

Nov. 15, 1938.

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2,136,830

CONVERTIBLE BED COUCH

Filed May 25, 1937

3 Sheets-Sheet 1.

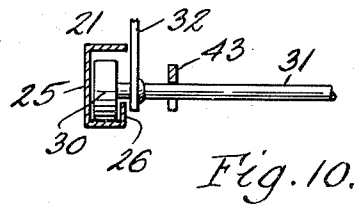
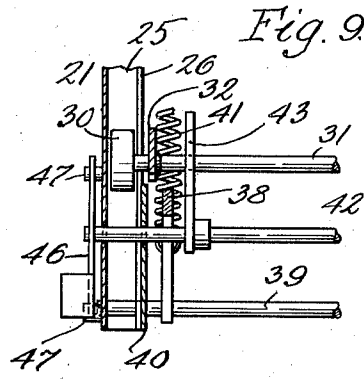
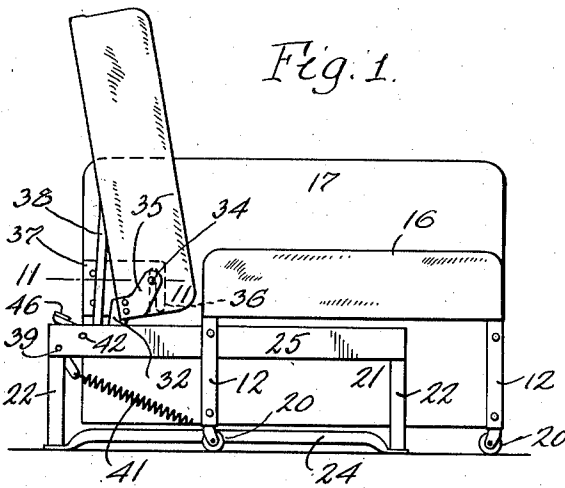


Fig. 2.

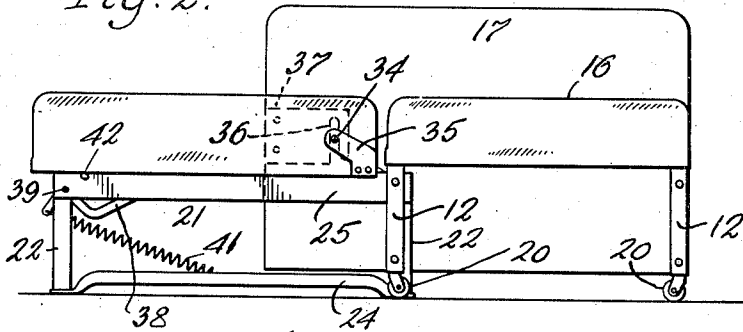


Fig. 11.

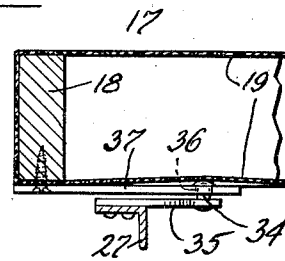
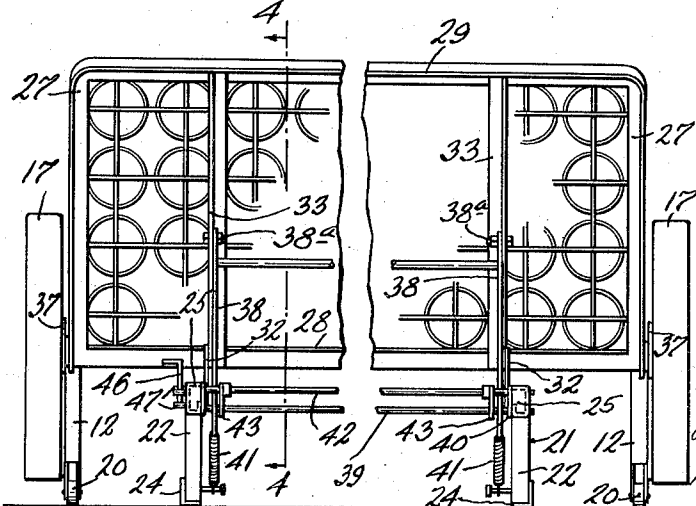


Fig. 3.

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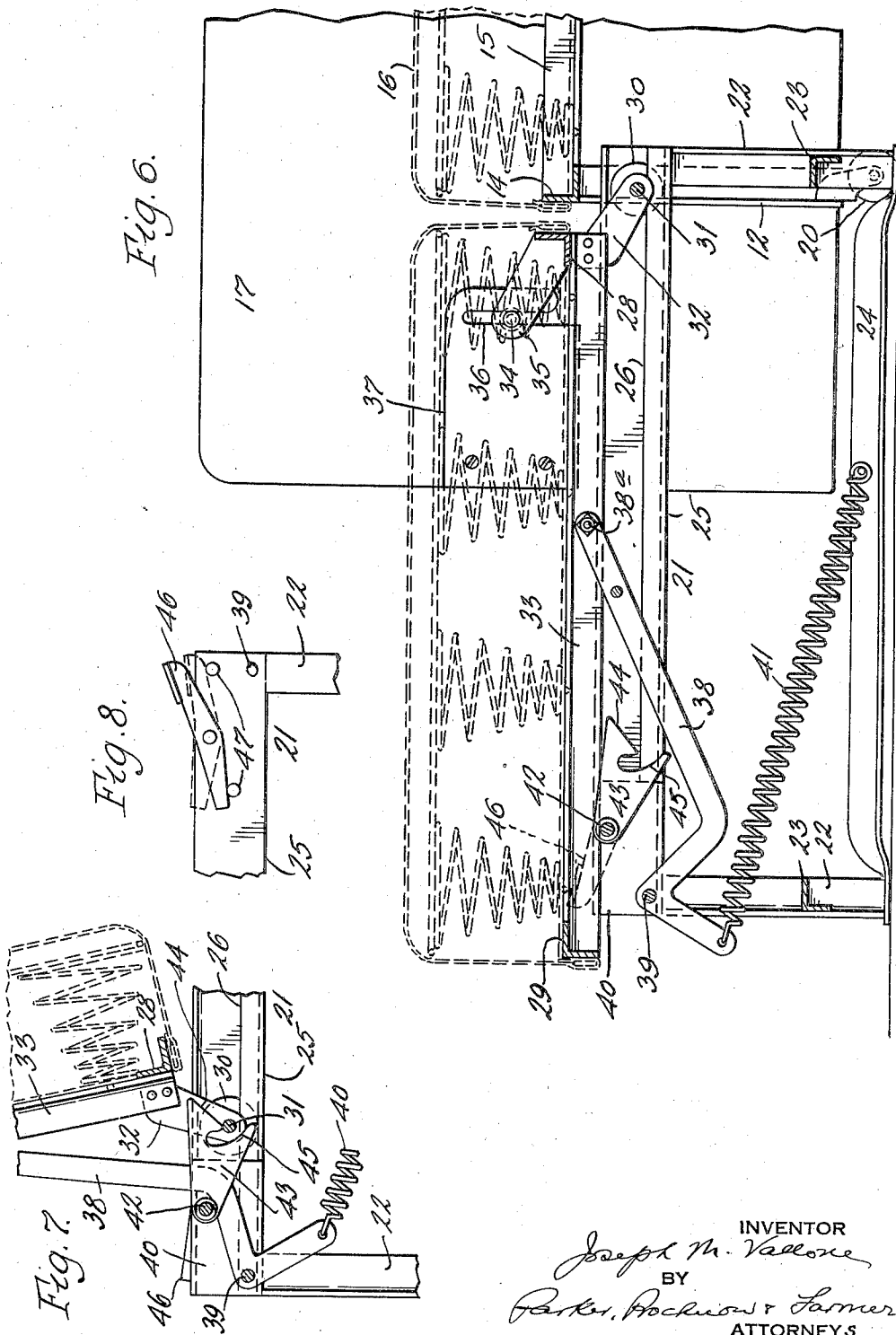
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3 Sheets-Sheet 3



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CONVERTIBLE BED COUCH

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8 Claims. (Cl. 5-47)

This invention relates to studio or convertible bed couches of that kind in which the couch back is adapted to be shifted to lie alongside of the couch seat and together therewith form a full width bed.

The objects of the invention are to provide a desirable, practical and easily operable convertible bed couch of novel construction; to provide a convertible bed couch in which the supporting frames of the couch seat and back are relatively movable laterally for converting from couch to bed and vice versa, and the back is moved from its normal standing position to a horizontal position beside the couch seat to form the bed; in which, in converting from couch to bed, the couch seat moves forwardly and the couch back moves downwardly and forwardly to a horizontal position beside the seat without either the seat or the back being inverted, so that the same surfaces which form the top of the seat and the front of the back form the top surface of the bed; which is of simple and economical construction; which is adapted to be constructed and assembled with the minimum of labor and expense; in which the couch is easily converted into the bed by pressing downwardly and rearwardly on the upper edge of the back; in which the parts are firmly held in their bed-forming position without the necessity for latching or locking means; in which when the back is moved upwardly and rearwardly to convert from bed to couch, the back is automatically latched or secured in its standing position; and which has the other features of improvement and advantage hereinafter described and set forth in the claims.

In the accompanying drawings:

Fig. 1 is a view of a convertible bed couch embodying the invention, showing the parts in end elevation, with the rear upright end or arm member removed and the parts in the normal couch-forming position.

Fig. 2 is a similar view showing the couch converted to form a bed.

Fig. 3 is a broken rear elevation of the same with the parts in the position shown in Fig. 1.

Fig. 4 is a transverse, sectional elevation of the couch on an enlarged scale on line 4-4, Fig. 3.

Fig. 5 is a fragmentary section on line 5-5, Fig. 4.

Fig. 6 is a fragmentary, transverse, sectional elevation, similar to Fig. 4, but showing the couch converted to form the bed.

Fig. 7 is a fragmentary, sectional, elevation

similar to Fig. 4, but showing the position of the parts when the back-holding latch is released.

Fig. 8 is a fragmentary end elevation showing the latch-operating device and its limit stops.

Fig. 9 is a longitudinal, sectional plan on line 9-9, Fig. 4.

Fig. 10 is a longitudinal, vertical section on line 10-10, Fig. 4.

Fig. 11 is a fragmentary, horizontal section of one end member on line 11-11, Fig. 1.

The couch comprises a seat-supporting frame and a back-supporting frame, one of which is horizontally movable laterally relatively to the other for converting from couch to bed and vice versa. Preferably the back-supporting frame remains stationary while the seat-supporting frame is movable sidewise forwardly and rearwardly thereto, and the former will be hereinafter termed the "stationary frame", although the seat-supporting frame could be the stationary frame and the back-supporting frame the movable frame.

A metal seat-supporting frame is shown comprising upright angle bar legs 12 at its four corners, rigidly connected at their upper ends by horizontal front and rear angle bars 13 and 14 respectively and horizontal end bars 15. The horizontal bars 13, 14 and 15 form the base of the couch seat, which may be an upholstered spring seat consisting, for example, of coil springs supported by the base frame and forming a spring support for an upholstered seat pad or cushions 16. This invention, however, is not concerned with the spring or upholstered construction of the couch, and the couch seat and back, which are shown as of similar upholstered construction, may be of any usual or suitable form and construction, such as indicated by broken lines. At opposite ends of the seat frame are upright couch ends or arm members 17 which may be constructed and rigidly fastened to the ends of the seat frame in any suitable manner. The couch ends shown consist of upright, rectangular skeleton frames 18 covered by suitable covering fabric or material 19. The seat frame is preferably furnished with supporting rollers or casters 20 at the lower ends of its corner legs to facilitate rolling motion of the seat frame on the floor.

The back-supporting or stationary frame 21, as shown, is also of metal construction and consists of upright angle bar legs 22 at its four corners rigidly connected by horizontal front and rear angle bars 23 and end bars 24 secured to the lower end portions of the legs. The end bars

24 shown have the ends of their horizontal flanges depressed and secured under the bottom ends of the legs, thus forming broad feet for the stationary frame. A horizontal end rail 25 is rigidly secured to and connects the upper ends of the corner legs at one end of the frame, and a similar end rail 25 connects the upper ends of the legs at the opposite end of the frame. Each of these rails 25 preferably consists of a metal channel bar arranged with its flanges extending inwardly, see Fig. 10, and its bottom flange having an upturned or vertical, inner edge 26, the end rails thus forming guideways or tracks for supporting rollers for the couch back, as hereinafter explained.

The stationary frame is shorter and lower than the seat frame, which is adapted to stand over the former with its legs straddling the stationary frame and spaced outwardly beyond the ends of the latter, most clearly shown in Fig. 3, so that the seat frame is adapted to move forwardly and rearwardly from and to its normal position in which the couch seat overlies the stationary frame. As shown, the couch back comprises a rectangular metal frame formed by rigidly connected end bars 27 and longitudinal front and rear, or bottom and top bars 28 and 29, and an upholstered spring back cushion, similar to the upholstered couch seat, supported by said back frame.

At its lower or front portion, and spaced inwardly from its ends, the back frame is equipped with rollers 30 arranged in and adapted to roll on the bottom flanges of the channel rails 25 of the stationary frame. As shown, these rollers are mounted on the ends of a longitudinal rod or axle 31 extending through bearing holes in brackets 32 which are rigidly attached to fixed cross bars 33 of the back frame and project downwardly from the back frame.

The back frame is also provided at its opposite ends adjacent its lower or front portion with outwardly projecting, fixed studs or pivots 34 which, as shown, are fixed to brackets 35, rigidly attached to the back frame at its lower or front corners and projecting upwardly and inwardly therefrom. These studs extend into and are adapted to slide and turn in vertical guides 36 on the vertical couch ends 17. The guides 36 may be formed by slots in bracket plates 37 rigidly attached to the frames of the couch ends 17. Heads on the studs prevent them from pulling out of the slots, but the slots have open, lower ends through which the studs can be engaged in and disengaged from the slots in assembling and dismantling the couch.

38 indicates two levers each of which is pivoted at one end, as by a bolt 38a, to one of the back cross bars 33 and is fulcrumed near its opposite end to the stationary frame 21, preferably by means of a horizontal rod 39 which extends longitudinally of the stationary frame adjacent its rear edge. The fulcrum rod 39 may extend through holes in the levers 38 and bear at its ends in holes in the channel rails 25 of the stationary frame and in bearing plates 40 fixed to said rails at their inner sides. A coil tension spring 41 is attached at one end to the lower or rear end of each lever 38 and is anchored at its other end to the stationary frame as, for instance, to the adjacent lower end bar 24 of the frame. These springs tend to pull the lower ends of the levers forwardly and swing the opposite ends thereof upwardly to the position shown in Figs. 1 and 4, in which the

couch back is in its normal standing position. By pressing rearwardly on the upper edge of the back, the lower or front edge thereof will move forwardly, the rollers 30 travelling on the channel rails 25, and by reason of the engagement of the studs 34 in the slots 36 in the couch ends, will shove the seat frame forwardly to the position shown in Fig. 6, until the cross bars 33 of the back frame strike and rest upon a horizontal rod or shaft 42 which extends longitudinally of the stationary frame from end to end thereof, near its rear edge so that the back will thus be firmly supported in a horizontal position by the rollers 30 at its front edge and the shaft 42 adjacent its rear edge. The back and seat will then lie alongside of each other in the same horizontal plane and form a wide bed. In thus moving the back downwardly to convert the couch into the bed, the springs 41 are stretched and act to assist in lifting the weight of the back in returning the back to its standing position when converting the bed into the couch. The upward, rear movement of the couch back to its normal position pulls the seat frame back over the stationary frame by reason of the engagement of the studs 34 in their slots 36 in the couch ends.

Latch means are provided for releasably securing the back in its normal standing position, such means, as shown, comprising two hooked-shaped latches 43 fixed to the shaft 42 and projecting forwardly therefrom so as to hook over the roller axle 31 for holding the lower edge of the back from forward movement. Each latch has a downwardly and rearwardly bevelled front end 44, and in rear of the hook has an upwardly and rearwardly inclined or curved cam face 45 arranged to be engaged by the axle 31. When the back is moved upwardly and rearwardly, the axle 31 will strike the bevelled ends of the latches and lift the same so that the axle will pass under the latch hooks and the axle will then strike the cam faces 45 and positively cam the latch hooks downwardly in front of the axle to secure the back in standing position.

For operating the latches to release the back, a latch-operating lever 46 is shown fixed to one end of the latch shaft 42 at the outer side of the adjacent end of the stationary frame. By depressing the rear end of this operating lever 46, the latches will be lifted out of holding engagement with the roller axle 31 and release the back. Stop pins 47 on the adjacent end rail 25 are engaged by the lever 46 to limit the up and down movement of the latches and prevent possible movement of the latches out of operative relation to the axle 31. The latches could be released by any other suitable means such, for instance, as a trip rod 47, see Fig. 4, movably mounted on the back frame and having a handle in convenient reach for operation, and a finger or part 48 at its lower end adapted, when the back is in normal position, to project under the front end of one of the latches for lifting them out of engagement with the axle 31.

The described construction of the couch is simple and economical and facilitates the manufacture and assembly of the parts. Before assembly, the seat frame and back frame are disconnected, which facilitates upholstering the seat and back. In assembling the seat and back, the rollers 30 on the back frame are passed into the channel rails 25 of the stationary frame through their open front ends, and the seat frame is placed in position with its legs strad-

dling the stationary frame and the rear portion of the seat over the front portion of the stationary frame. The back is then rolled rearwardly on the channel rails 25 until the studs 34 at the ends of the back are brought into vertical alinement with their guide slots 36 in the couch ends 17, and the seat frame is lifted and the guide slots engaged over the studs 34. The upper or forward ends of the levers 38 are then attached to the back frame by the bolts 38a which completes the assembly. To dismantle or disconnect the parts, it is only necessary to remove the bolts 38a and reverse the described assembling operation.

In the normal position of the parts, with the back in its standing or upright position, the back-operating levers 38, which are bent, pass in front of and under the latch shaft 42 and, by striking the latter, limit the rearward movement of the back, while the lower end of the back will be held from forward and rearward movement by engagement of the latches 43 with the roller axle 31. The back is thus firmly held in its standing position and prevented from tipping or moving forwardly or rearwardly so long as the latches are in holding position. To convert the couch into the bed, the latches are released and the upper edge of the back pressed rearwardly and downwardly. This tends to swing the back on its pivotal connections with the levers 38 and causes the rollers 30 to travel forwardly in the channel rails 25, and the upper ends of the levers 38 to move downwardly and forwardly. In this movement of the back, the stud and slot connections between the back and the couch ends 17 move the couch seat forwardly, and such movement of the parts is continued until the back lies horizontally in rear of and alongside the seat in the same horizontal plane, as before explained. The reversal of these movements reconverts the bed into the couch, and the springs 41 acting on the levers 38 assist in lifting the back and moving the seat frame rearwardly. The device is thus readily and easily converted from couch to bed and from bed to couch.

When the couch is opened to form the bed, as shown in Figs. 2 and 6, the seat and back sections can be disconnected for use as separate beds, simply by lifting the seat section to disengage the pivot studs 34 from their slot guides 36 on the couch ends 17.

I claim as my invention:

1. A convertible bed couch comprising an inner stationary back-supporting frame, an outer seat-supporting frame with a seat which is movable horizontally forwardly and rearwardly relatively to said stationary frame, a back carried by said back-supporting frame and having a horizontally sliding engagement at its lower portion with said back-supporting frame and a pivotal connection at its lower portion vertically shiftable with said seat-supporting frame, and a lever pivoted to said back and back-supporting frame, and disposed so that rearward and downward movement of the upper portion of the back causes relative horizontal movement of said seat-supporting frame and back-supporting frame and lowers said back to a position alongside of and in rear of the couch seat.

2. A convertible bed couch comprising an inner stationary back-supporting frame, an outer seat-supporting frame with a seat which is movable horizontally forwardly and rearwardly relatively to said stationary frame, a back carried by said back-supporting frame and having a horizontally

sliding engagement at its lower portion with said back-supporting frame and a vertically shiftable pivotal connection at its lower portion with said seat-supporting frame, a lever pivoted to said back and back-supporting frame and disposed so that rearward and downward movement of the upper portion of the back causes relative horizontal movement of said seat-supporting frame and back-supporting frame and lowers said back to a position alongside of and in rear of the couch seat, and latch means constructed and arranged to releasably hold the back in standing position.

3. A convertible bed couch comprising a seat-supporting frame with a seat, and a back-supporting frame, one of which is movable horizontally laterally relatively to the other, a back carried by said back-supporting frame and having a horizontally sliding engagement at its lower portion with said back-supporting frame and having at its ends vertically slidable pivot connections with said seat-supporting frame, and a lever pivoted to said back and back-supporting frame, whereby rearward and downward movement of the upper portion of the back causes relative horizontal movement of said seat-supporting frame and back-supporting frame and lowers said back to a position alongside of and in rear of the couch seat.

4. A convertible bed couch comprising a seat-supporting frame with a seat, and back-supporting frame, one of which is movable horizontally laterally relatively to the other, a back carried by said back-supporting frame and having a horizontally sliding engagement at its lower portion with said back-supporting frame, studs at the ends of said back near its lower portion pivotally and vertically movable in guides on said seat-supporting frame, and a lever pivoted to said back and back-supporting frame whereby rearward and downward movement of the upper portion of the back causes relative horizontal movement of said seat-supporting frame and back-supporting frame and lowers said back to a position alongside of and in rear of the couch seat.

5. A convertible bed couch comprising a seat-supporting frame with a seat, and a back-supporting frame, one of which is movable horizontally laterally relatively to the other, a back carried by said back-supporting frame, rollers at the lower portion of said back arranged to roll forwardly and rearwardly on horizontal tracks on said back-supporting frame, studs at the ends of said back pivotally and vertically movable in guides on said seat-supporting frame, and a lever pivoted to said back and back-supporting frame, whereby rearward and downward movement of the upper portion of the back causes relative horizontal movement of said seat-supporting frame and back-supporting frame and lowers said back to a position alongside of and in rear of the couch seat.

6. A convertible bed couch comprising a stationary back-supporting frame, a seat-supporting frame with a seat movable horizontally laterally relatively to said stationary frame, a back carried by said back-supporting frame and having a horizontally sliding engagement at its lower portion with said back-supporting frame and a vertically shiftable pivotal connection at its lower portion with said seat-supporting frame, and a lever pivoted to said back and back-supporting frame and disposed so that rearward and downward movement of the upper portion of the back causes forward movement of said seat-

supporting frame and lowers said back to a horizontal position in rear of the couch seat.

5 7. A convertible bed couch comprising a stationary back-supporting frame having horizontal
10 end guide rails, a seat, a frame movable forwardly and rearwardly of said stationary frame and supporting said seat over the stationary
15 frame, a back having supporting rollers arranged to travel on said guide rails and having vertically movable pivot connections with said
20 movable frame, and a lever fulcrumed on said stationary frame and connected to said back, whereby rearward and downward movement of the upper portion of the back moves said movable frame forwardly and lowers the back to a horizontal position in rear of the couch seat.

8. A convertible bed couch comprising a stationary back-supporting frame having horizontal end guide rails, a seat, a frame movable forwardly and rearwardly of said stationary frame

and supporting said seat over the stationary frame, a back having supporting rollers at its lower portion arranged to travel on said guide rails and having studs at its ends slidably and pivotally engaging vertical guides at the ends of said movable frame, levers fulcrumed on said stationary frame at its rear end portions and pivoted to said back above its normally lower edge, whereby downward and rearward movement of the upper portion of the back moves said movable frame forwardly and lowers the back to a horizontal position in rear of the couch seat, a part at the rear portion of the stationary frame cooperating with said rollers to support the back in its horizontal position, a stop which said levers engage to limit rearward movement of the back when in its standing position, and latch means which releasably hold said back from forward movement.

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CERTIFICATE OF CORRECTION.

Patent No. 2,136,830.

November 15, 1938.

JOSEPH M. VALLONE.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, first column, line 61, claim 1, strike out the words "vertically shiftable" and insert the same before "pivotal" in line 60, same claim; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 20th day of June, A. D. 1939.

Henry Van Arsdale

(Seal)

Acting Commissioner of Patents.