United States Patent [19]

Garza

[11] **3,872,523**

[45] **Mar. 25, 1975**

[54] **SOFA BED**

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[21] Appl. No.: **357,226**

[52] **U.S. Cl.** ..... **5/43,** 5/12 R
[51] **Int. Cl.** **A47c 17/16**
[58] **Field of Search** ..... 5/12 R, 17, 18, 25, 37 R, 5/43, 46; 297/112, 378

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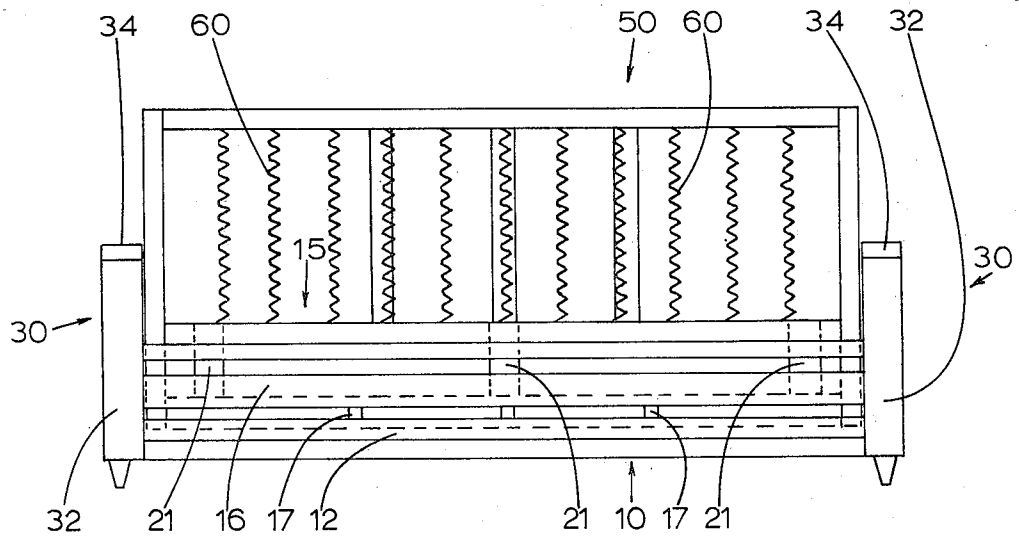
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Primary Examiner—Casmir A. Nunberg
Attorney, Agent, or Firm—Wellington M. Manning, Jr.

[57] **ABSTRACT**

A convertible sofa bed is disclosed and claimed herein where the rear side of the sofa back is provided with a cushioned surface and the back is pivotal forwardly to expose the rear cushioned side, thereby converting the device into a single bed. The sofa bed basically comprises three components, namely, a base, end sections and a back. The base is provided with two back supporting sections, one of which is at the rear and above a seat support section on the base while the other is at the rear and below the seat support section. The back is supported intermediate its length by the upper support section and at the bottom by the lower support section so as to provide complete support for the back in the upright position. Pivot means are provided along at least a portion of the length of the back so as to permit pivotal movement of the back around the upper support section. Preferably, the back is sized with relation to the base and end sections so as to substantially fill out the cross sectional area of the sofa in the closed or bed position. In other words, the height of the back is substantially equal to the width of the base while the length of the back is substantially equal to the length of the base and resides between the end sections.

17 Claims, 8 Drawing Figures



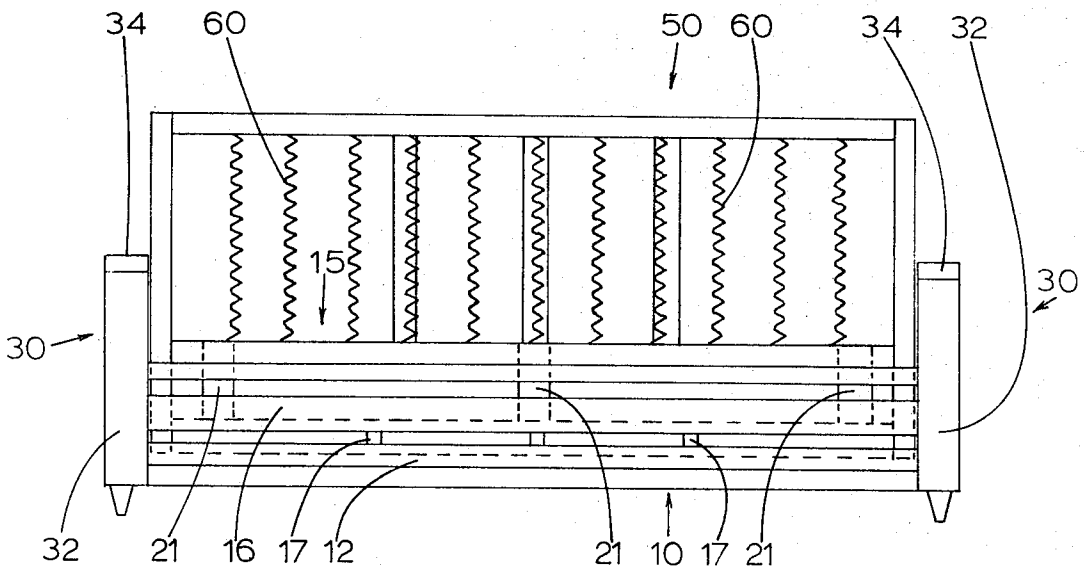

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FIG. 1

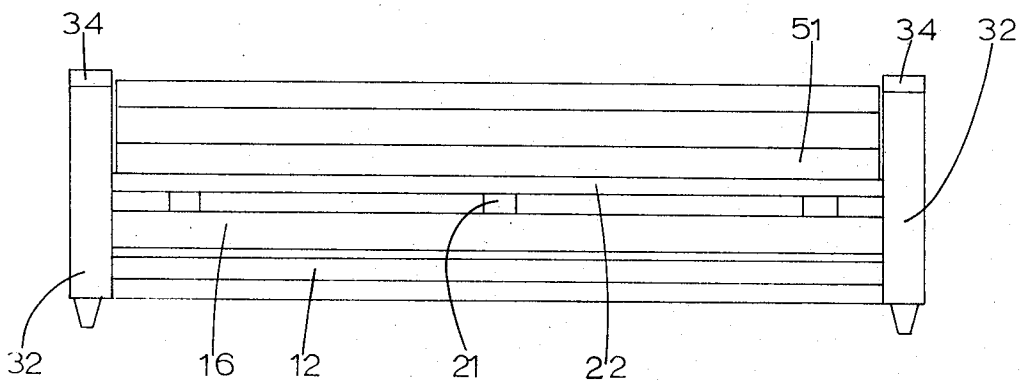

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FIG. 2

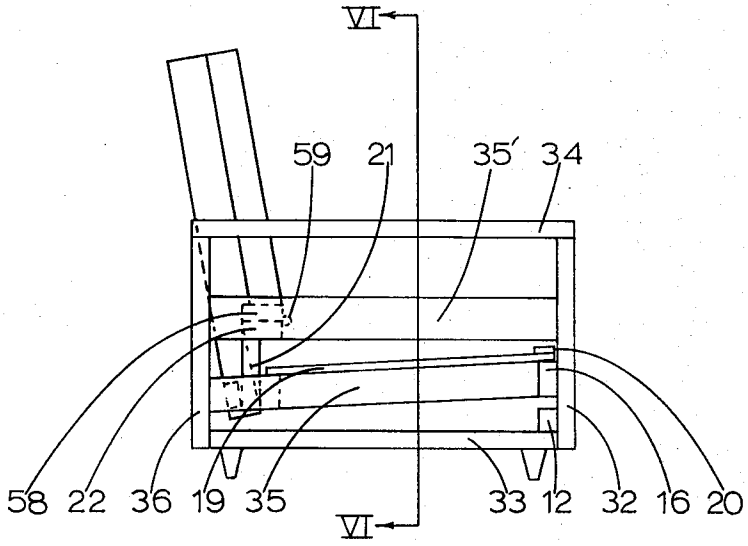

VI
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35'
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VI

FIG. 3

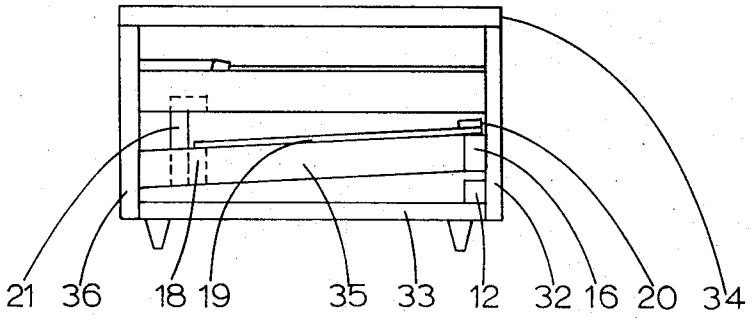

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FIG. 4

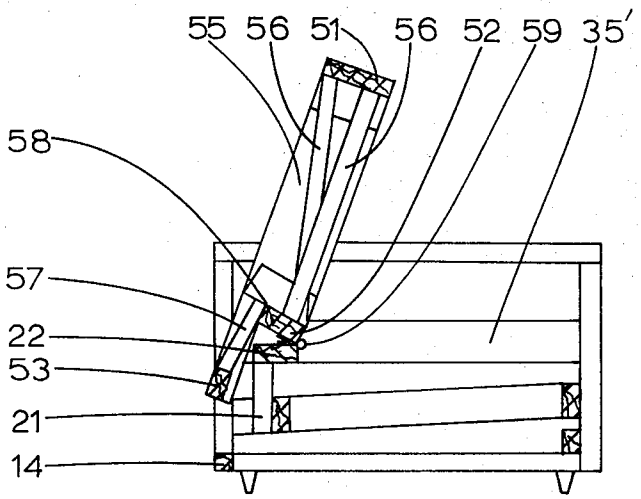

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FIG. 5

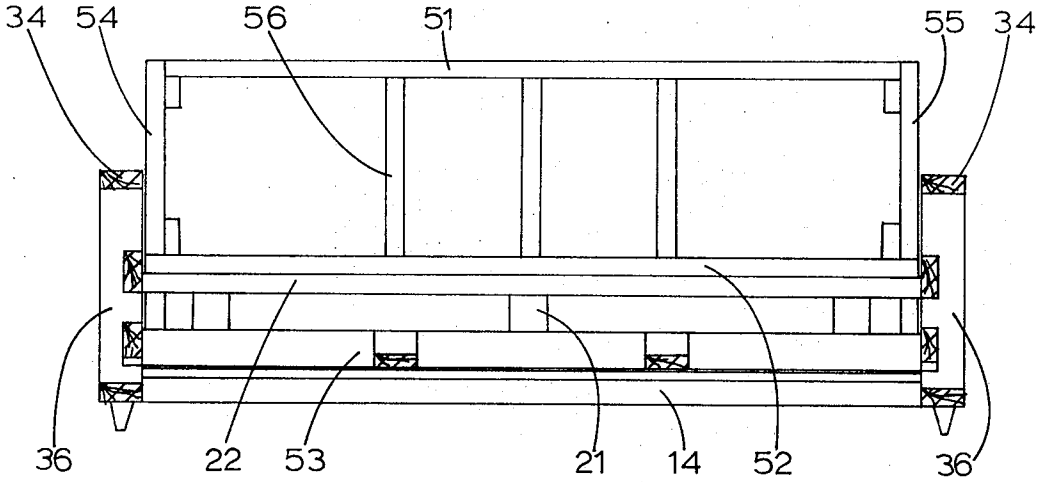

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FIG. 6

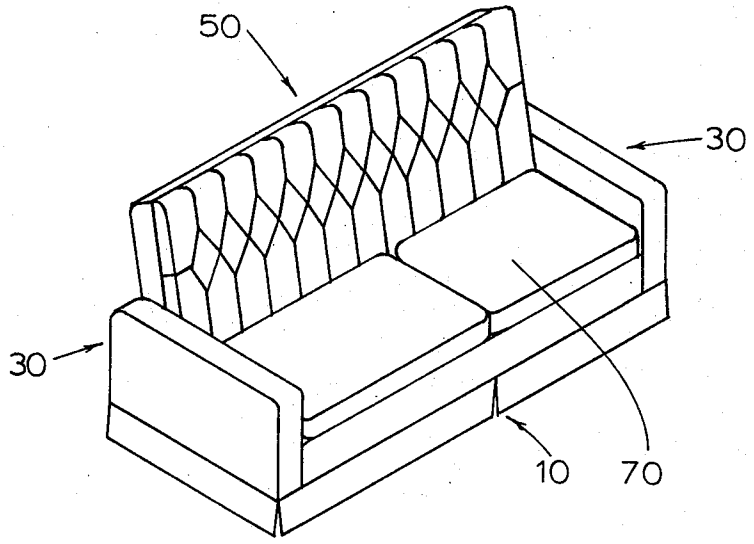


FIG. 7

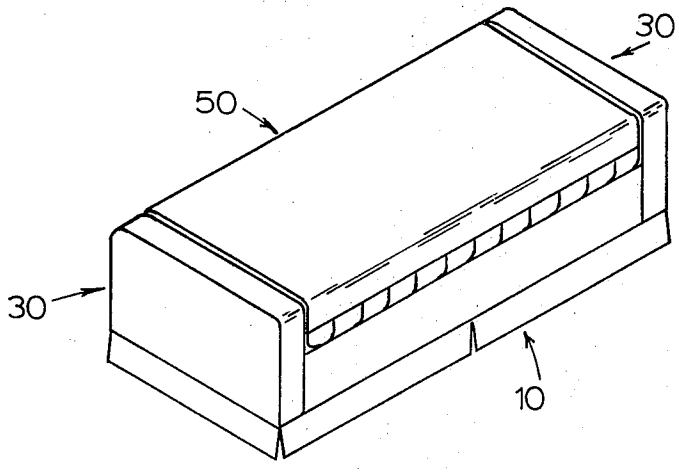


FIG. 8

SOFA BED

BACKGROUND OF THE INVENTION

The general concept of a sofa, chair or the like that is convertible to a bed is generally old in the art. Such devices have been available for a number of years and have been utilized in numerous and sundry situations. Basically the devices of the prior art have involved a base, and a back section that is pivotal by some means to the closed or bed position. Normally speaking, a considerable amount of hardware has been utilized in each of these prior art devices adjacent the ends of the back section so as to permit a controlled pivotal movement of the back section to the closed position; to lock the back in the upright position; to lock the back in the closed position; to control the radius of turning of the back to the closed position, and the like.

A further feature of the prior art should be considered. The majority of the sofa beds of the prior art have relied upon the strength of the hardware or hinges at the ends of the back to support the back on the frame. These hinge devices along with the prior art sofa beds in general, possess inherent disadvantages in initial cost, maintenance and general operability. For example, the complicated hinge systems or the like obviously add to the base cost of the item of furniture. At the same time, these pieces of hardware are subject to wear especially due to the fact that the weight of the back section is constantly applying force thereon. Hence, after a limited amount of use, it has generally become necessary to repair or replace the hardware on this type convertible sofa. Use of same in commercial establishments has been quite limited, due mainly to experience showing short useful life, continued maintenance to prevent deterioration of the article and the like. Once the prior art hardware received sufficient wear or is distorted due to excessive weight, use or the like, the operation to convert the sofa to a bed becomes quite difficult due to malfunction of the hinge mechanism. In fact, if sufficient distortion occurs, the device simply will not work, thus derogating from the intended use of the article.

The present invention has overcome the problems and disadvantages of the prior art devices. In this regard, the improved sofa bed of the present invention is best categorized by its simplicity and consequent economics coupled with unfailing operability without virtually any maintenance for an extended useful life. There is no complicated hinge mechanism. The back receives superior support in the upright and closed position, and the general framework of the article is sufficiently strong to insure against accidental damage. The present invention is thus an improvement over the prior art.

The prior art does not teach or suggest the sofa bed of the present invention, individually or in combination. Exemplary of the prior art are U.S. Pat. No. 112,031 to Hall; U.S. Pat. No. 1,006,785 to Pierce; U.S. Pat. No. 1,637,493 to Manott et al; U.S. Pat. No. 2,664,574 to Newborn; and U.S. Pat. No. 3,258,787 to Emmons et al.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide an improved sofa that is convertible to a bed.

Another object of the present invention is to provide an improved sofa bed that has a good aesthetic appearance, is economical and will undergo a long useful life.

Yet another object of the present invention is to provide an improved convertible sofa where the back is fully supported only by the base in the upright position with hinge means or the like being used substantially only to hold the back on the appropriate supports therefor and permit pivotal movement therearound.

Generally speaking, the present invention relates to a sofa bed comprising a base, said base having reinforcing members secured thereto, said base having resilient members across an upper side thereof, said base further having a first rear support member located behind said resilient members and upwardly therefrom and a second rear support member located behind said resilient members and downwardly therefrom; end sections secured to said base at opposite ends thereof, said end sections extending above said base and further being secured to said first and second rear support members; and a back pivotally secured to said first rear support member intermediate the length of said back, said back extending below said first rear support member and engaging said second rear support member in the upright position, said back being pivotal forward to expose a sleeping surface.

More specifically, the present invention is directed to an article of furniture that is very simple in design, and is functionally sound for an extended useful life. The base of the sofa of the present invention is preferably rectangular in shape and is reinforced according to conventional techniques so as to provide a rigid structure. Positioned above the base and secured thereto is a seat support section that extends rearwardly for a distance less than the width of the base. The seat support section is likewise rigidified and receives on an upper surface thereof a plurality of resilient members such as springs to provide a sitting surface. Adjacent the rear of the seat support section and positioned upwardly therefrom is a horizontal member extending longitudinally with respect to the seat support section. This member provides support for a back in the upright position across the width of the base and further serves as a pivot point for the back during pivotal movement in the forward direction to produce the bed.

The article of the present invention is likewise provided with end sections at opposite ends of the base, the end sections being secured to the base, the seat support section and the upper back support. Furthermore, a lower back support is provided at the rear of the base proper to engage a bottom portion of the back in the upright position. The upper and lower back supports thus afford support for the back without any further means being required except to hold the back in place. Pivotal means such as hinges or the like are connected to the back and to the upper support member. These hinges serve a dual purpose, in that (1) they hold the back in proper proximity to the support members in the upright position and (2) they enable pivotal movement of the back around the pivot point at a predetermined radius to provide the bed.

The back associated with the sofa of the present invention, as mentioned above, rests on upper and lower support members in the upright position and is held in the proper position with respect to the support members by simple hinge means or the like positioned along the length of the back. The back is fabricated to in-

clude a shoulder intermediate its length, the shoulder being engagable with the upper back support of the base so as to afford support to the back in the upright position. Furthermore, depending upon the angular relationship between the back and the shoulder, the back may assume a completely vertical position in the upright position or may be angularly presented with respect to the base. Preferably, an angular presentation is preferred so as to further afford comfort to one sitting on the sofa. Furthermore, the back is provided with resilient members on both sides thereof so as to provide proper support for sitting or reclining.

The above described framework for the sofa of the present invention is preferably constructed entirely of hardwood except for the hinge retainers connecting the back to the upper rear support and the springs or other type resilient members that are found on the seat support section and both sides of the back. Obviously, for proper use of the article, the springs are tied together and appropriate padding is placed thereon. The padding may be any conventional type padding and is thereafter covered with appropriate upholstry material.

A further added feature of the sofa of the present invention is the convertibility in place. The pivotal support section provided for the back is located approximately one-third of the height of the back from the bottom. As such, upon forward pivotal movement of the back to a bed arrangement, only a slight radius is experienced by the lower end of the back whereby it is unnecessary for the sofa to be positioned substantially from a wall or other barrier. Instead, cushions that are normally utilized in the seat portion of the device are simply removed and the back is pulled forward whereupon the underside of the back resides adjacent and is supported by the seat support section of the base. The back is then located between the end sections and approximately the same height thereof with the width of the bed being substantially the width of the base structure.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a front elevational view of a sofa according to the teachings of the present invention arranged for sitting.

FIG. **2** is a front elevational view of a sofa of the present invention arranged for reclining or sleeping.

FIG. **3** is an end view of a sofa of the present invention as shown in FIG. **1.**

FIG. **4** is an end view of a sofa of the present invention as shown in FIG. **2.**

FIG. **5** is a vertical cross section of a sofa according to the present invention with the back slightly pivoted in the forward direction.

FIG. **6** is a vertical cross section of a sofa of the present invention taken along lines VI—VI of FIG. **3.**

FIG. **7** is a perspective view of a finished sofa according to the present invention showing the back in the upright position.

FIG. **8** is a perspective view of a finished sofa according to the present invention showing the back in the down or reclined position.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Making reference to the Figures, preferred embodiments of the present invention will now be described in detail. In FIGS. **1–6,** the structural components of the sofa of the present invention are illustrated. The improved sofa bed of the present invention basically is made up of a base generally indicated as **10,** two end sections generally indicated as **30** that are a mirror image of each other and a back generally indicated as **50.** Each of the main components of the instant sofa may be a separate unit with the individual units being assembled to provide the base sofa structure. Preferably, however, the base and end sections are interrelated whereby the strength and rigidity of the sofa are fostered. As such, the integrated structure will be described hereinafter.

Base **10** generally provides the overall support for the sofa of the present invention and as mentioned above is preferably integral with end sections **20.** Base **10** comprises a first horizontal member **12** that extends across the lower front of the sofa and is secured at opposite ends thereof to front vertical posts **32** of end sections **30** and a lower horizontal end brace **33** of end section **30.** A further lower horizontal member **14** of base **10** is presented at the rear of the article (See FIG. **5**) and is secured between end sections **30** at rear vertical posts **36** and lower horizontal end brace **33.** A top horizontal end brace **34** of end sections **30** is then secured to vertical posts **32** and **33** to unify end sections **30,** to rigidify the overall structure and provide arms for the sofa. Insofar as base **10** is concerned, other reinforcing structures may be provided at the junctions of the members or across the base as desired to better strengthen the overall frame structure.

A seat support section generally indicated as **15** resides above a portion of base **10** (See FIG. **3**). Seat support section **15** is made up of a front horizontal member **16** and is positioned above member **12** and secured thereto by a plurality of vertical members **17.** Member **16** is further secured at opposite ends thereof to vertical posts **32** of end sections **30.** A rear horizontal member **18** of seat support section **15** is positioned intermediate the width of base **10,** extends longitudinally thereacross, and is secured at opposite ends to angularly presented braces **35** of end sections **20.** Flexible means such as springs **19** or the like span seat support section **15** and are secured by suitable means to members **16** and **18.** Flexible means **19** provide a resilient surface on which cushions may be received for sitting. A further member **20** is secured atop resilient members **19** across the length of front horizontal member **16** of the seat support section.

A plurality of vertical members **21** are secured to rear horizontal member **18** of seat support section **15** and extend upwardly therefrom. An upper back support rail member **22** is secured to the vertical members **21** across the length thereof and to horizontal braces **35'** of end sections **30** at the ends thereof. Vertical members **21** and horizontal member **22** thus provide rigid support for back **50** completely across the length of the sofa, though if desired, back support rail **22** may be a plurality of spread apart rails. Support of the lower area of the back **50** is provided by rear horizontal member **14** and/or member **33** of end section **30** of the base **10.**

The framework of back **50** generally includes horizontal members **51, 52** and **53,** ends **54** and **55** and a plurality of intermediate struts **56** and **57.** Horizontal members **51** and **53** along with ends **54** and **55** define the external dimensions of back **50.** Ends **54** and **55** may be notched at **58** to define a shoulder or as shown

in the drawings, a shorter member 54' and 55' may be positioned against ends 54 and 55 respectively to define shoulders 58 at the ends thereof. Shoulder 58 of back 50 engages upper back support rail 22 while horizontal member 53 engages horizontal member 14 of base 10 to support the lower end of back 50. As such, back 50 is completely supported in the upright position without the need for any further support means. Practically speaking, some means are required to hold back 50 in the proper position and in effect a minor vector force is applied thereto when back 50 is angularly presented. Hinge or pivot means 59 are thus secured to back 50 and support rail 22 to hold back 50 and secondly to permit back 50 to pivot forwardly about support rail 22.

The space defined by the framework of back 50 above shoulder 58 acts as a back rest in the sofa arrangement. Flexible members 60 are thus placed across the open spaces and appropriately secured at opposite sides thereof to horizontal members 51 and 52. Likewise, the space defined on the rear side of back 50 is spanned with flexible members 60 to provide a suitable bed surface when back 50 is pivoted forward.

As may be seen in the FIGURES, especially FIGS. 1, 4 and 5, certain of the intermediate struts 56 extend straight across the frame span on the back rest or front side of the back while others are angled from horizontal member 51 inwardly to the opposite side of horizontal member 52. Additionally, the intermediate struts 57 extending from horizontal member 53 inwardly to member 52 are angled. All of the angled struts 56 and 57 are angled inwardly with respect to the bed surface to permit more substantial flexing of springs or the like 60 without making contact with struts 56 and 57 when a heavy weight is applied thereto. A V shape is thus defined by the angled struts to permit better comfort without any substantial sacrifice in strength or rigidity.

Back 50 is thus substantially completely supported by the base and other components of the instant sofa and only minor, if any, stress is applied on hinge means 59. There is thus no need for any further hardware. The drawings illustrate back 50 angled rearwardly with respect to seat support section 50. Such an angular relationship is preferred to afford the greatest comfort and support to one sitting on the sofa. If desired, however, back 50 may be completely perpendicular with respect to seat support section 15 and base 10.

While shoulder 58 may be positioned at any convenient location along back 50, it is preferably located in the lower third of the height of back 50. The low pivot position produces a small radius of movement of the lower end of back 50 during pivoting whereby the sofa may be positioned close to a wall or barrier and permit pivoting of back 50 without any contact between back 50 and the wall. In fact, the instant sofa in its preferred design is positioned away from a wall about the thickness of cushions used on the sofa seat. The cushions may then be stored in the space between the sofa and the wall while the bed arrangement is desired.

The dimensions of back 50 may be as desired. It is preferable, however, that back 50 in the bed arrangement fills in the space between end sections 30, to produce a flat surface, and approximates the width of base 10. Back 50 is thus preferably substantially equal in length to the distance between end sections 30 and substantially equal in overall height to the width of base 10.

The frame of the instant convertible sofa must, of course, be padded and upholstred to provide the desired ultimate product. The resilient members on the sofa seat and both sides of the sofa back as shown in the drawings, comprise elongated, wavy springs. It should be pointed out, however, that any type resilient member in any suitable configuration may be utilized so long as it may be suitably affixed to the various structural members of the instant sofa and provide the needed support to one using same. Furthermore, though not shown in the drawings, it may be desirable to unite the flexible members with twine or the like for greater support; to use webbing criss crossing the frame instead of a spring; or such other conventional available means for upholstrying furniture.

The finished product is illustrated in FIGS. 7 and 8 showing an upholstred sofa in FIG. 7 where the base is obscured by the upholstry fabric. End sections 30, back 50 and base 10 are all suitably covered with appropriate padding and an upholstry material. Prior to the installation of the exterior upholstry material over the sofa, however, the padding such as foam sheets or the like is secured around the various components thereof. Furthermore, pillows 70 are shown received on the seat support section. To pivot back 50 forward and produce a bed, cushions 70 are removed and the back is pulled forward. In the down or bed position, back 50 is supported by the overall base including seat support section 15. As shown in FIG. 8, the finished dimensions of back 50 are preferably such that the height of back 50 is substantially equivalent to the width of the sofa per se, while the length is such that there is a continuous surface between end sections 30. Additional length is thus provided for sleeping.

Since substantially all of the back support of the instant sofa is provided by the base 10, base 10 is preferably integral with end sections 30, it is encumbent to provide extreme rigidity to base 10 and end sections 30. All joints and connections must thus be both strong and rigid. Any suitable means such as bolts, nails, glue and the like may be employed so long as the requisite strength and rigidity are provided. Furthermore, if desirable, suitable legs 80 may be secured to the underside of the framework to raise the sofa to a desirable height.

Having described the present invention in detail, it is obvious that one skilled in the art will be able to make variations and modifications thereto without departing from the scope of the invention. Accordingly, the scope of the present invention should be determined only by the claims appended hereto.

What is claimed is:

1. A sofa bed comprising:
   a. a base;
   b. a seat support section located atop said base, said seat support section having a width less than the width of said base;
   c. a back support member located to the rear of and above said seat support section, said back support member being elongated in the direction of length of the sofa bed; and
   d. a back received atop and pivotally secured to said elongated back support member intermediate the height of said back, said back extending rearwardly above said member in the upright position and engaging a portion of said sofa bed at an opposite end

thereof, said back being pivotal forward to provide a bed.

2. A sofa bed as defined in claim **1** wherein said base has end sections integral therewith.

3. A sofa bed as defined in claim **1** wherein said seat support surface has resilient members secured thereto and spanning the top thereof.

4. A sofa bed as defined in claim **1** wherein said back is angularly disposed with respect to said seat support section in the upright position.

5. A sofa bed as defined in claim **1** wherein said back has a shoulder intermediate the height thereof, said shoulder engaging said back support member across the length thereof and being connected to said support member by hinge means to provide the pivotal connection.

6. A sofa bed as defined in claim **5** wherein said hinge means are disposed lengthwise along said shoulder and said support member.

7. A sofa bed as defined in claim **1** wherein said back has resilient members secured to front and rear sides thereof, said resilient members on said front side extending downwardly to said shoulder and said resilient member on said rear side extending completely across said back.

8. A sofa bed as defined in claim **7** wherein said resilient members are springs.

9. A sofa bed as defined in claim **1** wherein the height of said back is substantially equal to the width of said base.

10. A sofa bed as defined in claim **1** wherein said back has internal structural members incorporated therein, certain of said members being angled away from the rear surface of said back.

11. A sofa bed comprising:

a. a base;

b. a seat support section positioned above said base and secured thereto, said seat support section having springs secured thereto and extending across an upper surface thereof;

c. end sections secured to the ends of said base and said seat support section, said end sections extending above said seat support section to provide arms for said sofa;

d. a back support member secured to said seat support section and positioned upwardly therefrom, said back support member extending across at least a major portion of the length of said seat support section; and

e. a back received on said back support member, said back having a shoulder intermediate its height, said shoulder engaging said support member and being pivotally connected thereto, said back having resilient members secured across a front side thereof down to said shoulder and completely across a rear side thereof.

12. A sofa bed as defined in claim **11** wherein said back is angularly presented in the upright position with respect to said seat support section.

13. A sofa bed as defined in claim **11** wherein said pivotal connection is provided by hinge means secured to said shoulder and said back support member.

14. A sofa bed as defined in claim **11** wherein said components are covered with padding and an upholstry material is secured over said padding.

15. A sofa bed as defined in claim **14** wherein said padding is sheet foam.

16. A sofa bed as defined in claim **11** wherein said back has a height substantially equal to the width of said base.

17. A sofa bed as defined in claim **11** wherein said back has internal structural members, said structural members being disposed away from the rear surface of said back.

* * * * *