectional view taken along line 4—4 of FIG. 3.

FIG. 5 is a fragmentary sectional view taken along line 5—5 of FIG. 4.

FIG. 6 is a view corresponding to FIG. 4 but showing adjustment of the device to chair form.

FIG. 7 is a fragmentary sectional view taken along line 7—7 of FIG. 6; and

FIG. 8 is a fragmentary end view of the device as shown in FIG. 2.

As indicated hereinabove, the present invention contemplates provision of a hospital type bed which is readily convertible into wheelchair form; a particular feature being that the patient may either with or without assistance shift his body with maximum ease and natural movements between recumbent and upright sitting positions, thereby utilizing alternatively the bed and chair portions of the device. The mechanical features of the device are such as to facilitate and minimize the assistance required by the patient incidental to the conversion operations.

Thus, as illustrated at FIG. 1 herein the device of the invention comprises a three unit construction including head, center, and foot sections designated generally at 10, 12, 14 respectively. Each section comprises essentially a horizontally disposed rectangular frame 16 carrying transversely disposed spring slats 18 for support of corresponding mattresses or cushions 20, 22, 24. The frames 16 are supported upon vertical legs 26, the leg devices at the front and foot ends of the bed conveniently comprising portions of the conventional head and foot bed frames. The head and foot frames may include if desired, transverse bars 28, and all of the legs 26 are provided with wheel castors as indicated at 30.

For bed use the units 10, 12, 14 are maintained in end-to-end aligned interconnection as shown in FIGS. 1 and 3 by means of a tie-rod 32 which slide-fits through

guide tubes 34—34 carried by the frames 16—16 of at least two of the units; the rear end of the rod 32 being fitted with a hand crank 36 and the leading end of the rod being screw-threaded as indicated at 38 for threading engagement with a bored and tapped block 40 carried by the frame of the third unit. Thus, it will be appreciated that when the three units are disposed in side-by-side alignment as shown in FIG. 1, and the tie-rod is slide-fitted through the directionally aligned guides and then rotated by the crank 36, the threaded end of the tie-rod will draw through the block 40 and thereby snug the three bed units together and maintain them in bed-forming arrangement as shown in FIGS. 1 and 3. However, upon withdrawal of the tie-rod, as indicated by broken lines in FIG. 3, the three units will be freed from one another and will be individually self-supporting upon their own leg and castor devices.

It will be seen that the center unit 12 is disposed substantially at the longitudinal center of the device when arranged in bed form, and thus the mattress portion 22 is disposed to support the pelvic portion of the patient's body when recumbent upon the bed. Hence, whenever the patient swings his body so as to extend his legs laterally from the bed he naturally swivels his pelvic section upon the cushion 22 and then assumes a sitting position thereon with his legs hanging over the side. In accord with the present invention, the cushion 22 is of two-piece construction and comprises cushion sections 22*a* and 22*b* hingedly connected as indicated at 44 (FIGS. 1 and 6), the portion 22*a* being suitably dimensioned to function as a comfortable seat cushion, while the portion 22*b* is suitably dimensioned to function as a back rest when tilted to its raised position as shown in FIG. 6. To provide for this alternative positioning of the cushion part 22*b*, a supplemental support frame 46 is provided to hinge upon pins 48 carried by the main frame 16; the frame piece 46 being slotted as indicated at 49 (FIGS. 4, 6) to enable the cushion part 22*b* to rise to the position shown in FIG. 6. The pins 48, as well as companion pins 48*a*, may be arranged to mate with holes found in the next adjacent frames to act as guide devices to accurately position the unit parts in aligned relation.

U-shaped members 50—50 are pivotally mounted as indicated at 52 upon the main frame 16 of the center unit 12 and normally suspend thereunder as shown in solid lines at FIGS. 1 and 2. However, when the center unit is separated from the two end units the members 50—50 may then be swung up to arm rest forming positions as shown in broken lines at FIG. 2, and in FIGS. 6, 8; the arm-rests 50—50 and the back-rest frame 46 being then interlocked by means of latch plates 54 which are pivotally carried upon the arm rests as indicated at 56. Thus, it will be appreciated that whenever a recumbent patient desires to sit upright in wheel chair fashion he may be simply swivelled upon the seat cushion portion 22*a* into upright sitting position, whereupon the tie-rod 32 will be cranked out of connecting relation and withdrawn whereby the center unit is fully separated from the end units which are then rolled aside. The back rest and arm rest devices are then folded upwardly and interlocked to provide complete sitting support for the patient's torso. Handle bars as indicated at 58—58 may be provided for the convenience of the patient's attendant when wheeling the latter from place to place. Foot-rest devices as indicated at 60—60 are conveniently suspended from the main frame 16 of the unit 12, and are preferably hinged thereto as indicated at 62 and arranged to be held in positional adjustments by means of corresponding ratchet bar devices 64 (FIG. 8).

Although only one form of the invention has been illustrated and described in detail herein, it will be un-

derstood that various changes may be made therein without departing from the spirit of the invention or the scope of the appended claims.

I claim:

1. A convertible bed-chair structure comprising three bed frame-mattress units dimensioned to be disposed in end-to-end relation to provide a single bed with the center unit of said structure disposed under the pelvic portion of a recumbent patient, means for detachably interconnecting said units in rigid bed form, said center unit having a two-piece mattress cooperating to provide a seat cushion and a back rest for the patient when seated upon said seat cushion with his legs hanging over the side thereof, hinged frame means movable to support said back rest in patient sitting position, arm-rest means normally hanging below said frame and swingable into upright standing positions at opposite sides of said unit to provide arm-rest means, latch devices carried by said arm-rests and detachably engageable with said back-rest support to maintain said arm-rest and back-rest in patient sitting attitudes, and positionally adjustable foot-rest devices suspending from said frame to support the patient's feet when in seated position.

2. A convertible bed-chair comprising three frame-mattress units dimensioned to be disposed in end-to-end relation to provide a single bed with the center unit disposed under the pelvic portion of a recumbent patient, means for detachably interconnecting said units in rigid bed form, said center unit having a foldable mattress adapted to provide a seat cushion portion and a back-rest portion for the patient when seated upon said seat cushion portion with his legs hanging over the side thereof, said center unit including hinged frame means movable to support said back-rest portion in patient sitting position, means normally hanging below said frame and swingable into upright standing positions to provide arm-rests at opposite sides of said unit, latch devices carried by said arm-rests and detachably engageable with said back-rest support to maintain said arm-rest and back-rest in patient seating attitudes, and foot-rest devices suspending from said frame and positionally adjustable to support the patient's feet when in seated position.

3. A convertible bed-chair comprising three frame-mattress units normally disposed in side by side relation to provide a single bed with the center unit disposed under the pelvic portion of a recumbent patient, a tie rod for detachably interconnecting said units in rigid bed form, said center unit being adapted to provide a seat cushion portion and a back-rest portion for the patient when seated upon said seat cushion portion with his legs hanging over the side thereof, said center unit including means movable to support said back-rest portion in patient sitting position, means normally hanging below said frame and swingable into upright standing positions to provide arm-rests at opposite sides of said unit, latch devices carried by said arm rests and detachably engageable with said back-rest support to maintain said arm-rest and back-rest in patient seating attitudes, and foot-rest devices suspending from said frame and positionally adjustable to support the patient's feet when in seated position.

4. A convertible bed-chair comprising multiple frame-mattress units dimensioned to be disposed in end-to-end relation to provide a single bed with the center unit disposed under the pelvic portion of a recumbent patient, means for detachably interconnecting said units in rigid bed form, said center unit having a foldable mattress adapted to provide a seat cushion portion and a back-rest portion for the patient when seated upon said seat cushion

portion with his legs hanging over the side thereof, said center unit including hinged frame means movable to support said back-rest portion in patient sitting position, means normally hanging below said frame and swingable into upright standing positions to provide arm-rests at opposite sides of said unit, and latch devices carried by said arm-rests and detachably engageable with said back-rest support to maintain said arm-rest and back-rest in patient seating attitudes.

5. A convertible bed-chair comprising three frame-mattress units dimensioned to be disposed in end-to-end relation to provide a single bed with the center unit disposed under the pelvic portion of a recumbent patient, a tie rod having a crank arm at one end and screw threaded at its other end and slip-fitted through aligned apertures in said frame units and engaging a screw thread portion of one of said frames for detachably interconnecting said units in rigid bed form, said center unit having a foldable mattress adapted to provide a seat cushion portion and a back-rest portion for the patient when seated upon said seat cushion portion with his legs hanging over the side thereof, said center unit including hinged frame means movable to support said back-rest portion in patient sitting position, means normally hanging below said frame and swingable into upright standing positions to provide arm-rests at opposite sides of said unit, latch devices carried by said arm-rests and detachably engageable with said back-rest support to maintain said arm-rest and back-rest in patient seating attitudes, and foot-rest devices suspending from said frame and positionally adjustable to support the patient's feet when in seated position.

6. A convertible bed-chair structure comprising

three bed frame-mattress units dimensioned to be disposed in end-to-end relation to provide a single bed with the center unit disposed under the pelvic portion of a recumbent patient.

means for detachably interconnecting said units in rigid bed form,

said center unit including a main frame and a sub-frame hingedly attached thereto,

said sub-frame being of a width substantially half the width of the center section and being hinged thereto substantially along the center of said bed,

means connecting said main frame and said sub-frame for holding the latter in substantially upright position,

said center unit having a two-piece mattress, one carried by said sub-frame and the other by said main frame, to provide a seat cushion and a back rest when said sub-frame is substantially upright.

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