SOFA BED CONSTRUCTION


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3 Claims. (Cl. 5—47)

This invention relates to an article of furniture known in the trade as a "sofa bed," characterized by a construction which permits the article to be used as a sofa and, alternatively, as a bed upon rearrangement of its principal construction parts. Particularly, the invention further relates to a sofa bed having arms adapted to recede into spaced recesses provided in the seat cushion so that the bed arrangement presents a flush horizontal alignment of the back cushion, the seat cushion and the arms, in a single plane. The invention is further characterized by a novel and inventive construction that provides for arms which are easily and simply removable from and reinsertable into the sofa bed structure.

The basic construction of the sofa bed employs a back cushion arranged at a slight angle from the vertical plane, connected to a seat cushion disposed at a slight angle to the horizontal plane, a base for the cushions supported upon legs, and linkage complementarily connected at each end of the sofa bed to provide the means for arranging the construction into a sofa with upstanding arms or into a bed with retracted cushion-aligned arms.

It is an object of the invention to provide receding arms in a sofa bed construction. Many sofas are used in homes or movable house trailers where the room size is unusually small and the sofa must therefore be limited in its length. These articles of furniture must also be convertible into a bed arrangement to provide the comfort of the sofa in the daytime and the comfort of the bed at night. The construction of the sofa bed must be so arranged that the sofa and bed arrangements can be made without difficulty or waste of space for the storage of the facilities.

Therefore, the extension of a sofa bed by the width of its arms should be avoided insofar as possible. It is thus another object of the invention to provide a sofa bed construction that employs receding arms arranged to fall back into seat cushion recesses at each end of the unit, so that the overall length of the sofa is not increased by the width of its arms. A further object is the provision of means by which the arms are easily and simply removable and coated with the mechanical linkage to provide arm rests for the sofa and filler cushions for the bed arrangements. In addition, the means by which the arms are removable also provide for more effective access to the linkage and for reduction of costs in the sofa bed construction. Still another object of the invention is to provide positive support and rest means for the arms when arranged either in the upstanding arm rest sofa position or in the retracted cushion-aligned bed position.

These and other objects of the invention will become more apparent from the description given below. The description together with the appended drawings is a disclosure of one form in which the invention may take, and is not in any way intended to be a limitation of the forms and variations which persons skilled in the art may make. The terms are used for purposes of description and not of limitation. For a visual understanding of the invention, reference is made to the accompanying drawings, in which

Fig. 1 is a perspective view of the sofa bed embodying the inventive construction.

Fig. 2 is a side elevational view, partially broken away to show the linkage, at the right side of the sofa bed, looking at it from the front.

Fig. 3 is a side sectional view showing the linkage, cushion and arm arrangement, being the reverse side of Fig. 2.

Fig. 4 is a view similar to Fig. 2, showing the seat and back cushions in tilted position, prior to releasing and dropping the seat cushion and arms into bed position.

Fig. 5 is a side elevational view of the cushions and arms disposed in bed position, with a portion broken away to show the linkage arrangement.

Fig. 6 is an enlarged side elevational view of the linkage taken from the vantage point in Fig. 3, showing the arrangement of its members.

Fig. 7 is an enlarged side elevational view of a portion of the linkage shown in Fig. 6.

Fig. 8 is an enlarged side elevational view of the linkage of Fig. 4, at a point just past accumulating two downward swing of the seat cushion into bed position.

Fig. 9 is a sectional view taken transversely of the sofa bed arm substantially on the line 9—9 of Fig. 2.

Fig. 10 is a vertical sectional view on the line 10—10 of Fig. 6.

As shown in Fig. 1, the sofa bed 10 comprises a back cushion 12, a seat cushion 14, two oppositely arranged, similarly constructed arms 16, a base 18, legs 20, and mechanical linkage connecting the back and seat cushions with the base and with each other, which linkage will be more particularly described below.

There are several ways of constructing back and seat cushions, 12 and 14, the particular details of which form no part of this invention. In general, this construction includes a cushion frame 22, coiled springs arranged on the frame in spaced relation to each other, a textile covering for the springs, which are tied together to maintain their spaced relationship under compressive loads, padding material over the textile covering, and a fabric upholstery covering 24 over the padding and nailed to the frame. The line of contact between the back and seat cushions is generally in the fold line between the cushions, the fabric upholstery coverings being sewn together in one manner or another. This line of connection or folding is designated by the reference numeral 26.

Base 18 is composed of framing elements or members 28, generally of wood, about the outside surface of which some padding material is applied and covered with the fabric upholstery material 24, nailed in place. Usually the base is arranged as a rectangular frame, open at the top and closed at the bottom by some such material as heavy paper, Masonite or wood paneling. Legs 20 are simply attached to the corners of the base framing by glue, screws, or other suitable fastening means.

Before describing the arms, it might be well to understand the mechanical linkage that connects back cushion 12 to base 18, seat cushion 14 to base 18, and the two cushions to each other. Considering the linkage shown in the figures of the drawings, for the right hand side of the sofa bed 10, looking at it from the front, the linkage 30 comprises a back cushion connecting plate 32 affixed to the back cushion framing 22, and a seat cushion connecting plate 34 affixed to the seat cushion framing 24, joined pivotally by a pin or rivet 36. The connecting plates are mounted securely by means of screws or bolts to the cushion frames.

Back cushion connecting plate 32 is provided with a pin 38 connecting a lever 40 thereto which is pivotally mounted at its other end to base framing member 28 by a pin or bolt 42.

A second lever 44 is also pivotally mounted on base framing member 28 by a pin or bolt 46 and is connected
at its other end by pin 36 which conjoins the two plates 32 and 34.

An examination of Fig. 2 will reveal that the back and seat cushions, 12 and 14, will move forward on pin 36 in an arc swung by lever 44 pivotally mounted on base 18. Further, back cushion 12 must rotate downward about pivot pin 36, controlled by lever 40, into the horizontal position shown in Fig. 4. The lateral control of the release movement of plates 32 and 34 is embodied in a latch lever 48 pivotally mounted on plate 32 by pin 50, about which it swings freely. Latch lever 48 is provided with a notch 49 in its lower edge near its outer end portion. On the inside of latch lever 48, i.e. facing the seat cushion 14, a cam lever 52, having a cam notch 53 cut out at its outer end, is pivotally mounted on its pin 54 fixed in the lever 48, and positioned to swing over latch lever notch 49. Cam lever 52 is free to rotate on pin 54, and as shown in Figs. 4 and 8, it assumes the position, upon tilting seat cushion 14 upward prior to unlatching, of a gravity-held cam. Fig. 7 further shows that the free swing of latch lever 48 and cam lever 52 is limited by a strap 56 affixed at its top flange 58 by bolts or spot welds to plate 34, and having an offset body portion 60 spaced apart from plate 34, and held in spaced relation to plate 34 by a latch pin 62. A wire spring 63, anchored at one end in plate 34 and at its working end on latch lever 48, tends to urge the lever 48 into constant contact with latch pin 62, and to hold cam lever 52 on latch pin 62, when the two are engaged by cam notch 53.

The arms 16 are constructed with a frame 64 having top, front, and side elements made generally of wood. A pair of tubes or rods 66 are affixed to the underside of the top element of frame 64, so that they depend in parallel spaced apart relation. Adapted to slidingly receive these rods 66 are a pair of tubes 68 fixedly mounted on the top edge of the side elements of seat cushion frame 22; and on the inside surface of the base frame elements 28 are affixed angle type rod rests 70, which positively support the rods 66 so that arms 16 have a firm positive rest support. There is no connection between the arms 16 and the base 18, the arms being freely installable into and removable from the support tubes 68 on the seat cushion frame 22.

The arm frame top element 72 is disposed in a notched out portion 74 in seat cushion 14, which causes it to be termed a T cushion in the trade. The arm frame outside rod 66 is slightly below the base frame, so as to freely rotate and move with respect to the seat cushion and base. However, the remainder of arm 16 is substantially within the dimensional perimeter of the base 18. Arms 16, as do the other exposed component parts of the sofa bed, have padding and upholstery fabric 24 covering the arm frames 64, in accordance with the usual practice in the trade.

In operation, starting with the position shown in Fig. 1, the back cushion 12 is disposed at a slight angle to the vertical, with seat cushion 14 arranged in seating position. Arms 16 are in arm rest position, the rods 66 resting upon their angle rests 70, affixed to the base framing elements 28.

To change the arrangement of the cushions and arms to bed position, Fig. 5, the seat cushion 14 is moved forward and tilted upward into the position shown in Figs. 4 and 8. As this proceeds, the back cushion 12 is resting upon the base 18, and the seat cushion 14 is still latched to the back cushion by latch lever 48 bearing on latch pin 62. To unlatch the seat cushion 14 from back cushion 12, the seat cushion must be rotated further upward about pin 36 in an arc swinging toward the back cushion 12. This movement raises latch pin 62 in the latch lever 49 until cam lever 52 engages latch pin 62 in cam lever notch 53. Upon lowering the seat cushion 14, latch pin 62 will slide out from under cam lever 52 and latch lever 48, which leaves ride upon it within strap 56, and seat cushion 14 comes to rest upon the forward edge of base 18.

As shown in Figs. 4 and 5, tilting the seat cushion 14 forward and upward will not cause the arms to assume a particular position, as the arm rods 66 are freely slideable in the tubes 68. The arm 16 is always positioned in the seat cushion notched out portion 74. Upon unlatching the seat cushion 14 from the back cushion 12, as above described, and lowering the seat cushion to bed rest position, the arm 16, by gravity fall, will come slidingly to rest so that its top element 72 will lie flush with the seat and back cushions. This position is attained by dimensionally proportioning the height of rod receiving guide tubes 68 on seat cushion frame 22, the underside of arm top element 72 resting directly upon the top edge of the tubes 68. The arm rods 66 are also dimensionally proportioned to stop short of the plane upon which the sofa bed legs 20 rest. In lowering the seat cushion 14 to bed rest position, the arm rods 66 are so spaced apart that the rearward one will fall within the base frame elements 28 and the forward one will fall without the base 18. It will be noted that the arm 16 can be removed from the construction at any time simply by lifting it, with its rods 66, out of the seat cushion portion 74.

In bed rest position, the back and seat cushion frames 22 rest directly upon the base frame elements 28 to provide positive support for these cushions.

Having described my invention in its simplest terms, it is to be understood by those skilled in the art to which this invention pertains that various modifications and changes may be made without departing from the spirit of the invention or from the scope of the appended claims. I claim:

1. A sofa bed construction in which the structure may be arranged as a sofa or alternatively as a bed comprising a base frame, seat and back cushions coacting together, means conjointing said cushions to said base frame and to each other, and side arms for said construction, said arms having rods vertically arranged depending therefrom, said seat cushion having a frame, a cushioning seat portion arranged upon said frame and provided with recesses at the ends thereof, and seat frame portions exposed by said recesses under said arms, arm rod guides disposed and affixed upon said exposed seat frame portions, said base frame having side members, and arm rod support rests affixed to said side members disposed directly below said seat frame portions, said cushion and frame is aligned above said base frame and said arms are disposed in arm rest position, said arm rods being freely slideable in said guides and through said seat frame to rest upon said base frame affixed rests.

2. A sofa bed construction in which the structure may be arranged as a sofa or alternatively as a bed comprising a base frame, seat and back cushions coacting together, means conjointing said cushions to said base frame and to each other, and side arms for said construction, said arms having support means depending therefrom, said seat cushion having a frame, a cushioning seat portion arranged upon said frame and provided with recesses at the ends thereof, and seat frame portions exposed by said recesses under said arms, guide means for said arm support means affixed to said exposed seat frame portions, said seat frame exposed portions having passages therethrough, said arm support means being freely slidable in said said seat frame portions, said seat frame passages, said arms being recessed in said seat cushion over said seat frame exposed portions and being flush with said seat and back cushions when said cushions are aligned in bed position, said seat cushion and frame being advanced relative to said base frame in said bed position.

3. A sofa bed construction in which the structure may be arranged as a sofa or alternatively as a bed comprising a base frame, seat and back cushions coacting to-
together, means conjoining said cushions to said base frame and to each other, and receding side arms for said construction, said arms having an arm rest horizontal portion and support members depending from said horizontal portion, said seat cushion comprising a frame and a cushioning seat portion arranged upon said frame and provided with recesses at the ends thereof, and seat frame portions exposed by said recesses under said arms, guide means for said arm support members affixed to said exposed seat frame portions, said arm support members being freely slidable in said guide means and through said seat frame, said base frame having side members, and rests for said arm support members affixed to said side members disposed below said members when said seat cushion and frame is aligned directly above and upon said base frame and said arms are in arm rest position, said construction being arranged as a sofa, said arm support members being disposed beyond said rests when said seat and back cushions are disposed in flush aligned bed position, said seat cushion and frame being advanced with respect to said base frame in said bed position so that said base frame rests lie behind said arm support members.

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