Aug. 5, 1969 J. EDWARDS 3,458,877

SOFA BED COMBINATION

Filed Sept. 29, 1967

FIG. 1

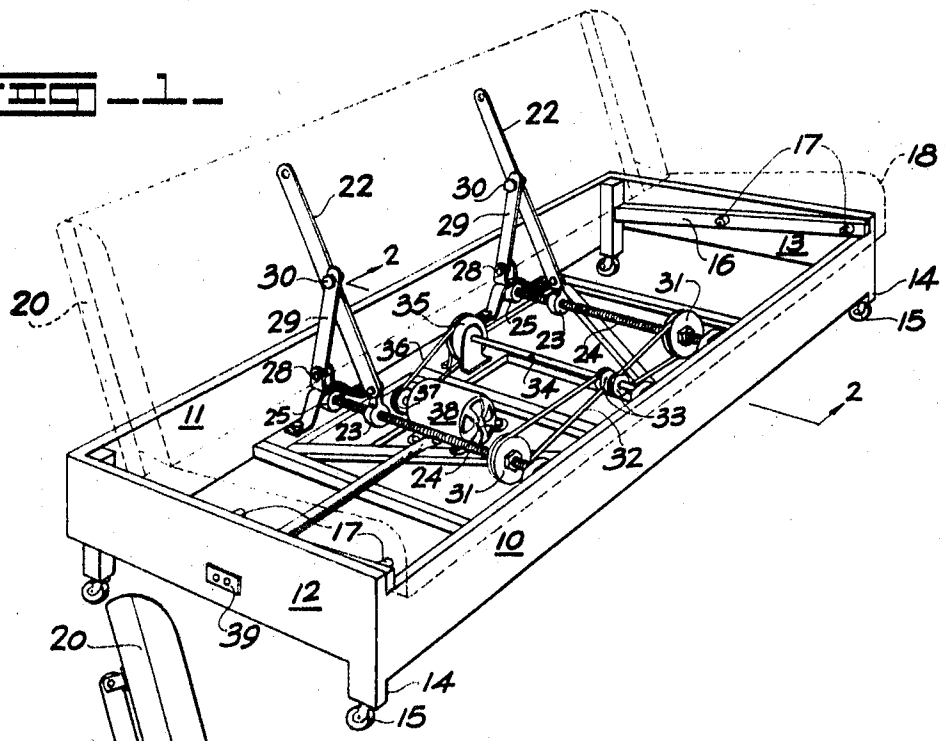
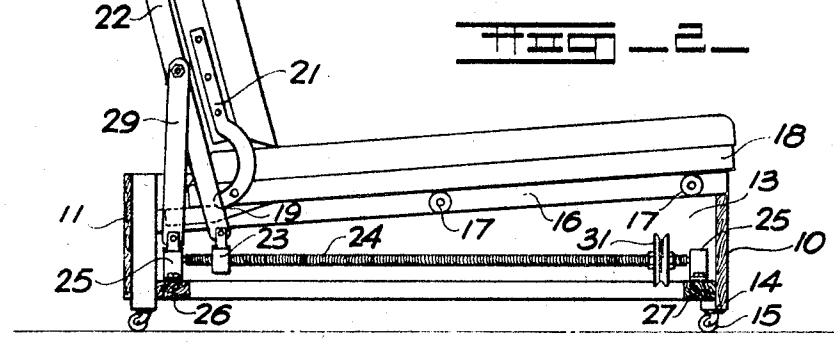


FIG. 2



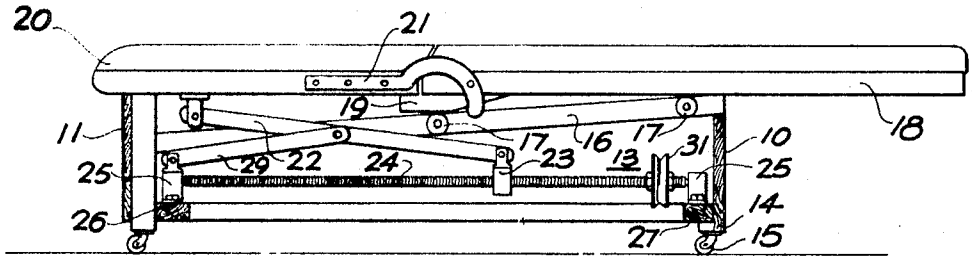


FIG. 3

INVENTOR
John Edwards
BY
W. B. Harpman
ATTORNEY

United States Patent Office

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SOFA BED COMBINATION

John Edwards, R.R. 1, Box 299 H.Y., Countryside Drive, Tampa, Fla. 33612

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ABSTRACT OF THE DISCLOSURE

A sofa bed combination having a seat portion and a back portion movable from sofa configuration to bed configuration by means of levers engaged on followers positioned on revolvable threaded shafts in said combination.

The principal object of the invention is the provision of a sofa bed combination furniture article that may be moved from sofa configuration to bed configuration and vice versa automatically by means of a built-in motion applying mechanism.

A further object of the invention is the provision of a sofa bed combination that is simple, positive in operation and comfortable in both its sofa and bed configurations.

A still further object of the invention is the provision of a sofa bed combination article having novel means for bringing the back and seat portions of the sofa into side-by-side horizontal alignment automatically.

The sofa bed combination furniture article disclosed herein comprises an improvement in the art, in that the sofa bed combination is movable from sofa configuration to bed configuration and vice versa, by an electric motor incorporated in the article and which drives a pair of rotatable shafts which in turn actuate levers imparting movement to the respective back and seat portions of the sofa which become the adjacent horizontally disposed portions of the bed.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being the intention to cover all changes and modifications of the example of the invention herein chosen for purposes of the disclosure, which do not constitute departures from the spirit and scope of the invention.

The invention is illustrated in the accompanying drawing, wherein:

FIGURE 1 is a perspective view of the sofa bed combination with broken lines indicating the seat and back portions of the same.

FIGURE 2 is a horizontal section on line 2—2 of FIGURE 1 and in enlarged detail.

FIGURE 3 is a view similar to FIGURE 2 showing the sofa bed combination in alternate position.

By referring to the drawing, and FIGURE 1 in particular, it will be seen that the sofa bed combination comprises a rectangular frame having front and back frame members **10** and **11** respectively, with interconnecting end members **12** and **13**. Legs **14** are formed at the four corners of the rectangular frame thus formed, and provided with casters **15**. The inner surfaces of the end members **12** and **13** are provided with inclined support rails **16** which are angularly disposed relative to the end portions **12** and **13**, and each of which is provided with a pair of rollers **17**. The seat portion **18** of the sofa bed rests on rollers **17** which are carried on the inclined rails **16** and with the end portions of the seat portion **18** of the sofa bed in closely spaced relation to the end rails **16**. The seat portion **18** of the sofa bed has a wedge member **19** at each of its rearmost corners, and which wedge members **19** are adapted to engage the oppositely disposed rollers **17** and elevate the rearmost portion of the seat portion **18** of the sofa bed when the same moves relative thereto, as seen in FIGURE 3 of the drawing.

The back portion of the sofa bed is shown in broken lines in FIGURE 1 of the drawing, and indicated by the numeral **20**, and in solid lines in FIGURES 2 and 3 of the drawing, and it will be seen that its lower foremost corners are provided with extending brackets **21** which are pivotally engaged on pivots **22** on the adjacent back corners of the seat portion **18** of the sofa bed combination. The back portion **20** of the sofa bed combination is supported in semi-vertical position, as seen in FIGURES 1 and 2 of the drawing, by arms **22** which are pivoted at their uppermost ends to the upper outmost portions of the back portion **20** of the sofa and at their lower ends to followers **23** which are engaged on a pair of threaded shafts **24** which are rotatably positioned in suitable bearings between the front and back frame members **10** and **11** respectively. The rotatable threaded shafts **24** are journalled at their ends in bearings **25** which are carried on inturned rails **26** and **27** secured to the lower inner sides of the back and front frame members **11** and **10** respectively, as best seen in FIGURE 2 of the drawing. The back journals **25** adjacent the back frame **11** have upturned brackets **28** thereon which pivotally engage the lower ends of levers **29** which are pivoted thereto and to the arms **22** intermediate therein by means of pivot pins **30**.

It will thus be observed that when the threaded shafts **24** are revolved followers **23** will move longitudinally of the same and hence move the lower ends of the arms **22** transversely of the sofa bed frame and due to their interconnection with the levers **29**, will cause the back portion **20** of the sofa bed to move from its semi-vertical position as seen in FIGURES 1 and 2 of the drawing, to a horizontal position as seen in FIGURE 3 of the drawing, or vice versa, depending upon the rotation of the threaded shaft **24**.

In order that the shafts **24** may be rotated each one is provided with a pulley **31** and a belt **32** trained thereover, and also trained over a secondary pulley **33** on an intermediate shaft **34** mounted midway between the threaded shafts **24** on suitable journals in the sofa bed combination frame. The rotatable shaft **34** is provided with a third pulley **35** and a belt **36** trained thereover connects it with a pulley **37** on an electric motor **38** which is also mounted in the frame of the sofa bed combination. Suitable wires (not shown) are provided for energizing the electric motor **38** and a control switch **39** on one end of the sofa bed combination controls the electrical circuit carried by said wires to said electric motor from a suitable power source.

It will thus be seen that when the electric motor is energized and operates in one direction the motion is transferred to the rotatable intermediate shaft **34** and therefrom to the threaded shafts **24**, and that the followers **23** will thus move longitudinally simultaneously in one direction, thus actuating the sofa bed combination.

By referring now to FIGURE 3 of the drawing, it will be seen that when the seat portion **18** moves forward to the right as shown in the drawing, by the aforesaid action, its pivotal connection with the members **21** on the back portion **20** will cause it to move the back portion forwardly and downwardly due to the interconnection of the arms **22** therewith, as heretofore described, and that when the wedge members **19** on the back corners of the seat portion **18** reach the rear rollers **17**, the seat and back portions **18** and **20** respectively will move to horizontal side-by-side relation. It will be observed that when the seat and back portions **18** and **20** of the sofa bed combination are in horizontal side-by-side relation they are relatively securely held by the positioning of the moving mechanism including the arms **22** and the levers **29**,

etc. When it is desired to change the bed configuration to the sofa configuration, actuation of the switch **39** will reverse the electric motor **38** and the followers **23** travel to the left on the threaded shafts **24**, thus moving the arms **22** rearwardly and upwardly, due to their control by the levers **29** and the interconnection of the members **21** and **22** will simultaneously move the seat portion **18** back into normal sofa configuration while the back portion **20** moves to a semi-vertical position.

It will occur to those skilled in the art that automatic stop switches can be incorporated in the device so that the electric motor **38** will stop automatically and reverse when the respective seat and back portions of the sofa bed combination reach their alternate maximum positions.

It will thus be seen that the sofa bed combination disclosed herein meets the several objects of the invention, and having thus described my invention what I claim is:

1. In a sofa and bed combination comprising a supporting frame, means at the sides of said frame for supporting a seat portion on said frame and means transversely of said frame and extending upwardly and rearwardly therefrom for supporting a back portion of said sofa bed, said last mentioned means including arms pivoted at their upper ends to said back portion and levers pivoted at their lower ends to said sofa supporting frame and at their upper ends to the middle portions of said arms and means in said sofa supporting frame engaging the lower ends of said arms for moving said arms transversely of said frame so as to move the same relative to said levers and impart desirable motion to said back portion, and means pivotally interconnecting said back and seat portions whereby motion imparted to said back portion by said arms may be conveyed to said seat portion to move the same relative to said supporting frame.

2. The sofa bed set forth in claim **1** and wherein said means for moving said arms includes journals on said supporting frame, threaded shafts positioned in said journals, followers threadably engaged on said threaded shafts and pivotal connections on said followers and said arms, said levers being pivotally connected to said journals and to said arms.

3. The sofa bed set forth in claim **1** and wherein said means at the sides of the frame for supporting said seat portion comprise angularly disposed members including rollers.

4. The sofa bed set forth in claim **3** and wherein spacing members of wedge-like configuration are attached to said seat portion adjacent its rearmost corners and arranged to engage said means at the sides of said frame for supporting said seat portion so as to elevate said seat and back portions to horizontal side-by-side position.

5. The sofa bed combination set forth in claim **1** and wherein said means in said sofa for moving said arms transversely of the frame includes transversely positioned threaded shafts, followers on said shafts pivoted to said arms, an electric motor and drive means interconnecting said electric motor and said threaded shafts for imparting rotating motion thereto.

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CASMIR A. NUNBERG, Primary Examiner

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