Nov. 4, 1958 F. RICHTER 2,858,550

BED COUCH

Filed June 24, 1954 4 Sheets-Sheet 1

Fig. 1

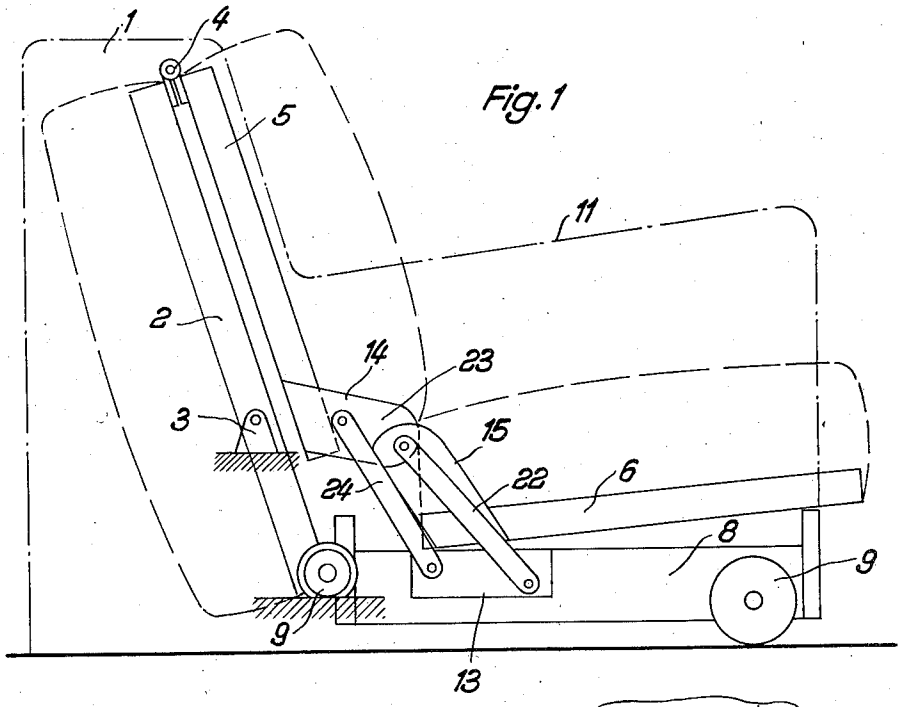
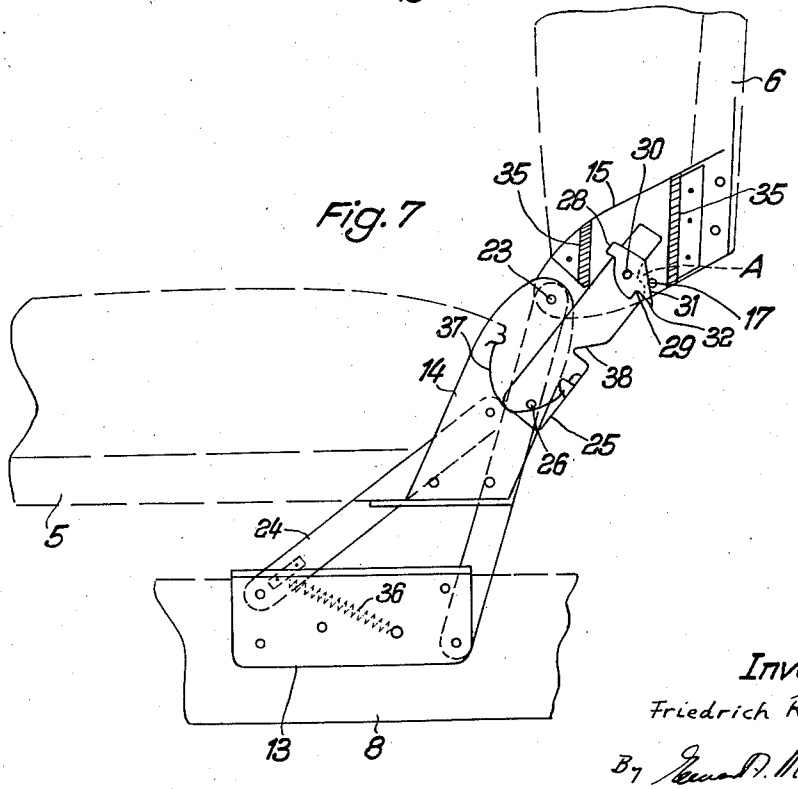


Fig. 7



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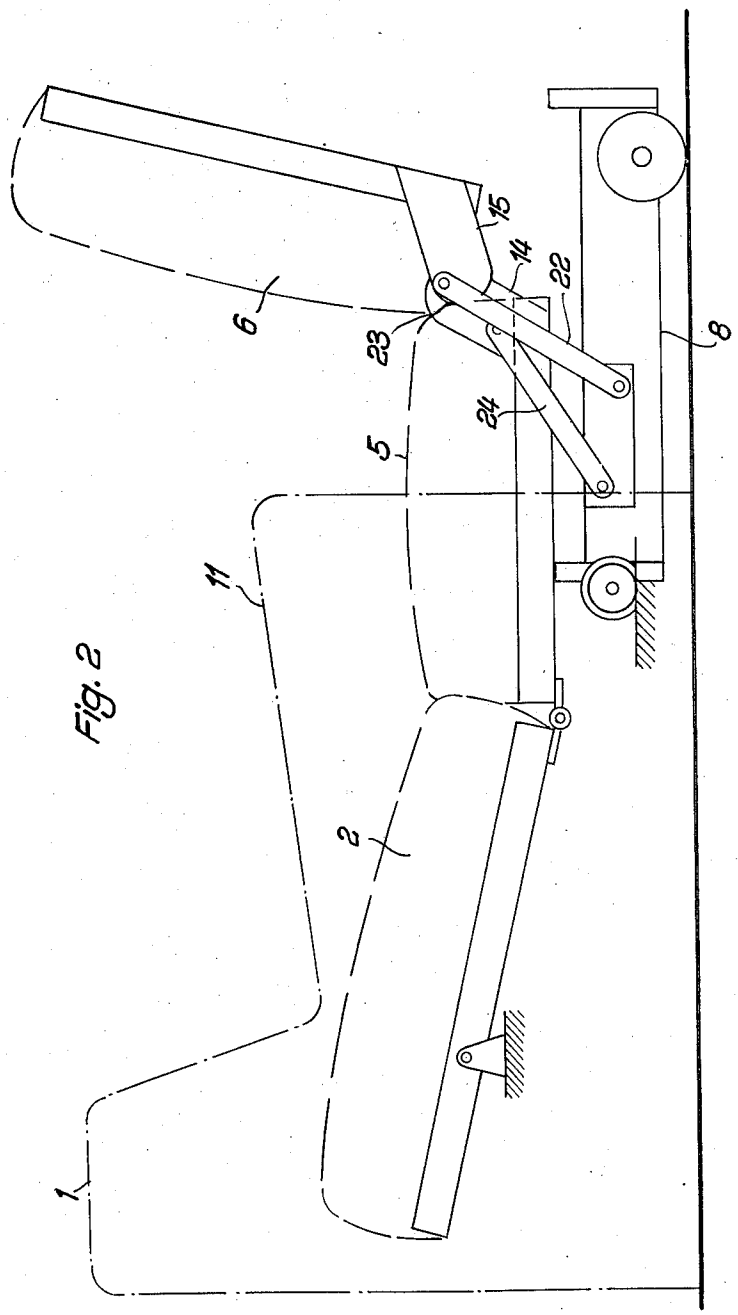


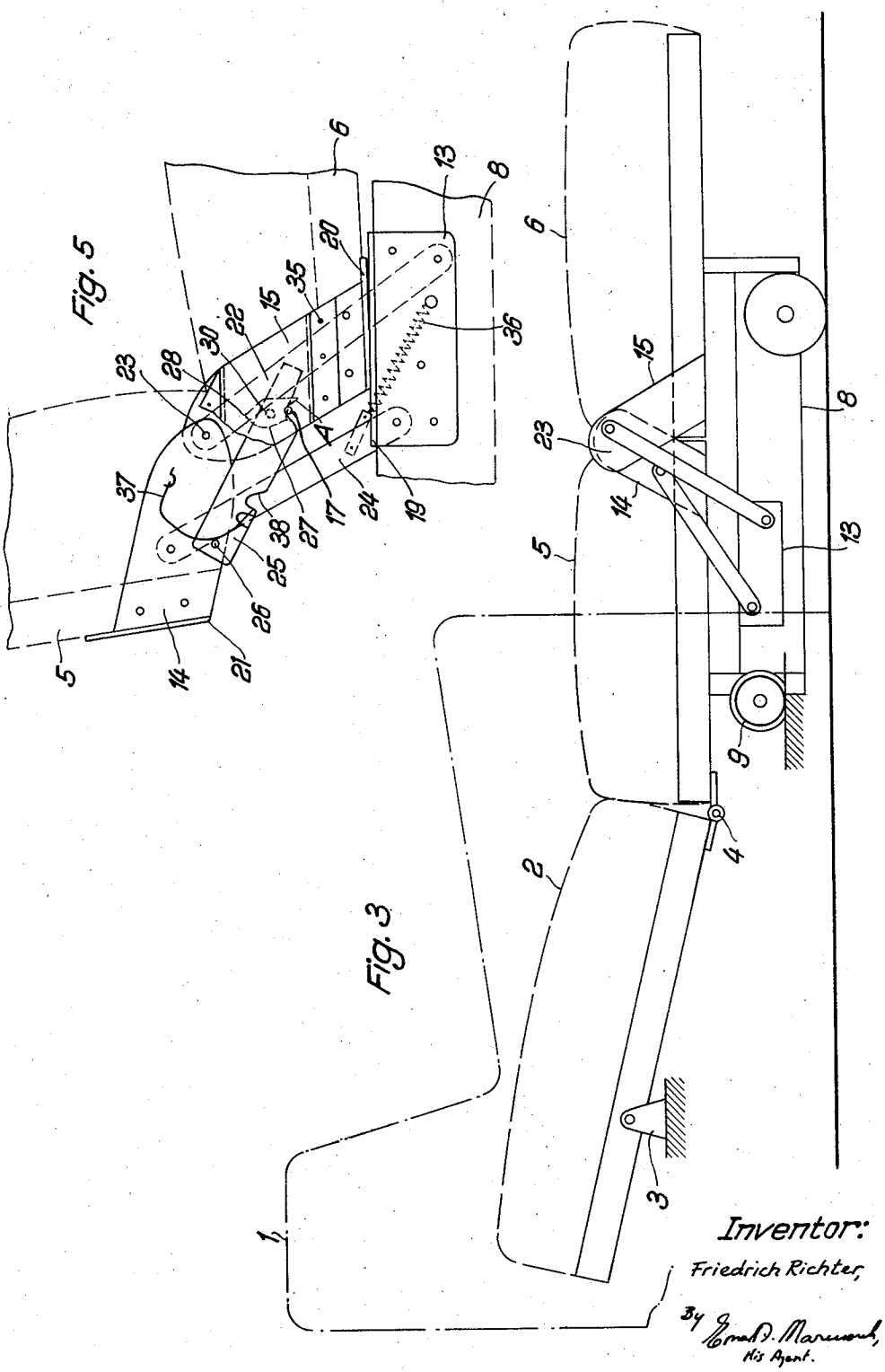
Fig. 2

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BED COUCH

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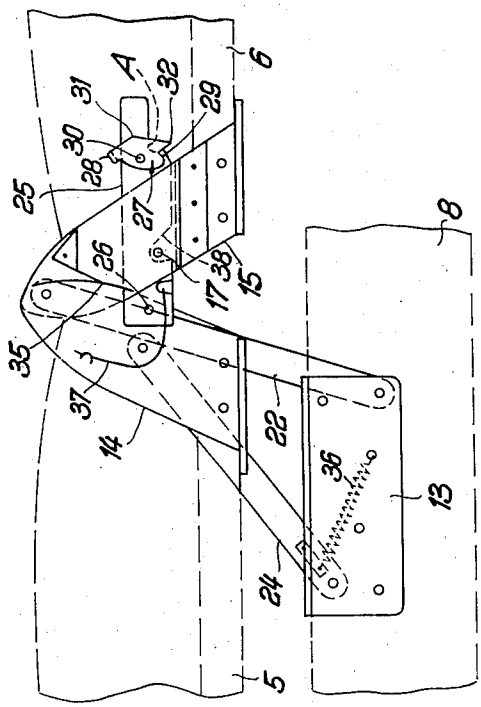


Fig. 6

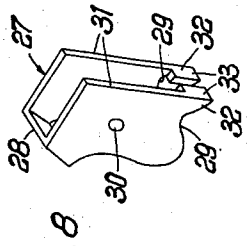


Fig. 8

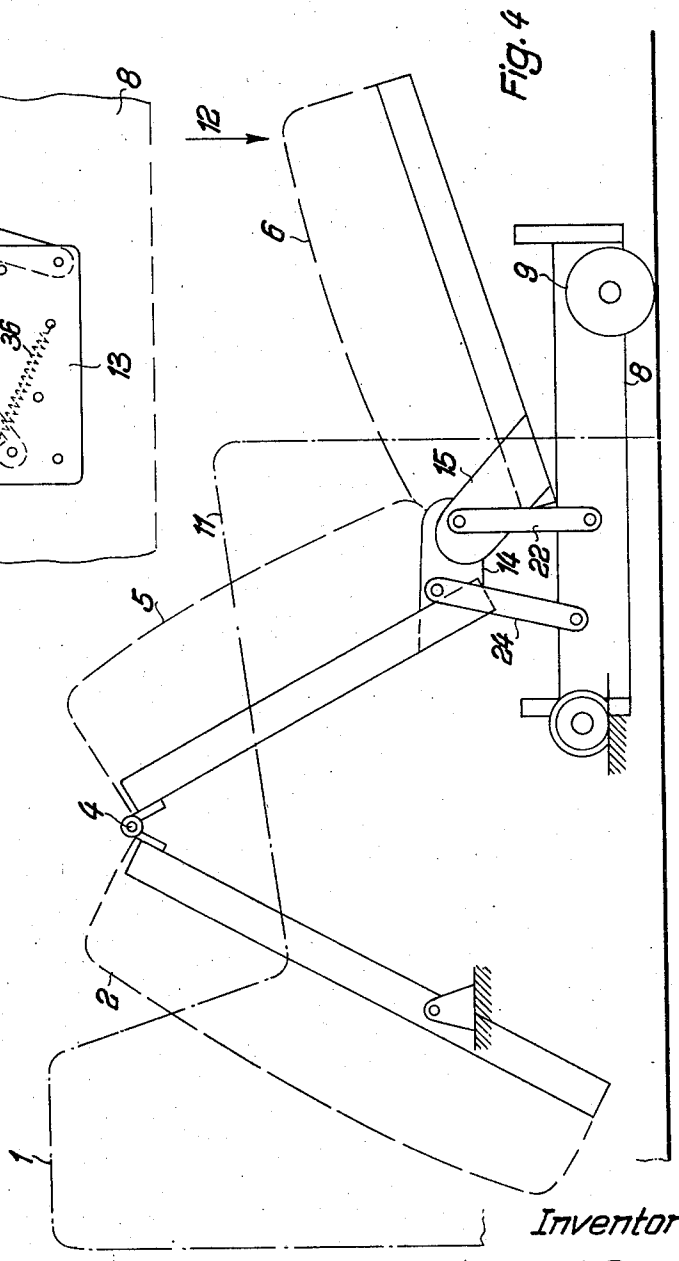


Fig. 4

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BED COUCH

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Application June 24, 1954, Serial No. 438,930

Claims priority, application Germany June 27, 1953

3 Claims. (Cl. 5—47)

The invention relates to articles of furniture of the bed-couch type which are convertible between a double bed and a couch, and relates more particularly to such an article wherein when it is in bed position the double bed is positionable with the headboard against the wall. Still furthermore, the invention relates to such articles of furniture in which the bedding may be stored in the frame of the article.

It is among the principal objects of the invention to provide a convertible bed-couch which is simple to operate without the exercise of great force, and which is easily to manufacture at comparably low cost.

With the above and other objects of the invention in view, the invention consists in the novel construction, arrangement and combination of various devices, elements and parts, as set forth in the claims hereof, one embodiment of the same being illustrated in the accompanying drawings and described in the specification.

In the accompanying drawings,

Fig. 1 is a schematic elevational view, partly in vertical section, of a bed-couch in accordance with the invention, showing it in the couch position;

Fig. 2 is a schematic elevational view partly in section, similar to Fig. 1 but showing the bed-couch in an intermediate position between the couch and the bed positions;

Fig. 3 is a schematic elevational view, partly in section, similar to the preceding views but showing the bed-couch in the bed position;

Fig. 4 is a schematic elevational view, partly in section, similar to the preceding views but showing the bed-couch returning from the bed to the couch positions;

Fig. 5 is a large scale fragmentary schematic elevational view of a joint mechanism for the bed-couch, in couch position comparable to that of Fig. 1;

Fig. 6 is a large scale fragmentary schematic elevational view similar to Fig. 5, but showing the parts in the bed position comparable to that of Fig. 3;

Fig. 7 is a large scale fragmentary schematic elevational view similar to Figs. 5 and 6, but showing the parts in an intermediate position comparable to that of Fig. 2; and

Fig. 8 is a large scale perspective view of a lug shown in Figs. 5–7.

In carrying the invention into effect in one of the embodiments which has been selected for illustration in the accompanying drawings and for description in this specification, and referring now particularly to Fig. 1, there is provided a frame structure that has a stationary frame 1 and a movable part that forms a bedding receptacle carriage 8. The frame 1 comprises an upright board that forms the headboard for the bed, and two stationary sidewalls that form arm rests 11, and the carriage 8 in the couch position shown in Fig. 1 is concealed within the confines of the frame 1 including the sidewalls thereof. The carriage 8 may, however, be shifted to extend for the major portion of its length from the frame 1, as best shown in Figs. 2 and 3.

Three members are provided, which in the bed position (Fig. 3) form a head support 2, a center support 5, and a foot support 6.

In the couch position (Fig. 1), however, the foot support member 6 forms a seat, and the center support member 5 forms a back rest, while the head support member 2 is folded back-to-back against the back rest 5. In the couch position (Fig. 1), the head support member 2 is entirely concealed within the confines of the frame 1, the seat 6 is partially disposed within the confines of the frame 1, and of the back rest 5 only the upholstered part projects beyond the confines of the frame 1.

The head support member 2 is pivoted at 3 to the frame 1, and is pivotably linked at 4 to the center support or back rest member 5. The center support or back rest member 5 and the foot support or seat member 6 are interlinked by means of two plates 14 and 15 that are pivoted at 23 (Figs. 3 and 5). The back rest 5 and seat 6 furthermore are connected by means of links 22 and 24 to a plate 13 that is secured to the carriage 8.

The bedding receptacle carriage 8 is open on top and has casters 9, namely front casters that engage the ground on which the bed-couch rests and rear casters that engage tracks which are formed in the stationary frame 1.

The weights of the head support member 2, the center support member 5, and the foot support member 6 are so arranged, that the head support member 2 substantially balances the foot support member 6, to facilitate changing of the bed-couch between the couch and the bed positions.

The support members 2, 5 and 6 preferably have the width of a double bed, and, as best shown in Figs. 1–4, may be provided with upholstery serving as couch upholstery in the couch position (Fig. 1), and as a three-part mattress in the bed position (Fig. 3).

In changing the bed-couch from the couch position (Fig. 1) to the bed position (Fig. 3), the operator will grasp the foot support member 6. It will be observed that there is a joint mechanism for connection between the foot support member 6 and the center support member 5, a preferred embodiment of which will be described further below. Suffice it to say at this point, that during the ensuing outward pulling relative to the frame 1, as exerted by the operator, the joint connection will remain unchanged. There will thus result a pulling out of the center support member 5, and a turning of the head support member 2 about the pivot 3, until the head and center support members 2 and 5 are substantially horizontally aligned, while the foot support member 6 will retain its angular relation to the center support member 5 and be disposed upwardly, as best shown in Fig. 2. During the pulling out, the movable carriage 8 will move to the extended position as shown in Fig. 2.

The foot support member 6 may be provided with handles (not shown) to facilitate the pulling-out operation.

In the position shown in Fig. 2, the open top of the receptacle carriage 8 is at least partially uncovered, and the bedding may be removed from the open top of the carriage 8.

Subsequently, the operator will impart to the foot support member 6 a slight lifting push, to rotate it counterclockwise with respect to Fig. 2 about the pivot 23. The joint mechanism between the foot and center support members 6 and 5 is so arranged that during this slight rotational movement it will release the rigid angular connection that it maintained during the preceding pull-out operation, and the foot support member 6 may thereupon be lowered by the operator to rest on the front wall of the carriage 8, as best shown in Fig. 3.

The double bed is now ready for sleeping, with the

previously exposed part of the bedding receptacle carriage 8 being covered by the foot support member 6.

For closing the bed and converting it to a couch, the operator will first lift the foot support member 6 to a position similar to that shown in Fig. 2, in which the joint mechanism will again provide for a fixed angular engagement between the foot and center support members 6 and 5. In this position, the bedding may be removed off the bed and be placed into the exposed top part of the receptacle carriage 8. Thereafter, the operator will exert a downwardly directed force, indicated by an arrow 12 in Fig. 4. Owing to the arranging by the joint mechanism of a fixed angular relationship in this position between the foot and center support members 6 and 5, the downwardly directed force will cause a lowering of the foot support 6 accompanied by a matching lifting of the center support 5, and a corresponding turning of the head support member 2 about the pivot 3, until there is resumed the couch position shown in Fig. 1. During this last operational step, the carriage 8 will move inwardly until it resumes its position of concealment in the frame 1 shown in Fig. 1.

The downward pushing in direction 12, needs no special weight, and the force may be exerted by applying the weight of the operator to the foot support member 6.

A preferred embodiment of a joint mechanism between the center support member 5 and the foot support member 6 will now be described, in connection with Figs. 5–8.

The joint mechanism is illustrated in Fig. 5 in the couch position that corresponds to Fig. 1. A narrow elongated latch 25 is pivoted at 26 to the plate 14 of the center support member 5. The foot support member 6, on the other hand, has a pin 17 with which the latch 25 cooperates for the aforementioned releasable interengagement between the center and the foot support members 5 and 6.

The plate 14 carries a flange 21; similarly, the plate 15 has a flange 20; and the plate 13 has a flange 19. These flanges 19, 20 and 21 serve to aid in positioning and securing of the plates, 13, 15 and 14 on the carriage 8, the foot support member 6, and the center support member 5, respectively, and also to take up the forces transmitted between the plates.

The link 22 is connected to the plate 13 and to the pivot point 23 between the plates 14 and 15. The link 24, on the other hand, is connected to the plate 13 and to the plate 14, all as best shown in Fig. 5.

The latch 25 is provided with two spaced notches A and 38 for engagement with the pin 17.

In the couch position (Figs. 1 and 5), the pin 17 will engage the notch A, and this engagement will prevail during the movement between the positions shown in Figs. 1 and 2 respectively, as well as during the return movement between the positions shown in Figs. 4 and 1. The pin 17 will, however, engage the notch 38 of the latch 25 in the bed position (Figs. 3 and 6).

A lug 27 is pivoted at 30 to the latch 25 for covering and uncovering the notch A; this enables the pin 17 in certain positions to be shunted past the notch A and in other positions to uncover the notch A for engagement therewith.

As best shown in Fig. 8, the lug 27 is of the channel type and has a connecting piece 28 between the channel side walls. The lug 27 straddles the latch 25, and the connecting piece 28 is so arranged that it can abut against the top edge of the latch 25 to limit the tilting movement of the lug 27 about the axis of the pivot 30. A recess 29 is provided at the lower portion of each of the side walls, and the recesses 29 are so spaced from the axis of the pivot 30 that when the lug 37 is turned about that axis until the recesses 29 are flush with the notch A, they will be in alignment. The pin 17 in that position, as shown in Fig. 5, will thus simultaneously engage the notch A as well as the recesses 29.

On both side walls, the lug 27 has front edges 31 that are flush with each other and which serve in certain positions as a bypass guide for the pin 17 to guide it past the notch A when the side walls overlie the notch A. Each of the side walls furthermore has a projection 32 with an inwardly turned extension 33. The extensions 33 are adapted to engage the lower edge of the latch 25 when the side walls overlap the notch A, as best shown in Fig. 7.

During the movement of the members from the position of Fig. 1 to the position of Fig. 2, the plates 14 and 15 will, owing to the engagement of the pin 17 with the notch A and with the recesses 29, retain their angular relationship, while the links 22 and 24 will pull along the carriage 8 and will move from the position shown in Figs. 1 and 5, to the position shown in Fig. 2.

In the latter position, as previously mentioned, a slight counterclockwise turning of the foot support member 6 about the pivot 23 will act to release the member 6 for subsequent lowering to the bed position of Fig. 3. During this turning movement, the pin 17 will rotate the lug 27 counterclockwise in respect of Figs. 5–7 until the pin 17 slides out of engagement with the recesses 29 and passes during the rotation of the lug 27 beyond the projections 32 thereof, sliding along the lower edge of the latch 25. Owing to the bias of a spring (not shown) the lug 27 will subsequently, after the pin has been moved out of engagement with the lug 27, turn clockwise in respect of Figs. 5–7, until the extensions 33 will engage the underside of the latch 25, and the lug 27 will assume a position overlapping the notch A as shown in Fig. 7.

During the subsequent downward movement of the foot support member 6, turning about the pivot 23, the pin 17 will slide on the edges 31 of the lug 27, and will thus bypass the notch A and will subsequently slide on the underside of the latch 25 and will finally engage the notch 38 (Fig. 6).

During the operation to convert the bed (Fig. 3) to the couch (Fig. 1), the operator, as pointed out earlier, will first raise the foot support member 6. During this raising, the pin 17 will slide out of the notch 38 and will engage the projections 32 of the lug 27, and will subsequently turn the lug 27, against the power of its spring, counterclockwise in respect of Figs. 5–7 about the axis of the pivot 30. By this turning of the lug 17, the notch A will be uncovered, and the recesses 29 be aligned with the notch A, and the pin 17 will again engage simultaneously the notch A an the recesses 29. During the ensuing downward movement (arrow 12, Fig. 4) the engagement between the pin 17 and the notch A of the latch 25 will ensure that the angular relationship between the plates 15 and 14 and thereby of the foot and center support members 6 and 5 will be maintained.

Reinforcements 35 are provided on the plate 15. A spring 36 is provided for biasing the link 24, and a spring 37 is provided for urging the latch 35 clockwise in respect of Figs. 5–7.

Since certain changes may be made in the above article and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

Having thus described the invention, what I claim as new and desire to be secured by Letters Patent, is as follows:

1. In a convertible bed-couch, having a stationary frame, a rolling support movable relative to the frame, and three linked members including a seat member forming in the couch position a seat support and in the bed position a foot support, a backrest member forming in the couch position a backrest and in the bed position the

center piece, and a headrest member forming in the bed position the head support and being in the couch position folded back-to-back with said backrest member and being pivotally connected to said frame, the combination of, said rolling support having a raised fixed front edge and a raised fixed rear edge, two tiltable levers pivoted to each side of said rolling support, the free end of one of said levers on each side being connected to said seat member and the free end of the other lever on each side being connected to said backrest member, the points of pivot connection of said levers on said rolling support being so arranged that upon conversion to the bed position the seat member will rest in substantially horizontal position on one of said raised edges of the rolling support and the backrest member will rest in substantially horizontal position on the other raised edge, and latchable linking means operatively disposed between said backrest and seat members.

2. In a convertible bed couch, as claimed in claim 1, the point of the pivot connection between said headrest and said frame being positioned about midway within

that half of the length of the headrest member which is spaced from the backrest member in the bed position.

3. In a convertible bed-couch, as claimed in claim 1, said latchable linking means comprising releasable latching means operable to maintain said backrest and seat members in a predetermined angular station relative to each other throughout a portion of the conversion movement in either direction between the bed and couch positions until released, the angle of said angular station corresponding to the seating angle between said backrest and said members in the couch position.

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