

May 24, 1960

J. K. FOSSUM

2,937,384

CONVERTIBLE SOFA-BED

Filed Sept. 22, 1958

2 Sheets-Sheet 1

FIG-1

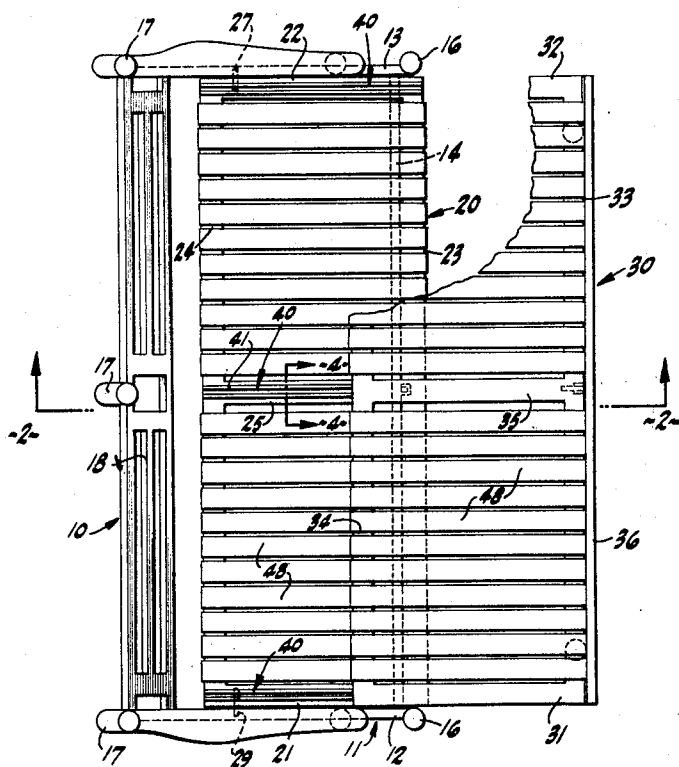
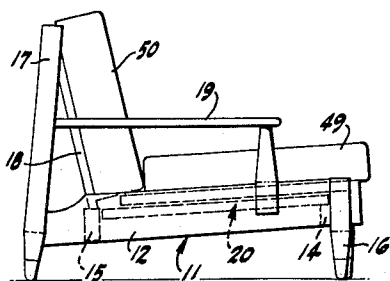


FIG-6

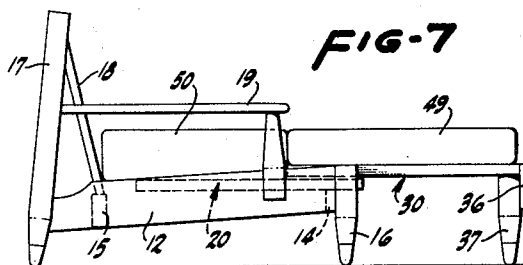


FIG-7

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2 Sheets-Sheet 2

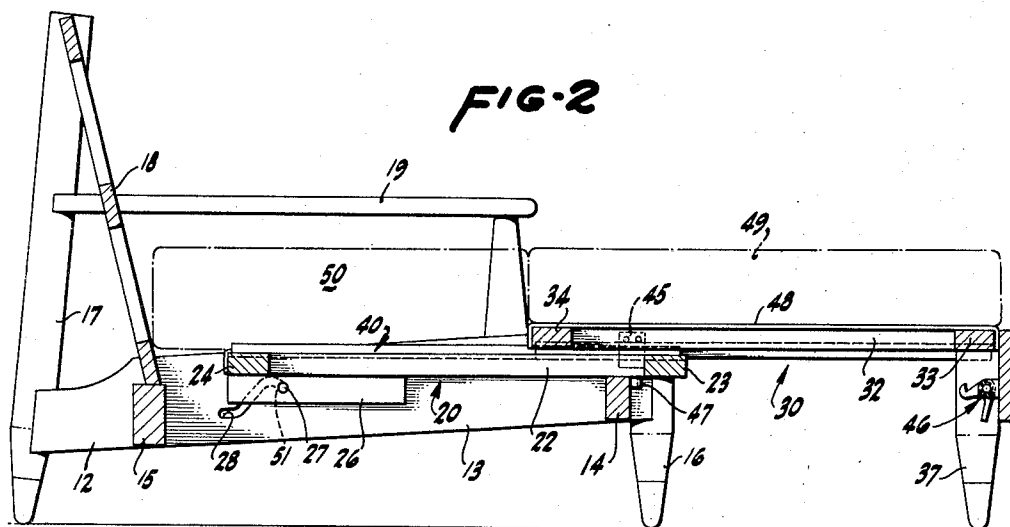
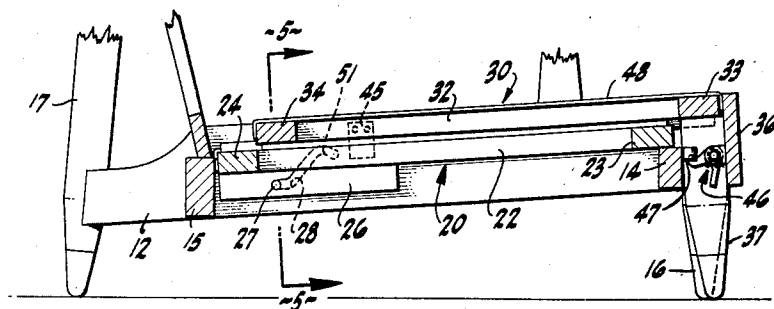


FIG-3

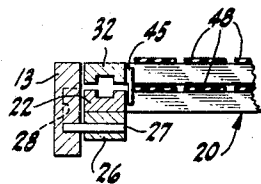


FIG-5

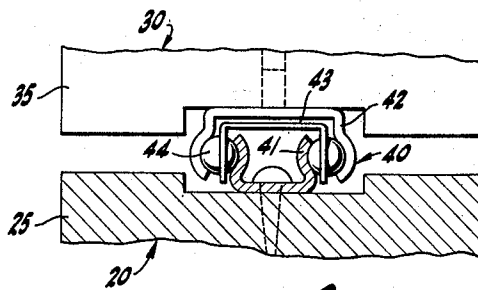


FIG-4

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2,937,384

CONVERTIBLE SOFA-BED

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5 Claims. (Cl. 5—18)

This invention relates to articles of furniture, and more particularly to an article of furniture which may be quickly and easily converted from a sofa to a bed or from a bed to a sofa.

It is well known in the furniture art that for maximum seating comfort in a chair or sofa, the seat should be inclined downwardly and rearwardly so that a person seated thereon will not tend to slide out of the seat when relaxed. Similarly, it is well known that a bed must be level. Accordingly, it is the principal object of this invention to provide an article of furniture which may be interchangeably converted between sofa and bed positions and which will have a rearwardly and downwardly inclined surface when used as a sofa and which will have the surface horizontal when used as a bed.

It is a further object of the invention to provide such a convertible sofa-bed which has no complicated levelling devices to get out of order or which will require adjustment. It is also an object to provide an inexpensive but reliable means to automatically level the device when converted from a sofa to a bed, which means may be applied to a wide variety of styles of furniture of this type. Another object is to provide such an article of furniture which may be quickly and easily reversibly converted between sofa and bed positions by a minimum of physical exertion.

A more specific object of the invention is to provide a convertible sofa-bed comprising a main frame having first and second opposed and spaced apart end members and a cross-piece extending between the forward ends of said end members, a lower support frame extending between said first and second end members of said main frame and supported at their forward end thereof upon said cross-piece for limited forward and rearward sliding and tilting movement thereon, said lower support frame having first and second end members disposed adjacent said first and second main frame end members, respectively, said main frame and said lower support frame having a groove formed in the rearward end of one of said first end members thereof and a groove formed in the rearward end of one of said second end members thereof, said grooves being upwardly and forwardly inclined, a rod mounted on the other of said first end members, and a rod mounted on the other of said second end members, said first and second end member rods projecting into said first and second end member grooves respectively.

Other objects and advantages will become apparent in the course of the following detailed description.

In the drawings, forming a part of this application, and in which like parts are designated by like reference numerals throughout the same,

Fig. 1 is a plan view of a convertible sofa-bed constructed in accordance with the invention, showing the sofa-bed in extended bed position.

Fig. 2 is a sectional view of the invention, taken on line 2—2 of Fig. 1, with parts shown in elevation.

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Fig. 3 is a view similar to Fig. 2, illustrating the invention in closed, or sofa, position.

Fig. 4 is a sectional view, taken on line 4—4 of Fig. 1, illustrating the sliding connection between the upper and lower support frames.

Fig. 5 is a sectional view, taken on line 5—5 of Fig. 3, illustrating the rear connection between the support frames and the main frame.

Figs. 6 and 7 are end views of the invention, illustrating the sofa and bed positions thereof.

Referring now to the drawings, the convertible sofa-bed, generally indicated by the reference numeral 10, comprises a generally rectangular open main frame 11 having opposed and spaced apart end members 12 and 13 and front and rear cross-pieces 14 and 15. The front end of the frame is supported by legs 16 attached thereto, and elongated rear legs 17 are attached to the rear end of the main frame. A generally rectangular back rest member 18 is secured at its lower end to cross-piece 15 and at its upper end to the upper ends of the rear legs 17. Arm rests 19 are provided at each end of the frame.

A generally rectangular open lower support frame 20 fits between the end frame members 12 and 13 of the main frame and comprises end frame members 21 and 22 and front and rear cross-pieces 23 and 24. An intermediate frame member 25, connected between the cross-pieces, lends rigidity to the lower support frame. As is seen in drawings, the front end of the lower support frame 20 rests upon the main frame cross-piece member 14, and is free to move forwardly and rearwardly thereon and also to tilt thereon.

The lower support frame end member 22 includes a depending block member 26 secured rigidly thereto. A dowel rod 27 is carried by this block member and projects outwardly therefrom into groove 28 formed on the inner surface of the main frame end member 13. Groove 28 is inclined upwardly and forwardly, for a purpose to be described hereinafter.

In a like manner, an identical rod 29 is carried by the lower support frame end member 21 and projects into a similar upwardly and forwardly inclined groove in main frame end member 12. Thus, the only connections between the lower support frame 20 and the main frame 11 are the two rods 27 and 29 carried by the rear end of the lower support frame and the resting of the front end of the lower support frame upon the main frame cross-piece 14.

A generally rectangular open upper support frame 30 is mounted upon the lower support frame 20 for forward and rearward parallel movement relative thereto. The upper support frame 30 is generally identical to the lower support frame and comprises end frame members 31 and 32, front and rear cross-pieces 33 and 34 and an intermediate stiffening member 35. A front apron 36 is provided on the upper support frame, and a plurality of legs 37 depend downwardly from the front end of the upper support frame.

The upper and lower support frames are connected together by roller slides 40, the details of which are best seen in Fig. 4. A lower track member 41 is secured on the intermediate frame member 25 of the lower support frame 20 from front to rear thereof, and an upper track member 42 is similarly secured to the intermediate member 35 of the upper support frame 30. A ball cage 43 carries balls 44 between the upper and lower tracks 42 and 41. Similar ball slides are also fixed to the end frame members 21, 22, 31 and 32 of the upper and lower support frames. These slides allow the upper support frame to slide freely and easily forwardly and rearwardly upon the lower support frame while being maintained parallel thereto. Although one particular form of slide

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has been shown, it is to be understood that any other conventional slide may be used for this purpose.

Stop members 45, secured to the upper support frame, will abut the front cross-piece 23 of the lower support frame to limit the forward movement of the upper support frame relative thereto. If desired, these stop members may be eliminated if the roller slides 40 include structure to limit this above forward movement of the upper support frame relative to the lower support frame.

A spring-biased latch member 46 is secured to the back side of the upper support frame apron 36 to engage the latch plate 47 fastened to the main frame cross-piece 14, in order to latch the upper support frame in its rearward position.

The upper and lower support frames are each provided with a plurality of elastic band members 48 secured to and extending between the front and rear cross-pieces thereof to serve as springs for these support frames as is customary in the furniture art.

A generally rectangular cushion 49 is rested upon the upper support frame 30 and is generally the same overall size thereof. Another generally rectangular cushion 50 is provided for use both against the back rest 18 and upon the lower support frame 20. The cushions 49 and 50 are both preferably made from foam rubber, and the cushion 50 is thicker than cushion 49 by an amount equal to the distance between the upper surfaces of the upper and lower support frames 30 and 20.

The invention is quite simple in operation. As shown in Figs. 3 and 6, the sofa-bed is in a sofa position, with the upper and lower support frames 30 and 20 being generally superposed upon one another, and with both being inclined downwardly and rearwardly to provide maximum comfort for people sitting thereon. In this case, the cushion 50 will be rested against the back rest 18. The upper support frame legs 37 will be generally in line with the front main frame legs 16, and the lower ends of all of the legs 16, 17 and 37 will lie on a common plane so that they will all touch the floor. Latch 46 will prevent accidental forward sliding of the upper support frame 30.

When it is desired to convert from a sofa into a bed, the latch 46 is unlatched and the upper support frame is pulled to a forwardly extended position relative to the lower support frame, at which time the stop members 45 will engage the lower support frame cross-piece 23. Further forward pulling of the upper support frame will then cause the upper and lower support frames to move forward as a unit, with the rods 27 and 29 riding forwardly and upwardly in the main frame grooves. This last movement causes the rear end of the lower support frame to move upwardly generally to the level of the main frame cross-piece 14 so that the lower support frame is now horizontal. As a consequence, the upper support frame will also be horizontal, and the legs 37 thereon will again extend downwardly to the floor. The cushion 50 is then placed upon the exposed lower support frame 20, and the upper surfaces of the cushions 49 and 50 will lie in the same horizontal plane.

As is seen in Fig. 2, the forward end of groove 28 hooks slightly downwardly at 51 to receive the rod 27 therein when in bed position so that a downward force imposed upon the rear end of the lower support frame will not cause the lower support frame to move backwardly and downwardly to its original position.

The closing of the device from its bed position is accomplished simply by replacing cushion 50 against the back rest 18 and by pushing backwardly on the upper support frame, causing the return of the upper and lower support frames to their original sofa position. Once this position is reached, the latch 46 will automatically engage the latch plate 47 to latch the device in the closed, or sofa, position.

Although the dowel rods 27 and 29 have been shown as carried by the lower support frame and the grooves

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28 as formed in the main frame, it is obvious that these may be reversed, if desired.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred embodiment of the same and that various changes may be made in the shape, size and arrangement of parts without departing from the spirit of the invention or the scope of the attached claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A convertible sofa-bed comprising a main frame having first and second opposed and spaced apart end members and a cross-piece extending between the forward ends of said end members, a lower support frame extending between said first and second end members of said main frame and supported at the forward end thereof upon said cross-piece for limited forward and rearward sliding and tilting movement thereon, said lower support frame having first and second end members disposed adjacent said first and second main frame end members respectively, said main frame and said lower support frame having a groove formed in the rearward end of one of said first end members thereof and a groove formed in the rearward end of one of said second end members thereof, said grooves being upwardly and forwardly and then downwardly and forwardly inclined, a rod mounted on the other of said first end members, a rod mounted on the other of said second end members, said first and second end member rods projecting into said first and second end member grooves respectively, an upper support frame, and means mounting said upper support frame for forward and rearward parallel sliding movement upon said lower support frame between superposed and forwardly extended positions relative thereto.

2. A convertible sofa-bed comprising a main frame having first and second opposed and spaced apart end members and a cross-piece extending between the forward ends of said end members, a plurality of leg members mounted on and extending downwardly from said main frame with the bottoms thereof terminating at a common plane, a generally rectangular lower support frame extending between said first and second end members of said main frame and supported at the forward end thereof upon said cross-piece for limited forward and rearward sliding and tilting movement thereon, said lower support frame having first and second end members disposed adjacent said first and second main frame end members respectively, said main frame and said lower support frame having a groove formed in the rearward end of one of said first end members thereof and a groove formed in the rearward end of one of said second end members thereof, said grooves being upwardly and forwardly and then downwardly and forwardly inclined, a rod mounted on the other of said first end members, a rod mounted on the other of said second end members, said first and second end member rods projecting into said first and second end member grooves respectively, a generally rectangular upper support frame, means mounting said upper support frame for forward and rearward parallel sliding movement upon said lower support frame between superposed and forwardly extended positions relative thereto, and leg members mounted on the forward end of said upper support frame and extending downwardly to said common plane when said support frames are in extended position.

3. A convertible sofa-bed comprising a main frame having first and second opposed and spaced apart end members and a cross-piece extending between the forward ends of said end members, a generally rectangular lower support frame extending between said first and second end members of said main frame and supported at the forward end thereof upon said cross-piece for limited forward and rearward sliding and tilting movement thereon, said lower support frame having first and second end members disposed adjacent said first and second main

frame end members respectively, said main frame and said lower support frame having a groove formed in the rearward end of one of said first end members thereof and a groove formed in the rearward end of one of said second end members thereof, said grooves being upwardly and forwardly and then downwardly and forwardly inclined, a rod mounted on the other of said first end members, a rod mounted on the other of said second end members, said first and second end member rods projecting into said first and second end member grooves respectively, a generally rectangular upper support frame, means mounting said upper support frame for forward and rearward parallel sliding movement upon said lower support frame between superposed and forwardly extended positions relative thereto, a generally rectangular front cushion superposable upon said upper support frame, and a generally rectangular rear cushion superposable upon said lower support frame when said support frames are in extended position, said rear cushion having a thickness approximately equal to the thickness of said front cushion plus the distance between the upper surface of said upper and lower support frames.

4. A convertible sofa-bed comprising a main frame having first and second opposed and spaced apart end members and a cross-piece extending between the forward ends of said end members, a plurality of leg members mounted on and extending downwardly from said main frame with the bottoms thereof terminating at a common plane, a generally rectangular lower support frame extending between said first and second end members of said main frame and supported at the forward end thereof upon said cross-piece for limited forward and rearward sliding and tilting movement thereon, said lower support frame having first and second end members disposed adjacent said first and second main frame end members respectively, said main frame and said lower support frame having a groove formed in the rearward end of one of said first end members thereof and a groove formed in the rearward end of one of said second end members thereof, said grooves being upwardly and forwardly inclined, a rod mounted on the other of said first end members, a rod mounted on the other of said second end members, said first and second end member rods projecting into said first and second end member grooves respectively, a generally rectangular upper support frame, means mounting said upper support frame for forward and rearward parallel sliding movement upon said lower support frame between superposed and forwardly extended positions relative thereto, leg members mounted on and extending downwardly from the forward end of said upper support frame to said common plane when said support frames are in extended position, and interengageable latch means carried by said upper support frame and said main frame for releasably latching said upper frame against movement relative to main frame when said support frames are in superposed position.

5. A convertible sofa-bed comprising a main frame

having first and second opposed and spaced apart end members and a cross-piece extending between the forward ends of said end members, a plurality of leg members mounted on and extending downwardly from said main frame with the bottoms thereof terminating at a common plane, a generally rectangular back rest member mounted on the rear end of said main frame and inclined upwardly and rearwardly therefrom, a generally rectangular lower support frame extending between said first and second end members of said main frame and supported at the forward end thereof upon said cross-piece for limited forward and rearward sliding and tilting movement thereon, said lower support frame having first and second end members disposed adjacent said first and second main frame end members respectively, said main frame and said lower support frame having a groove formed in the rearward end of one of said first end members thereof and a groove formed in the rearward end of one of said second end members thereof, said grooves being upwardly and forwardly and then downwardly and forwardly inclined, a rod mounted on the other of said first end members, a rod mounted on the other of said second end members, said first and second end member rods projecting into said first and second end member grooves respectively, a generally rectangular upper support frame, means mounting said upper support frame for forward and rearward parallel sliding movement upon said lower support frame between superposed and forwardly extending positions relative thereto, a generally rectangular front cushion superposable upon said upper support frame, a generally rectangular rear cushion superposable upon said lower support frame when said support frames are in extended position, said rear cushion having a thickness approximately equal to the thickness of said front cushion plus the distance between the upper surfaces of said upper and lower support frames, leg members mounted on and extending downwardly from the forward end of said upper support frame to said common plane when said support frames are in extended position, and interengageable latch means carried by said upper support frame and said main frame for releasably latching said upper frame against movement relative to main frame when said support frames are in superposed position.

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