

May 18, 1943

W. O. McDANIEL

2,319,337

SOFA BED

Filed July 6, 1942

3 Sheets-Sheet 1

Fig. 1.

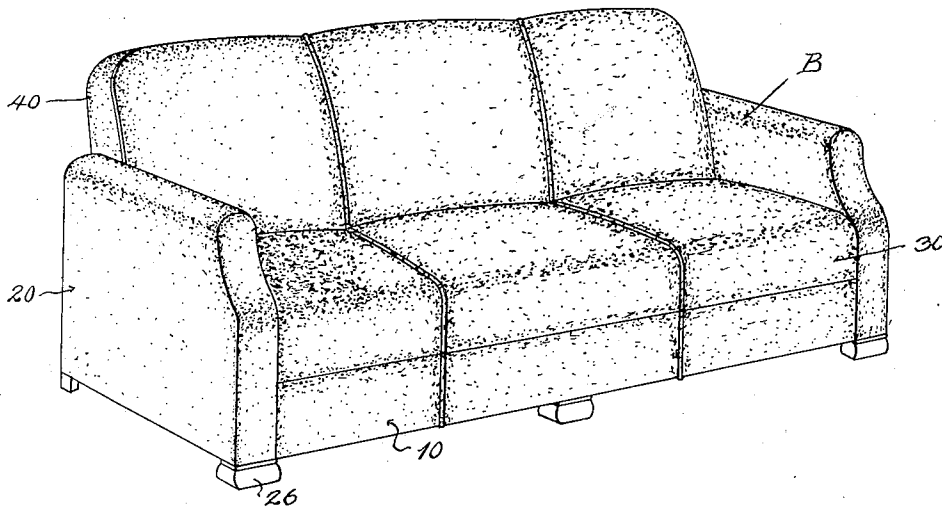
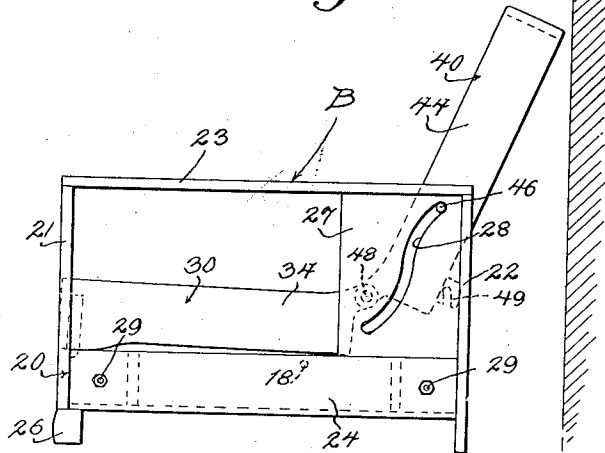


Fig. 2.



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Fig. 3.

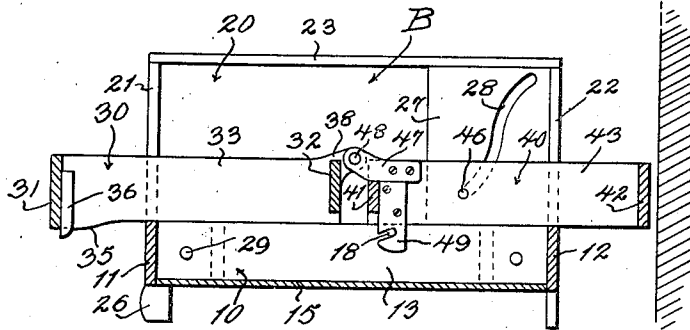


Fig. 4.

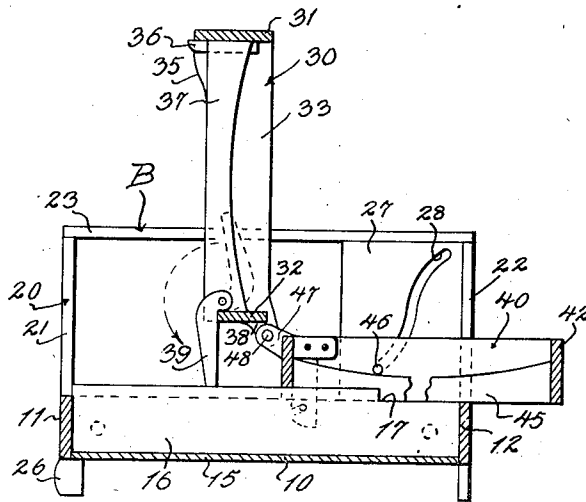


Fig. 8. Fig. 9.

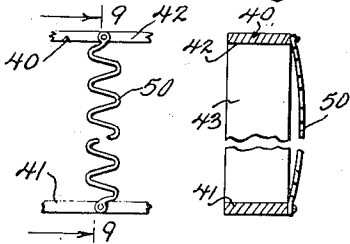
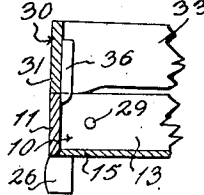


Fig. 7.



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Fig. 5.

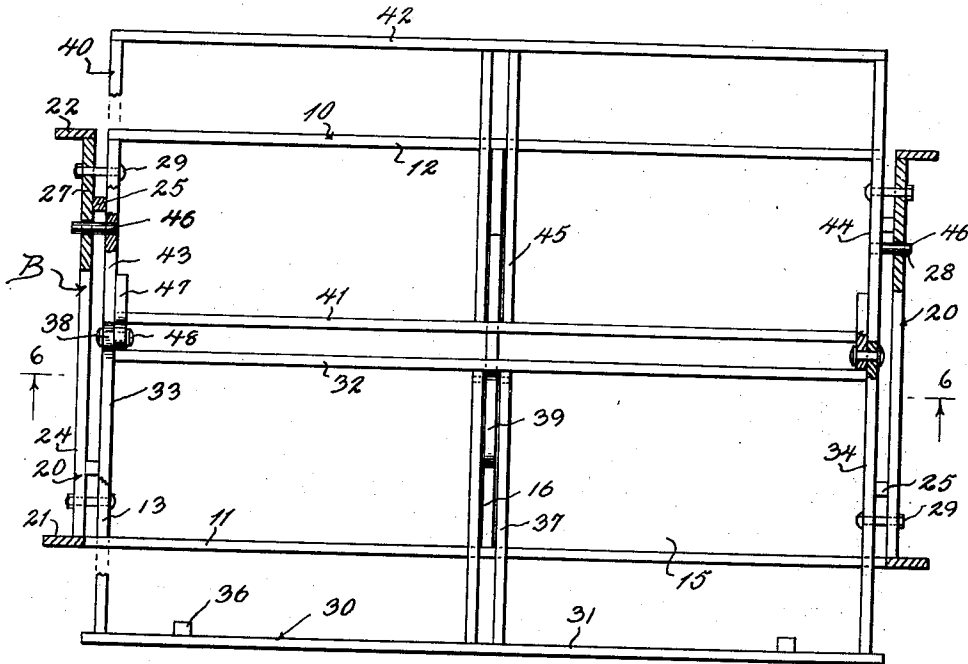
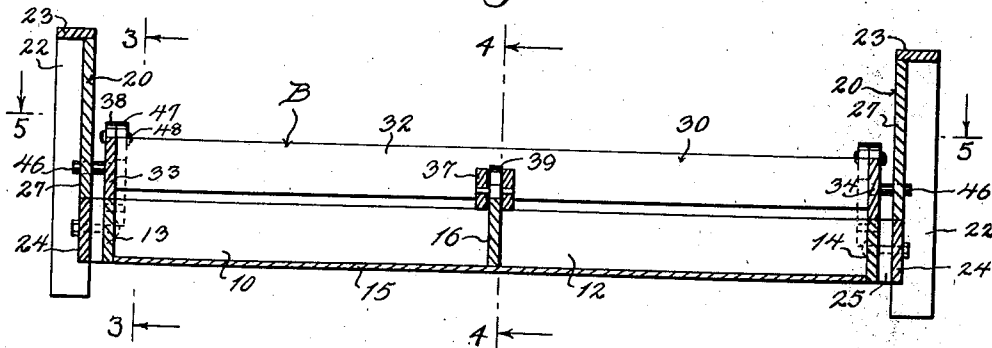


Fig. 6.



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UNITED STATES PATENT OFFICE

2,319,337

SOFA BED

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Application July 6, 1942, Serial No. 449,862

4 Claims. (Cl. 5—47)

This invention appertains to folding beds and more particularly to an improved sofa bed.

One of the primary objects of my invention is to provide a sofa bed which will be especially simple and easy to operate and one which will not have to be moved away from a wall during manipulation.

Another salient object of my invention is to provide a sofa bed embodying a minimum number of parts and one which can be manufactured and assembled at an exceedingly low cost, whereby the same can be placed upon the market at a saving both to the manufacturer and the buyer.

A further important object of my invention is to provide a sofa bed which can be built substantially entirely of wood, thereby resulting in a saving of critical material and permitting the manufacturer to fabricate the sofa bed entirely in his own furniture plant.

A further important object of my invention is to provide a sofa bed which merely embodies a box frame, removable arm frames, and pivotally connected back and seat frames.

A still further object of my invention is the provision of novel means for connecting the back and seat frames together and for operatively connecting the back frame with the arm frames, whereby to insure the proper movement of the back frame during manipulation and the proper holding of the back frame when the device is being used as a sofa.

A still further important object of my invention is the provision of novel means for guiding the seat and back frames during manipulation and for holding these frames against accidental swinging movement when the device is being used as a bed.

A still further important object of my invention is the provision of novel means for forming the bottom box frame and the seat frame whereby the seat frame can be raised to permit the box frame to be used as a storage compartment for bed linen and the like.

With these and other objects in view the invention consists in the novel construction, arrangement and formation of parts as will be hereinafter more specifically described, claimed and illustrated in the accompanying drawings, in which drawings:

Figure 1 is a perspective view of my novel sofa bed.

Figure 2 is a side elevational view of my sofa bed with the upholstering removed to show the

construction of the various frame members, the back and seat frames being arranged as a sofa.

Figure 3 is a transverse sectional view through the sofa bed taken on the line 3—3 of Figure 6 looking in the direction of the arrows and showing the back and seat frames in position for permitting the device to be used as a bed.

Figure 4 is a central transverse sectional view taken on the line 4—4 of Figure 6 looking in the direction of the arrows but showing the seat frame in a raised position to permit access to be had to the linen compartment in the box frame.

Figure 5 is a top plan view with parts thereof broken away and in section and showing the frames without upholstery and springs and in position to permit the device to be used as a bed.

Figure 6 is a longitudinal sectional view taken on the lines 6—6 of Figure 5 looking in the direction of the arrows.

Figure 7 is a fragmentary transverse sectional view showing the position of the seat frame relative to the box frame when the device is being used as a sofa.

Figure 8 is a fragmentary front elevational view of the back frame showing one type of spring which can be used with the upholstering.

Figure 9 is a detail transverse sectional view through the back frame taken on the line 9—9 of Figure 8 looking in the direction of the arrows.

Referring to the drawings in detail, wherein similar reference characters designate corresponding parts throughout the several views the letter B generally indicates my improved sofa bed and the same includes a bottom box frame 10, end arm frames 20, a seat frame 30 and a back frame 40.

All of these frames are fabricated from wood and are so constructed that upholstery, springs and the like can be readily used therewith.

The box frame 10 includes front and rear longitudinally extending rails 11 and 12 and these rails are firmly secured to end transverse rails 13 and 14. A bottom closure wall 15 is secured to the rails 11, 12, 13 and 14, as is clearly shown in Figure 6. An intermediate transverse guide rail 16 is also employed and this intermediate guide rail 16 can be secured to the front and rear rails 11 and 12 and the bottom wall or plate 15. This guide rail 16 forms an important part of my invention and it is to be noted that the upper edge thereof adjacent to its rear end is cut away as at 17, for a purpose, which will be later set forth. The end transverse rails 13 and 14 are provided with bolt holes, for a purpose, which will also be later set forth, and these

rails 13 and 14 also carry keeper pins 19 adjacent to their rear ends.

The end arm frames 20 are of like construction and each includes spaced vertical uprights 21 and 22. These uprights are connected by a top cross piece 23 which constitutes an arm per se. Firmly secured to the uprights 21 and 22 adjacent to their lower ends is a flat cross piece 24 and the inner faces of the cross piece 24 and the arm frames are each provided with upright spaced strips 25. The rear upright 22 of each end arm frame can extend below the front upright 21 so as to constitute a rear leg and an ornamental foot 26 can be carried by the front of each arm frame for resting upon the floor. Each arm frame adjacent to their rear ends carries a panel or plate 27 and these plates are firmly secured to adjacent parts of the top arm 23, the rear upright 22 and the flat piece 24. Each panel is provided with a reversely curved guide slot 28. The curved slots 28 take substantially the form of an O. G. curve.

The arm frames 20 are removably bolted to the box frame 10 by means of bolts 29 and the bolts serve to draw the end arm frames toward the box frame with the pieces 25 into tight engagement with the end arm frames. These pieces 25 slightly space the arm frames from the end rails 13 and 14 of the box frame.

The seat frame 30 is of a less width than the box frame but the same includes front and rear rails 31 and 32 and end transverse connecting rails 33 and 34. These rails 33 and 34 normally rest on the upper edges of the end rails 13 and 14 of the box frame and it is to be noted that the lower edges of the side rails 33 and 34 have formed thereon depending shoulders 35. Thus when the seat frame is in its normal position to form the bottom of a sofa the shoulders 35 rest on the upper edges of the end transverse rails of the box frame and serve to slightly tilt the seat frame downwardly and rearwardly. To prevent the riding forward of the seat frame the same is provided with depending rigid latch straps 36 which are adapted to engage the rear face of the front longitudinal rail 11 of the box frame when the seat frame is in position to form the sofa (see Figures 2 and 7). Arranged adjacent to the transverse center of the seat frame is a pair of spaced transversely extending guide rails 37 and these guide rails are adapted to straddle the intermediate guide rail 16 of the box frame. The upper corners of the end transverse rails 33 and 34 of the seat frame can have formed thereon or secured thereto rearwardly and forwardly directed hinge leaves or ears 38. Pivotaly connected between the boards 37 is a holding dog 39. This dog is arranged adjacent to rear rail 32 and is adapted to hold the seat frame in a raised position, as will hereinafter more fully appear, to permit access to be had to the interior of the box frame 10 (see Figure 4).

The back frame 40 is constructed similar to the seat frame 30 and includes the front and rear rails 41 and 42, connecting end rails 43 and 44 and a pair of spaced parallel intermediate guide rails or boards 45. These guide rails or boards 45 are similar to the guide rails or boards 33 of the seat frame and the boards 44 are adapted to straddle the guide rail 16 of the box frame when the back frame is in its lowered position to form the bed.

The end rails 43 and 44 at a point intermediate their ends are provided with outwardly extending guide pins 46 and these pins are slidably re-

ceived in the guide slots 28 formed in the panels 27 of the arm frames. It is to be noted that the guide pins 46 are arranged slightly in advance of the longitudinal center of the back frame.

The forward end of the back frame adjacent to its upper corners has secured thereto or formed thereon forwardly extending hinge leaves 47 and these hinge leaves are connected by means of hinge pins 48 with the hinge leaves 38 of the seat frame. Hence the seat and back frames are pivotally connected together. While I have shown and described one particular type of hinge, it is to be understood that various different forms of hinges can be utilized for connecting the back and seat frames together.

Likewise, I have shown the box frame carrying at its transverse center the guide board and also the back and seat frames spaced parallel guide rails or boards, it is to be understood that these members or similar guiding devices can be used at the ends of these frames.

In use of my sofa bed, the back frame 44 is normally in a raised elevated inclined position as is clearly shown in Figure 2 and the guide pins 46 rest against the upper walls of the guide slots 28. Hence these pins support the back frame against rearward movement. When the back frame is in the position shown in Figure 2 the seat frame 30 is disposed over the box frame and the stop members 36 engage the inner face of the front rail 11 of the box frame and these members effectively prevent forward sliding movement of the frames 30 and 40. The device can now be effectively used as a sofa and when it is desired to use the same as a bed the front end of the seat frame 30 is raised so as to lift the members 36 above the front rail 11 of the box frame and the seat frame 30 is pulled forwardly and as the back frame 40 is pivotally connected to the seat frame the back frame will be drawn downwardly and forwardly. This is due to the fact that the pins 46 riding in the reverse curve slots 28 will effectively guide the back frame to its lowered horizontal position. During this sliding movement the back frame will not strike the wall as can be clearly seen by referring to Figures 2 and 3. As the back frame slides to its lowered horizontal position to form the bed, latch plates 49 carried by the end rails 43 of the back frame will engage the keeper pins 18. This is important as when the latch plates 49 engage the keeper pins 18 the seat frame and the back frame are held against upward movement when a weight is placed on the outer ends of said frames.

When it is desired to change the device back into a sofa, it is merely necessary to pull up on the outer end of the back frame and this upward pulling movement will draw in on the seat frame and the latch plates 49 will be drawn away from the keeper pins 18. If desired an inward thrust can be given to the front of the seat frame until the frames reach their normal sofa position.

The box frame 10 forms an ideal compartment for bed linen and the like and access can be readily had thereto by merely swinging up on the seat frame 30 (see Figure 4). When the seat frame is swung to an elevated position, the latch dog 39 can be swung down into engagement with the upper edge of the guide rail 16 and this will effectively hold the seat frame against accidental downward swinging movement.

Obviously, the projecting upper edge of the guide rail 16 of the box frame will facilitate slid-

ing of the seat and back frames and will prevent lateral shifting of these frames. The notch 17 facilitates the engagement of the guide boards 45 of the back frame with the guide rail 16 of the box frame.

As heretobefore stated the frames are so constructed that upholstering can be easily accomplished and many types of upholstery can be used. In Figures 8 and 9 I have shown sinuous flat springs 50 which are adapted to extend transversely across the seat and back frames. If preferred, upholstery webbing can be substituted for these springs.

From the foregoing description, it can be seen that I have provided an exceptionally simple and durable form of sofa bed which can be easily manipulated by a single operator and which is so constructed that the use of metal is practically eliminated or reduced to a minimum.

Changes in detail may be made without departing from the spirit or scope of my invention, but what I claim as new is:

1. A sofa bed comprising a base including a bottom frame and end frames connected therewith, said bottom frame having a central transverse guide rail having at least the major part thereof extending slightly above the upper edge of the bottom frame, back and seat frames hingedly connected together at their meeting ends slidably supported upon the bottom frame, said back and seat frames having guide members for straddling the transverse guide rail of the bottom frame and inter-engaging means between the back frame and the end frames for guiding said back frame during movement thereof.

2. A sofa bed comprising a base including a bottom frame and end frames connected therewith, said bottom frame having a central transverse guide rail having at least the major part thereof extending slightly above the upper edge of the bottom frame, back and seat frames hingedly connected together at their meeting ends slidably supported upon the bottom frame, said back and seat frames having guide members for straddling

the transverse guide rail of the bottom frame and inter-engaging means between the back frame and the end frames for guiding said back frame during the movement thereof, and means for preventing upward tilting of the seat and back frames when the same are in a horizontal position.

3. A sofa bed comprising a base including a bottom frame and end frames connected therewith, said bottom frame having a central transverse guide rail having at least the major part thereof extending slightly above the upper edge of the bottom frame, back and seat frames hingedly connected together at their meeting ends slidably supported upon the bottom frame, said back and seat frames having guide members for straddling the transverse guide rail of the bottom frame and inter-engaging means between the back frame and the end frames for guiding said back frame during the movement thereof, and means for preventing upward tilting of the seat and back frames when the same are in a horizontal position, said means including keeper pins carried by the bottom frame and latch plates on the back frame for receiving said keeper pins when the back frame is in a lowered horizontal position.

4. A sofa bed comprising a bottom box frame including front and rear rails, end rails and a bottom wall, side arm frames connected to said box frame, said box frame also including a transverse guide rail having at least its major part extending above the front and rear rails, seat and bottom frames hingedly connected together slidably supported on the box frame guide means between the back frame and the arm frames, guide means carried by the seat and back frames for engaging the transverse guide rail of the box frame, and a pivoted latch dog carried by the rear end of the seat frame for engaging said transverse guide rail to hold the seat frame in a raised position when access to the interior of the box frame is desired.

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