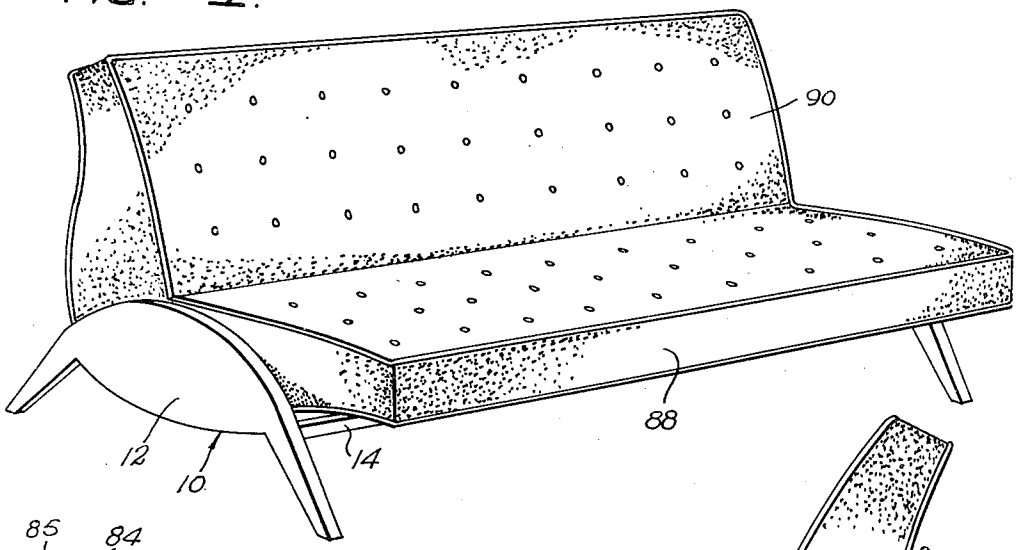
Nov. 13, 1956 H. A. THAL 2,769,987

SOFA BED

Filed Oct. 28, 1955

2 Sheets-Sheet 1

FIG. 1.



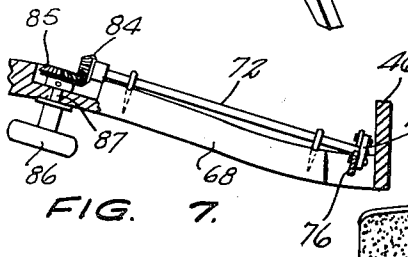


FIG. 7.

FIG. 2.

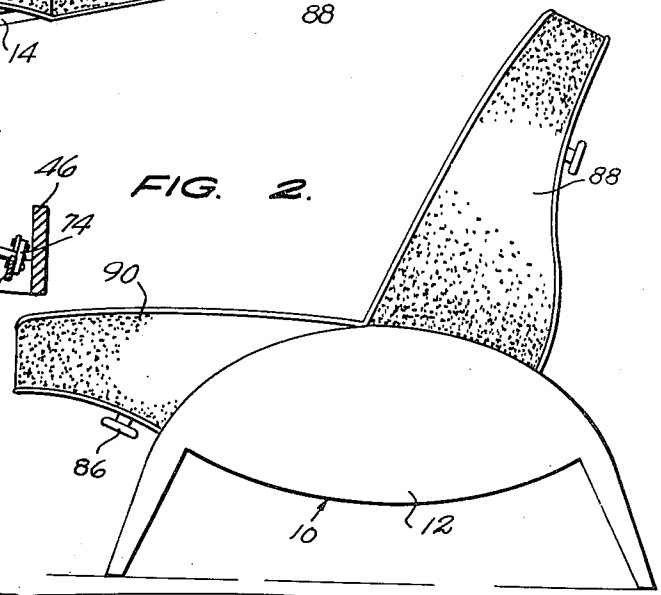
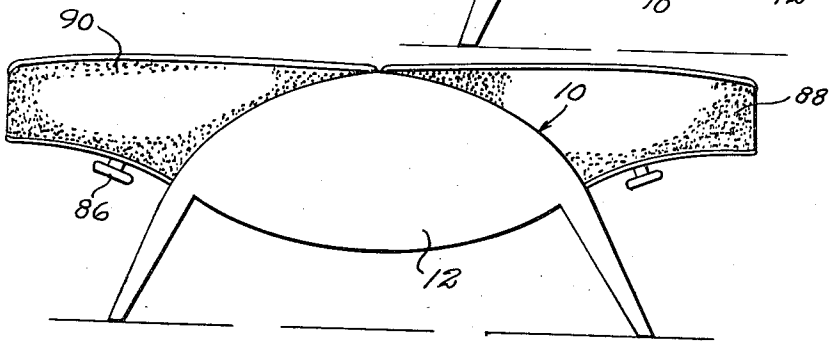


FIG. 3.



INVENTOR.
HARRY A. THAL,
BY
McMorrow, Berman & Davidson
ATTORNEYS.

Nov. 13, 1956 H. A. THAL 2,769,987

SOFA BED

Filed Oct. 28, 1955

2 Sheets-Sheet 2

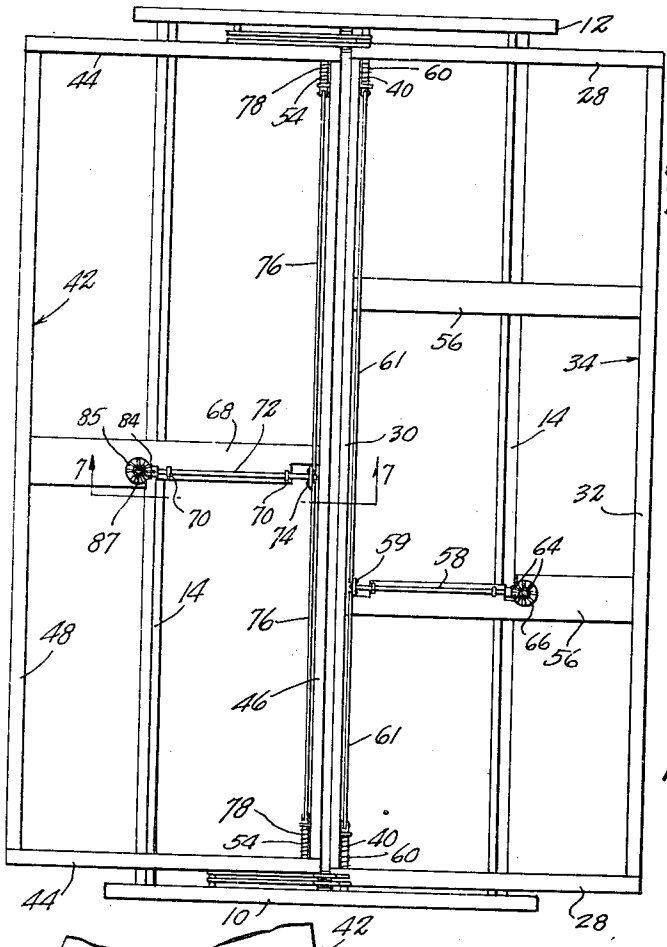


FIG. 4.

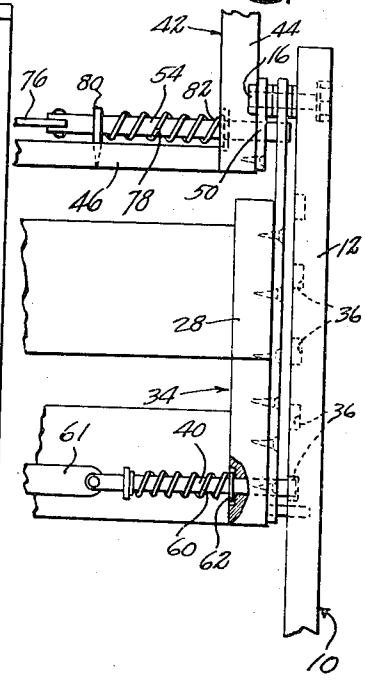


FIG. 6.

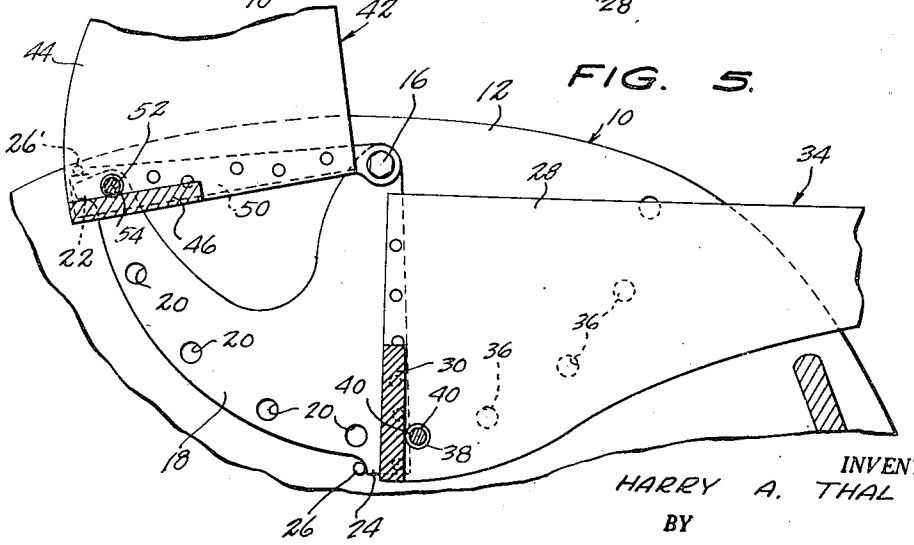


FIG. 5.

INVENTOR.
HARRY A. THAL
BY
McMorrow, Berman & Davidson
ATTORNEYS.

United States Patent Office 2,769,987
Patented Nov. 13, 1956

2,769,987

SOFA BED

Harry A. Thal, Kew Gardens, N. Y.

Application October 28, 1955, Serial No. 543,389

3 Claims. (Cl. 5—37)

This invention relates to a sofa bed and has for its primary object to facilitate the conversion of this piece of furniture from a sofa into a bed.

Another object is to enable the element of the sofa bed forming the back of the sofa to be adjusted angularly relative to the element of the device defining the seat.

A further object is to afford the rapid transformation of the device from a sofa into a bed and vice-versa.

The above and other objects may be attained by employing this invention which embodies among its features spaced parallel end members, spaced parallel side rails carried by said end members and extending therebetween to define a bed frame, quadrant plates mounted on the adjacent faces of the end members for movement in spaced vertical arcuate paths about a common axis which lies parallel with and above the side rails, each plate having an arcuate row of circumferentially spaced openings extending therethrough in concentric spaced relation to the common axis, each end member having an arcuate row of circumferentially spaced recesses opening into adjacent faces thereof, the rows of recesses lying in concentric spaced relation to the common axis, arms pivotally mounted on the end members for movement about the common axis adjacent the quadrant plates, a first cushion frame carried by the quadrant plates and extending therebetween for movement therewith about the common axis in a vertical arcuate path between the end members, a second cushion frame carried by the arms for movement therewith about the common axis in a vertical arcuate path between the end members, bolts carried by the second cushion frame for projection through selected openings in the quadrant plates to hold the second cushion frame at a selected position relative to the first cushion frame, bolts carried by the first cushion frame for entering selected recesses in the end members and holding the cushion frames in a selected position relative to the bed frame, and cushions carried by the cushion frames.

Other features include springs carried by the cushion frames and engaging the bolts for yieldingly projecting them toward the end members and into selected openings and selected recesses, and bolt retracting means carried by the cushion frames and operatively connected to the bolts for retracting them against the effort of the springs.

Still other features include levers carried by the cushion frames for rotation about axes which lie perpendicular to the axes of the bolts, links carried by the levers and connected to the bolts for retracting them against the effort of the springs, and manually actuated means carried by the cushion frames and operatively connected to the levers for rotating said levers and retracting the bolts.

Still other features include stop pins carried by the end members and projecting outwardly from adjacent faces thereof in parallel relation to the common axis, and stops carried by the quadrant plates and extending outwardly from the perimeter thereof for movement in arcuate paths which intersect the axes of the pins and limit

the movement of the quadrant plates about the common axis.

In the drawings:

Figure 1 is a perspective view of a combination sofa and bed embodying the features of this invention;

Figure 2 is an end view of Figure 1;

Figure 3 is an end view of Figure 1, showing the parts in a position to define a bed;

Figure 4 is a plan view of the frame members of the device showing the cushions removed and the frames horizontal;

Figure 5 is an enlarged fragmentary side view of one of the end members and looking at the inside face thereof;

Figure 6 is a fragmentary side view of Figure 5; and

Figure 7 is an enlarged fragmentary sectional view taken substantially on the line 7—7 of Figure 4.

Referring to the drawings in detail, a bed frame designated generally **10** comprises spaced parallel end members **12** to which are affixed longitudinally extending side rails **14** which extend between the end members and define therewith the bed frame **10** above referred to.

Pivot pins **16** are carried by the end members **12** and extend horizontally inwardly from adjacent faces thereof along a common axis to form supports for the first and second cushion frames to be more fully hereinafter described.

Mounted on the pivot pins **16** for movement about the common axis are quadrant plates **18** having arcuate rows of openings **20** extending therethrough which rows lie concentric about the common axis **16** with the openings in opposite quadrant plates lying along aligning axes which lie parallel to the common axis about which move the plates **18**. Carried by the plates **18** and extending outwardly from the periphery thereof are stop lugs **22** and **24** and carried by the end members **12** and extending inwardly therefrom in the paths of movement of the stop lugs **22** and **24** are stop pins **26** and **26'**. It will thus be seen that the quadrant plates may move in arcuate paths for limited distances about the common axis. Secured to the quadrant plates **18** and extending outwardly therefrom on the side thereof opposite the arcuate row of openings **20** are end pieces **28** carrying side bars **30** and **32** which define with the end pieces **28** a first cushion frame designated generally **34**. Extending into the adjacent faces of the end members **12** are arcuate rows of spaced recesses **36** and extending through each end piece **28** adjacent its junction with its respective quadrant plate **18** is an opening **38** which aligns with a mating opening in the adjacent quadrant plate **18** for receiving bolts **40** which are adapted to be projected into a recess **36** to hold the first cushion frame **34** in a selected position relative to the bed frame **10**. It will thus be seen that the first cushion frame may be moved about the common axis to align the bolts **40** carried by the end pieces **28** with selected aligned recesses **36** so that the bolts may be projected into the recesses to retain the first cushion frame **34** in a selected position of adjustment on the bed frame **10**.

A second cushion frame designated generally **42** comprises end pieces **44** which, like the end pieces **28**, are joined by side bars **46** and **48**. Mounted for rocking movement about the common axis on the pivot pins **16** previously described are arms **50** which are secured to the end pieces **44** so that the second cushion frame **42** may move in an arcuate path about the common axis adjacent the quadrant plates **18**. Extending through the arms **50** adjacent the ends thereof remote from the common axis and adjacent the side bar **46** are aligning openings **52** which move with the arms **50** in arcuate paths and are adapted to register with selected openings **20** in the

quadrant plates 18. Bolts 54 extend through the openings 52 and are adapted to be projected into selected aligning openings 20 in the quadrant plates 18. It will thus be seen that the angular relation of the second cushion frame with relation to the first cushion frame may be selected by withdrawing the bolts 54 from their engagement with the walls of aligned openings 20 and moving the second cushion frame about the common axis to the position chosen after which the bolts 54 are projected through other aligned openings 20 in the quadrant plates 18.

The first cushion frame 34 is provided with longitudinally spaced transversely extending cross bars 56 which lie intermediate opposite ends of the frame and mounted on one of the cross bars 56 for rotation about an axis which lies perpendicular to the longitudinal axis of the first cushion frame 34 is a shaft 58 which carries at the end adjacent the side bar 30 a lever 59 which is coupled through the medium of links 61 to the bolts 40 so that when the shaft 58 is rotated, the bolts 40 will be retracted against the effort of coiled springs 60 carried by the side bar 30 and bearing on outwardly extending annular flanges 62 formed on the bolts 40. Manipulation of the shaft 58 is governed by miter gears 64 carried by the shaft 58 and a transversely extending shaft 66 which extends through the cross bar 56 and carries on its end remote from the miter gears 64 a knob by means of which the shaft 66 may be rotated to impart rotation to the shaft 58.

A cross bar 68 is carried by the second cushion frame and extends between the side bars 46 and 48 substantially midway between opposite ends of the second cushion frame. Aligned bearing eyes 70 are carried by the cross bar 68 and mounted in said bearing eyes is a shaft 72 carrying at its end adjacent the side rail 46 a lever 74 to which links 76 are connected. These links are coupled to the bolts 54 which are mounted for longitudinal sliding movement on the adjacent side bar 46 adjacent opposite ends of the second cushion frame 42. Compression coiled springs 78 surround the bolts 54 adjacent the end pieces 44 and one end of each spring bears on a guide eye 80 carried by the adjacent side bar 46, while the opposite end of each spring bears on a flange 82 carried by the bolt 54 adjacent the adjacent end piece 44. It will thus be seen that the bolts 54 are yieldingly projected through the openings in the end pieces 44 and arms 59 to enter selected openings 20 in the quadrant plates 18. A suitable miter gear 84 is carried by the shaft 72 remote from the lever 74 and meshes with a miter gear 85 carried by a shaft 87 which extends through the cross bar 68 and carried by said shaft 87 is a knob 86 by means of which the gears 84 and 85 may be rotated to turn the shaft 72 and move the lever 74 to retract the bolts 54 against the effort of the springs 78 so that the second cushion frame may be adjusted angularly relative to the first cushion frame. Suitable cushions 88 and 90 are carried respectively by the first cushion frame 34 and the second cushion frame 42.

In use, it will be evident that by turning the knob carried by the cushion frame 34, the bolts 40 may be retracted so that the first cushion frame may be moved to a selected angular relation about the common axis to adjust the tilt of the cushion 88 carried thereby. Obviously, by extracting the bolts 54 from the opening 20 in which it has been projected, the second cushion frame 42 may be moved to a selected angle about the common axis 16 so as to lie in a selected position relative to the first cushion frame. Upon releasing the manipulating mechanism, the links 76 will return the lever 74 to its initial position under the influence of the springs 78 so that the bolts 54 may be projected under the influence of their respective springs into selected aligned recesses 20 in the quadrant plates 18. Obviously, the cushions 88 and 90 may be moved, as suggested in Figures 1 to 3, inclusive, from a position in which they form a sofa to a position in which they form a bed.

While in the foregoing there has been shown and described the preferred embodiment of this invention, it is to be understood that minor changes in the details of construction, combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as claimed.

What is claimed is:

1. A sofa bed comprising spaced parallel end members, spaced parallel side rails carried by said end members and extending therebetween to define a bed frame, quadrant plates mounted on adjacent faces of the end members for movement in spaced vertical arcuate paths about a common axis which lies parallel with and above the side rails, each plate having an arcuate row of circumferentially spaced openings extending therethrough in concentric spaced relation to the common axis, each end member having an arcuate row of circumferentially spaced recesses opening into adjacent faces thereof, the rows of recesses lying in concentric spaced relation to the common axis, arms pivotally mounted on the end members for movement about the common axis adjacent the quadrant plates, a first cushion frame carried by the quadrant plates and extending therebetween for movement therewith about the common axis in a vertical arcuate path between the end members, a second cushion frame carried by the arms for movement therewith about the common axis in a vertical arcuate path between the end members, bolts carried by the second cushion frame for projection through selected openings in the quadrant plates to hold the second cushion frame at a selected position relative to the first cushion frame, bolts carried by the first cushion frame for entering selected recesses in the end members and holding the cushion frames in a selected position relative to the bed frame, and cushions carried by the cushion frames.

2. A sofa bed comprising spaced parallel end members, spaced parallel side rails carried by said end members and extending therebetween to define a bed frame, quadrant plates mounted on adjacent faces of the end members for movement in spaced vertical arcuate paths about a common axis which lies parallel with and above the side rails, each plate having an arcuate row of circumferentially spaced openings extending therethrough in concentric spaced relation to the common axis, each end member having an arcuate row of circumferentially spaced recesses opening into adjacent faces thereof, the rows of recesses lying in concentric spaced relation to the common axis, arms pivotally mounted on the end members for movement about the common axis adjacent the quadrant plates, a first cushion frame carried by the quadrant plates and extending therebetween for movement therewith about the common axis in a vertical arcuate path between the end members, a second cushion frame carried by the arms for movement therewith about the common axis in a vertical arcuate path between the end members, bolts carried by the second cushion frame for projection through selected openings in the quadrant plates to hold the second cushion frame at a selected position relative to the first cushion frame, bolts carried by the first cushion frame for entering selected recesses in the end members and holding the cushion frames in a selected position relative to the bed frame, cushions carried by the cushion frames, springs carried by the cushion frames and engaging the bolts for yieldingly projecting them toward the end members and into selected openings and selected recesses, and bolt retracting means carried by the cushion frames and operatively connected to the bolts for retracting them against the effort of the springs.

3. A sofa bed comprising spaced parallel end members, spaced parallel side rails carried by said end members and extending therebetween to define a bed frame, quadrant plates mounted on adjacent faces of the end members for movement in spaced vertical arcuate paths about a

common axis which lies parallel with and above the side rails, each plate having an arcuate row of circumferentially spaced openings extending therethrough in concentric spaced relation to the common axis, each end member having an arcuate row of circumferentially spaced recesses opening into adjacent faces thereof, the rows of recesses lying in concentric spaced relation to the common axis, arms pivotally mounted on the end members for movement about the common axis adjacent the quadrant plates, a first cushion frame carried by the quadrant plates and extending therebetween for movement therewith about the common axis in a vertical arcuate path between the end members, a second cushion frame carried by the arms for movement therewith about the common axis in a vertical arcuate path between the end members, bolts carried by the second cushion frame for projection through selected openings in the quadrant plates to hold the second cushion frame at a selected position relative to the first cushion frame, bolts carried by the first cushion frame for entering selected recesses in the end members and holding the cushion frames in a selected

position relative to the bed frame, cushions carried by the cushion frames, springs carried by the cushion frames and engaging the bolts for yieldingly projecting them toward the end members and into selected openings and selected recesses, levers carried by the cushion frames for rotation about axes which lie perpendicular to the axes of the bolts, links carried by the levers and connected to the bolts for retracting them against the effort of the springs, and manually actuated means carried by the cushion frames and operatively connected to the levers for rotating said levers and retracting the bolts.

References Cited in the file of this patent

UNITED STATES PATENTS

1,224,982	Washeim	May 8, 1917
1,977,550	Gibb	Oct. 16, 1934
2,625,693	Raginsky	Jan. 20, 1953

FOREIGN PATENTS

143,088	Great Britain	May 20, 1920