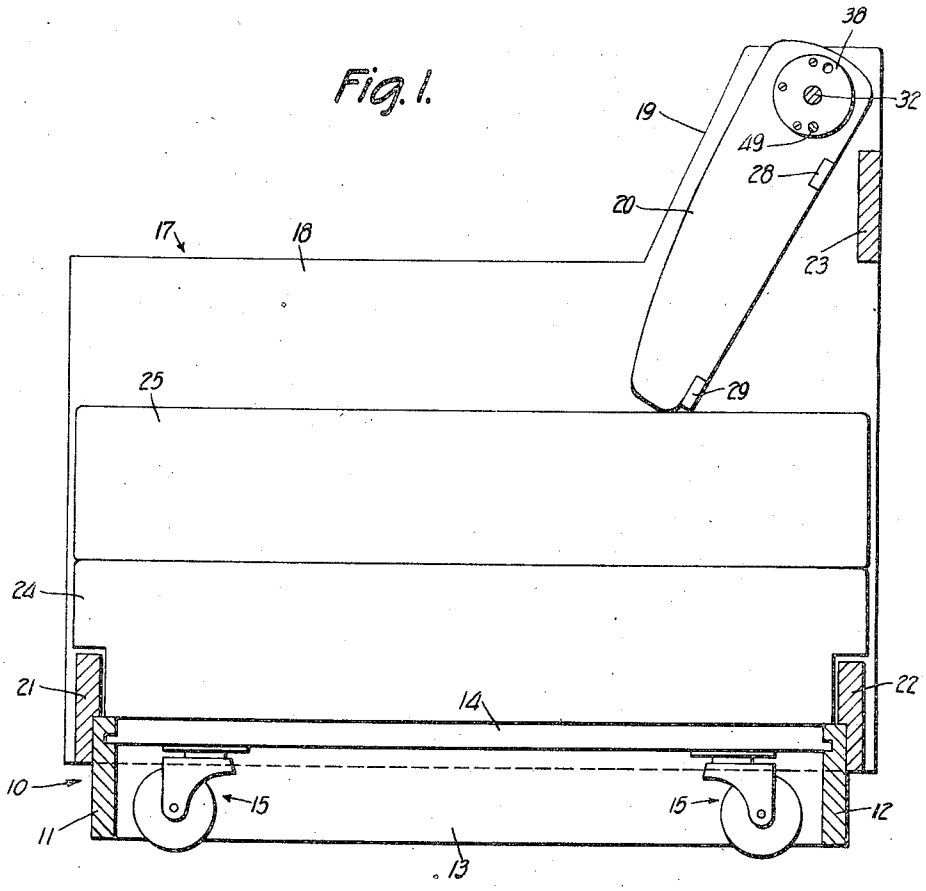
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SOFA BED CONSTRUCTION

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2 Sheets-Sheet 1

Fig. 1.



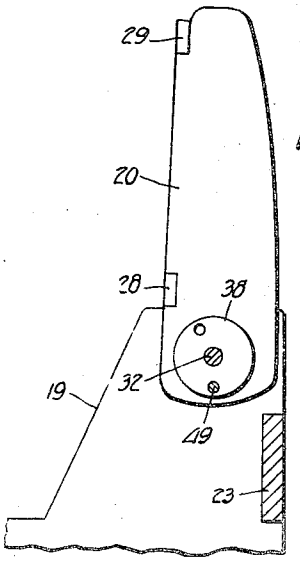


Fig. 2.

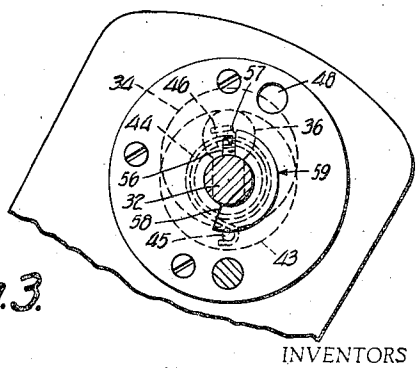


Fig. 3.

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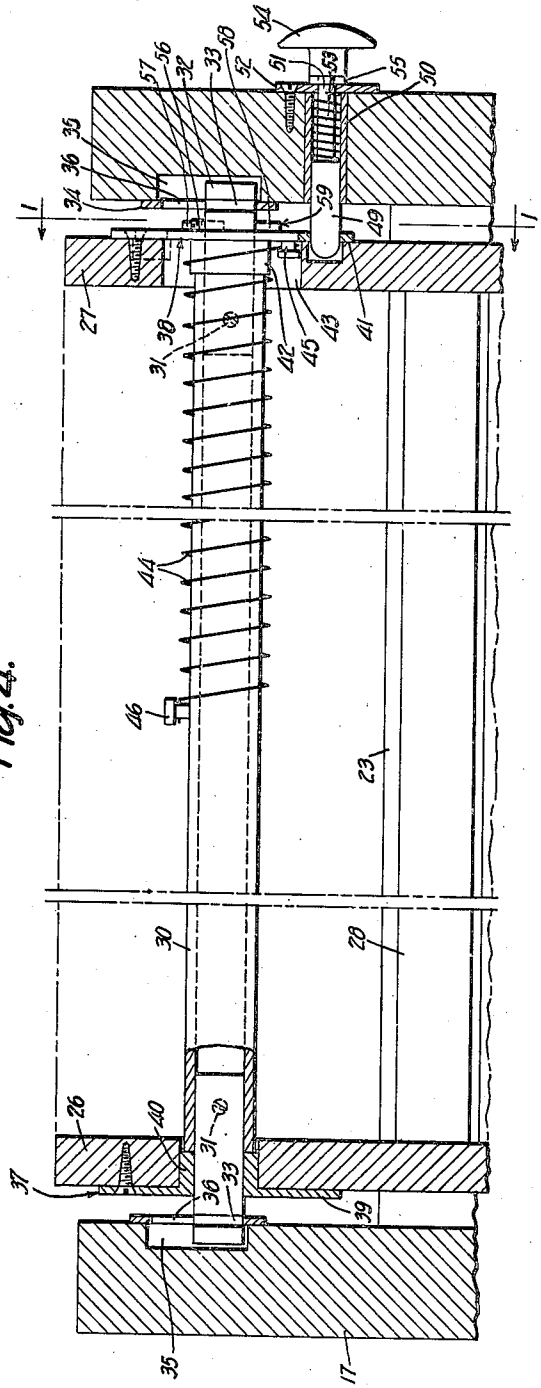


Fig. 4.

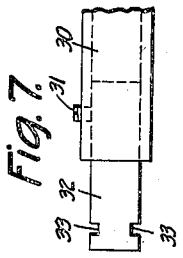


Fig. 7.

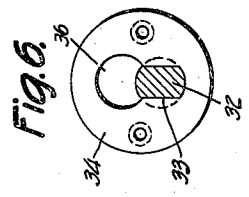


Fig. 6.

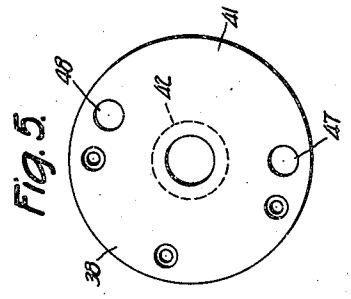


Fig. 5.

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2,483,296

UNITED STATES PATENT OFFICE

2,483,296

SOFA BED CONSTRUCTION

Gilbert Murtagh and Joseph B. Platt, New York, N. Y., assignors to James McCutcheon & Co., New York, N. Y., a corporation of New York

Application January 11, 1946, Serial No. 640,533

11 Claims. (Cl. 5—59)

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The present invention relates to sofa bed construction and more particularly to a novel and advantageous construction whereby the back of the sofa is controlled in its movement from its position as part of a sofa to the position assumed when the sofa bed is to be used as a bed and in the reverse movement, and is retained in such positions against accidental movement.

An important object of the invention is novel and advantageous means for converting a sofa bed to a bed and vice versa.

Another object of the invention is to provide a novel and advantageous mounting for the back of a sofa bed whereby the back may be swung about a horizontal axis back and forth between a position for a sofa arrangement and a position for a bed arrangement.

Another object of the invention is to provide novel and advantageous controlling means for the back of a sofa bed whereby said back may be swung about a horizontal axis to positions for sofa use or bed use and retained against accidental displacement from either of said positions.

Another object of the invention is to provide novel and advantageous means for controlling the back of a sofa bed whereby the back thereof may be moved back and forth between the positions for use as a sofa or a bed and will be automatically latched in each position until manually released.

The invention may be carried out by using a bed having ends that are high at the rear of the bed to provide means for pivoted support of the sofa back at its upper edge, and having means at one of said ends to hold said back in either of two positions. The back may be pivotally supported on a round member extending from one of said ends to the other and held against rotation, and may be urged upwardly by a spring attached at one end to said round member at a point spaced from said ends and also to a part of the frame of said back to urge the same upwardly. The back may be latched in either position by means of a spring latch at one of said ends.

Other objects, features and advantages will appear upon consideration of the following detailed specification and of the drawings, in which

Fig. 1 is a section taken along a line 1—1 of Fig. 4;

Fig. 2 is a view of the structure shown in the upper right hand part of Fig. 1 showing the sofa back in raised position;

Fig. 3 is a fragmentary view on a larger scale

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of the parts shown at the upper edge of the sofa back;

Fig. 4 is a fragmentary section taken in a vertical plane along the pivotal axis of the sofa back;

Fig. 5 is a view of a plate on the right end of the sofa back surrounding the opening through the side of the frame for said back;

Fig. 6 is a view of one of the end plates supporting the ends of the shaft or round member on which the sofa back is pivotally mounted; and

Fig. 7 is a fragmentary view showing one end of the back-supporting shaft.

The drawings disclose a base frame 10 comprising front and rear members 11 and 12, respectively, side members 13, and members 14 connecting the members 11 and 12 preferably near their upper edges, said members 14 being near the end members 13. Said frame 10 is supported by casters 15 secured to the two members 14, located at the ends of the frame, and at their lower faces. Mounted on the frame 10 is the frame 16 of the bed proper. In view of the fact that the arrangement of side members 13, members 14 and pairs of casters 15 is the same at both ends of the frame 10, only one of each is shown on Figure 4.

Said frame 16 includes ends 17 having flat top portion 18 extending from the front toward the rear where there are raised portions 19 to receive between them a sofa back 20. Said ends 17 are connected at their lower ends by front and rear members 21 and 22 respectively, and said raised portions 19 are connected at their rear edges by a bar 23.

A bed spring 24 of any suitable kind is supported by means including said bars 14, and said bed spring carries a mattress 25. The sofa back 20 may, when the sofa bed is to be used for a sofa, be located with its lower edge adjacent the upper surface of the mattress 22 and its upper edge far enough to the rear to assume an inclination suitable for the comfort of a person seated on the mattress. Said sofa back has a frame including left and right ends or members 26 and 27 (Fig. 4) and upper and lower bars 28 and 29 respectively, secured to said members 26 and 27 at the rear thereof.

The description up to this point applies to the first form of sofa bed described and claimed in the application of Chandler Cudlipp, Ser. No. 630,829, filed November 26, 1945, and assigned to the same assignee as this application, which later became abandoned.

The invention of the present application relates to novel means for mounting the sofa back 20 whereby it may be shifted back and forth between a position for use and a position where it will be out of use, thus leaving the whole bed available, and may be secured in either of said positions.

As illustrated, there is a hollow shaft 30 (Fig. 4), extending from side to side of the frame of the cushion back 20. Secured in the ends of shaft 30 by suitable devices 31 are pins 32 each formed at opposite sides with slots 33 having parallel bottoms. Said pins 32 are supported in plates 34 placed over recesses 35 in said sides 17 of the bed and secured to said sides 17 in any suitable manner. Said plates 34 have keyhole slots 36 with circular upper parts large enough to receive the ends of pins 32 and lower parts with parallel sides to receive the flat portions of said pins 32 between the bottoms of said slots. Said shaft 30 is thus held against rotation.

The frame of the sofa back is supported on the pins 32 by means of bearing members 37 and 38 at the left and right as seen in Fig. 4. The member 37 has plate portion 39 secured to the member 26 at its outer face by any suitable means, and a sleeve portion 40 fitting over the corresponding pin and adapted to turn thereon. The sleeve or bushing 40 is of greater external diameter than the shaft 30 and preferably fits in a corresponding opening in the member 26. The inner end of sleeve 40 may be engaged by the adjacent end of shaft 30 and limit movement of the sleeve in that direction.

At the other end 27 of the sofa back 30, the bearing member 38 is similar in general to bearing member 37 and has a plate portion 41 and a sleeve portion 42 receiving the corresponding pin 32 and engaging the adjacent end of sleeve 30. At this end 27 the sleeve 42 does not fit in an opening through side member 27 but passes through a much larger opening 43 to provide space for a helical spring 44 secured to one end by suitable means such as a pin 45 fixed to plate 41, and at the other end to shaft 30 by suitable means such as a pin 46. Said spring 44 is arranged to urge the sofa back 20 from its normal depending position to its upwardly extending position when the sofa bed is to be used as a bed, and the tension of the spring is sufficient to make it easy to swing said sofa back to its upright position. The spring would also serve to cushion the downward movement.

To secure the sofa back in either normal position, the plate 41 may be provided (Fig. 5), with two detent openings 47 and 48 over recesses in side 37, and the adjacent end 17 of the bed frame may be provided with a spring pressed bolt or detent 49 to enter either of said detent openings. Said bolt 49 has an end gradually reduced in cross-section, preferably by rounding the same, to facilitate entrance thereof into said openings 47 and 48. The bolt 49 may be slidable in a sleeve 50 extending through end 17 and secured thereto, and may have a reduced extension 51 passing through a plate 52 secured to member 17 at its outer face. The bolt 49 is urged inwardly by a helical compression spring 53 surrounding said reduced extension 51 and interposed between the outer end of the larger part of bolt 49 and plate 52. A handle 54 secured to the outer end of reduced extension 51 limits inward movement of the bolt and may be used to draw back the bolt and release the sofa back for movement from either position to the other.

A washer 55 around the extension 51 may be interposed between the plate 52 and the handle 54.

The relative positioning of openings 47 and 48 is indicated on Fig. 5 in which opening 47 is shown in position for engagement by bolt 45 to hold the sofa back in its depending inclined position. Upon withdrawing the bolt or pin 49 from the opening 47 and swinging the back and plate 41 in a clockwise direction (Fig. 5), and through slightly less than 180°, the opening 48 will be brought to the position vacated by opening 47 and will receive the bolt or pin 49 which preferably was released into engagement with plate 41 as soon as the shifting movement was started. As soon as opening 47 moved into alignment with bolt 49, the bolt would snap into locking position.

Provision must also be made for limiting changes of tension of spring 44 in a sofa bed in use and for adjusting the tension of the spring. To this end, a set screw 56 may be screwed into pin 32 at the right of Fig. 4 just outside the body of plate 41 and between limit stops 57 and 58 shows as the ends of an arcuate flange 59 at the outer face. The tension of spring 44 may be adjusted by relative rotation of the back 20 and pin 32 at the right of Fig. 4 while the set screw is removed. After such adjustment is completed the set screw 56 may again be screwed into the pin.

It should be understood that various changes may be made and that certain features may be used without others, without departing from the true scope and spirit of the invention.

Having thus described our invention, we claim:

1. In a sofa bed comprising a bed with ends projecting at their rears above the mattress level and a sofa back with a frame having end members, means for connecting the upper part of said sofa back with said ends for swinging movement about a fixed horizontal axis between a depending position comprising aligned pivots carried by said ends and fixed against rotation therein and passing through said end members, spring means connecting one of said pivots to the corresponding end member to swing said sofa back upwardly for use and an upwardly projecting position, and means for retaining said sofa back in a selected position.

2. The combination according to claim 1 wherein the ends of the frame for said sofa back have aligned sleeves passing therethrough and fitting over said aligned pivots.

3. The combination according to claim 1 wherein said retaining means comprises spring locking means effective when the sofa back is brought to a selected position.

4. The combination according to claim 1 wherein said retaining means comprises a bolt slidably mounted in a bed end and bolt receiving recesses provided by said back in position to cooperate with said bolt when the back is in a selected position.

5. In a sofa bed of the character described, a bed frame having ends, a sofa back comprising a frame having end members with coaxial openings therein, bearing members comprising bushings and end plates secured to the end members with the bushings extending inwardly in said openings and in alignment with each other, pivots in said bushings, means carried by said bed ends for supporting said pivots and preventing relative rotation, and spring means connecting one of said

bushings to an end of said bed frame to swing said back upwardly.

6. The combination according to claim 5 wherein each of said pivots has opposite grooves with parallel bottoms near its outer end and said bed ends carry plates with aligned keyhole slots having upper parts large enough to receive said pivots and lower parts to receive the flat portions between two grooves and hold the pivots against rotation.

7. The combination according to claim 5 wherein there is a hollow shaft fitting over the inner ends of said pivots between the inner ends of said bushings and said shaft is connected to said pivots to prevent relative rotation therebetween.

8. The combination according to claim 5 wherein there is a hollow shaft fitting over the inner ends of said pivots between the inner ends of said bushings, said shaft is connected to said pivots to prevent relative rotation therebetween, and there is a helical spring around said shaft attached at one end to said hollow shaft and at the other end to a part attached to the frame of the sofa back and urging said sofa back toward its upwardly extending position.

9. The combination according to claim 5 including means for limiting the turning of one of said end plates on the corresponding pivot

comprising an arcuate flange on said plate and a set screw in said pivot.

10. The combination according to said claim 5 comprising a shaft connecting said pivots and fixed thereto and means urging said sofa back upwardly including a helical spring surrounding said shaft and connected at one end to the shaft and at the other end to one of said end plates.

11. The combination according to claim 5 comprising a shaft connecting said pivots and fixed thereto, means urging said sofa back upwardly including a helical spring surrounding said shaft and connected at one end to the shaft and at the other end to one of said end plates, and stop means for limiting the unwinding action of said spring.

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The following references are of record in the file of this patent:

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Certificate of Correction

Patent No. 2,483,296 September 27, 1949

GILBERT MURTAGH ET AL.

It is hereby certified that errors appear in the printed specification of the above numbered patent requiring correction as follows:

Column 4, lines 48 and 49, strike out the words "for use and an upwardly projecting position" and insert the same after "position" in line 43, same column;

and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 5th day of September, A. D. 1950.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.