Oct. 22, 1963 J. J. BARABAS 3,107,366

SOFA-BED

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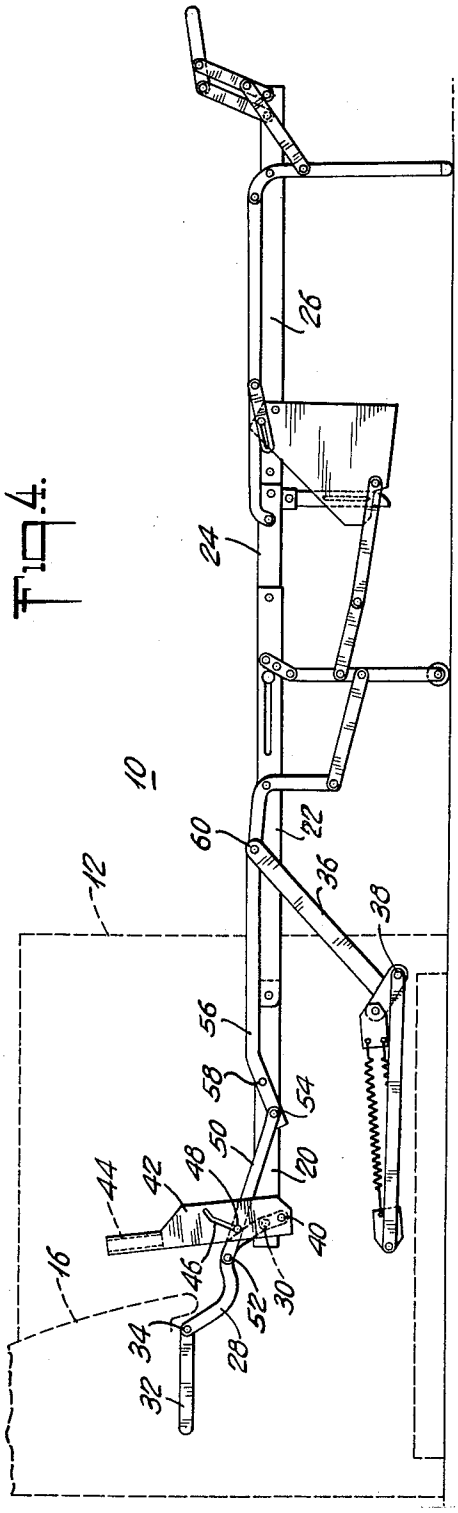


FIG. 4.

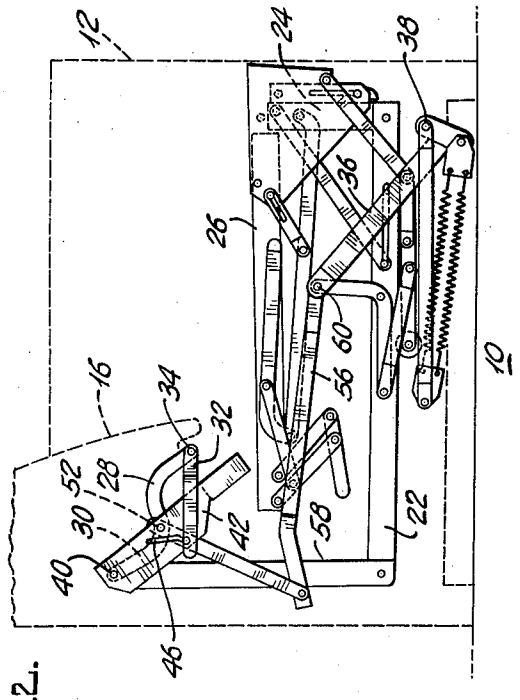


FIG. 2.

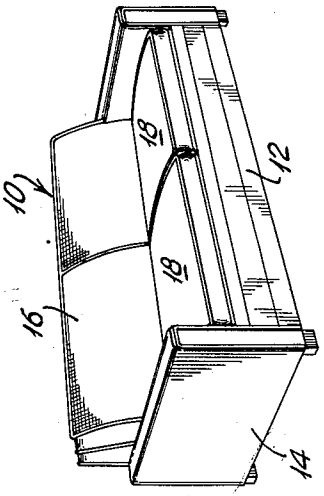


FIG. 1.

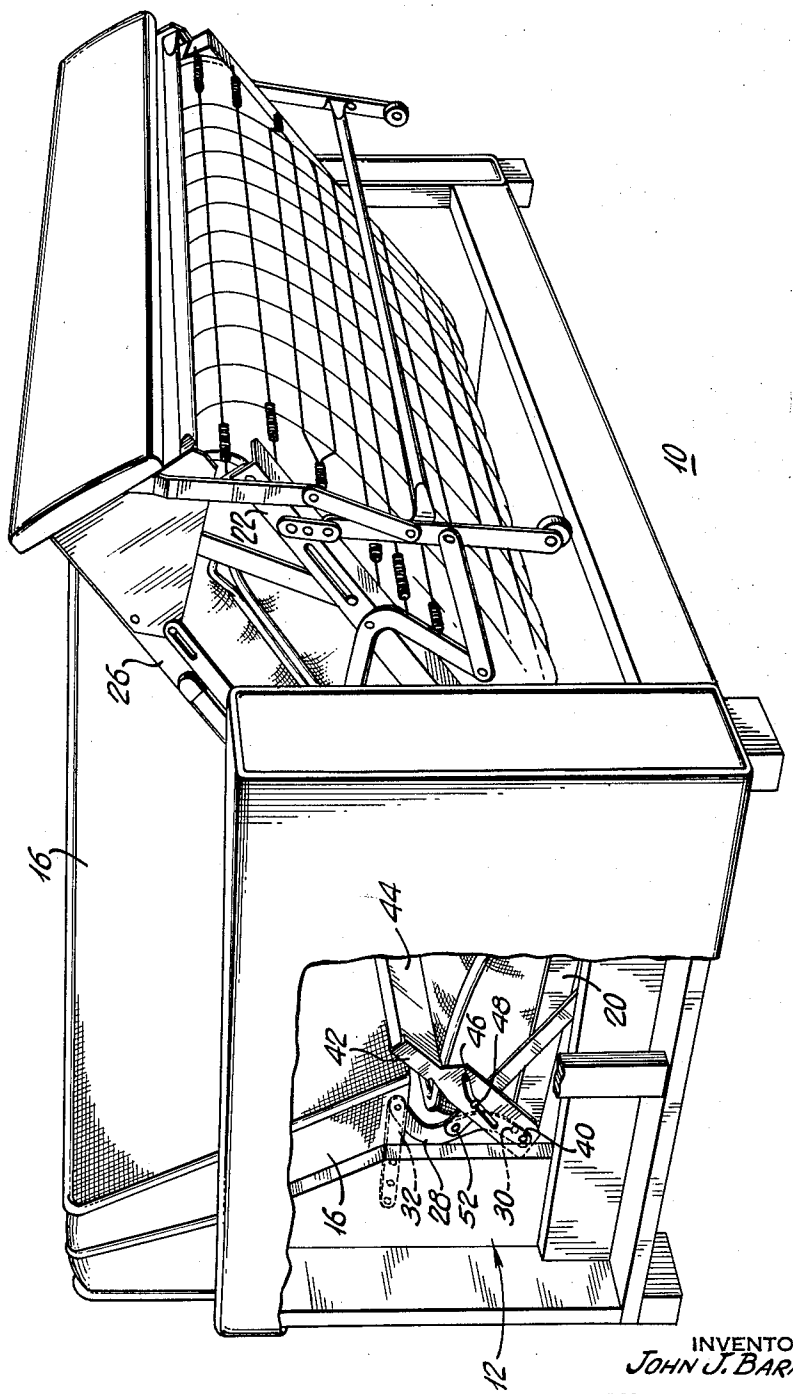
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Fig. 5.



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SOFA-BED

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5 Claims. (Cl. 5—53)

This invention relates to a sofa-bed and more particularly to an improved headboard mechanism therefor.

An object of this invention is to provide a headboard arrangement which is easily adapted to existing convertible bed mechanisms and which requires minimal working space so that it can be used with low-to-the-floor model sofa-beds.

Another object is to provide a headboard arrangement which is simple and inexpensive and which operates reliably.

These and other objects will in part be understood from and in part pointed out in the following description.

The present invention is especially applicable to a four-section folding bed mechanism of the type described in detail in U.S. Patent No. 3,041,634. In such a mechanism there are four sections serially pivoted together. They are suspended in a stationary frame, in the form of a sofa for example, and are adapted to unfold from the frame into horizontal bed position. When folded, the inner section of the mechanism is positioned vertically within a space behind a fixed backrest of the sofa frame. The bottom edge of this inner section is pivoted to an intermediate section which extends horizontally forward just above the floor within the frame to the front edge thereof. Here the intermediate section is pivoted to a connecting section of the mechanism which extends vertically upward to the fourth or end section. The latter extends back parallel above the intermediate section almost to the inner section, the four section thus lying in a "figure four" configuration.

In this kind of a bed mechanism a person sleeps with his head supported by the inner section near the fixed backrest of the frame, and with his feet on the end section. Now, in order to protect the upholstery of the backrest, and also to provide a support for pillows many people want this mechanism fitted with a headboard. Other people however are satisfied to sleep on such a bed without a headboard and are unwilling to pay extra for it. Thus, it is desirable to have a headboard arrangement which can easily and inexpensively be fitted to a standard bed mechanism in accordance with the customer's wishes.

Recently the trend in sofa design has been to lower and more streamlined styles. This because of reduced height and thinner silhouette makes it increasingly difficult to fit a bed mechanism within these new sofa frames. Fortunately the bed mechanism described in the aforesaid patent application is admirably suited for use in a frame with a minimum amount of clearance. However, previous headboard linkages generally require more space than is available in these new frames or else these headboards are unreliable, or complicated and expensive. The present invention provides a very simple headboard arrangement which operates effectively in the minimum amount of space available in a low-to-the-floor style sofa frame. This headboard and its associated linkage are easily fitted onto a standard bed-mechanism.

In accordance with the present invention in one specific embodiment thereof, a headboard is attached to the bed mechanism by means of two arm-like brackets, one on each side of the mechanism, which are indirectly connected to the inner section through a unique swinging pivot and a pin and slot linkage which cause the headboard to swing and unfold in a tight arc very close to the underside of the fixed backrest. The trajectory thus obtained by this arrangement permits a standard-height headboard to fold and unfold without rubbing against the bed mechanism or frame. When the headboard is unfolded and the mechanism is in bed position, its full length is usable, the headboard being positioned at the rear edge of the inner bed section and not blocking part of the length of the mattress.

A better understanding of the invention together with a fuller appreciation of its many advantages will best be gained from the following description given in connection with the accompanying drawings wherein:

FIGURE 1 is a perspective view of a sofa-bed in folded or sofa position;

FIGURE 2 is an enlarged side view of the bed mechanism in folded condition;

FIGURE 3 is a perspective view of the sofa-bed, with parts broken away, showing the bed mechanism partly unfolded; and

FIGURE 4 is a side view of the mechanism unfolded.

The sofa-bed 10 seen in FIGURE 1 comprises a stationary frame 12 having side arms 14 and an upholstered backrest 16, the lower edge of which, for example, is only about 14 inches above the floor. The seat of the sofa is covered with two removable seat cushions 18 which rest upon and conceal a bed mechanism folded within the frame. As seen in FIGURE 2, this mechanism includes an inner section 20, an intermediate section 22, a connecting section 24 and an end section 26, which in the position shown provides a platform or support for the seat cushions.

The upper or inner end (see also FIGURES 3 and 4) of inner section 20 is suspended from frame 12 by means of an S shaped support link 28 pivoted to the inner section at 30 and to a bracket 32 at point 34. Bracket 32 is screwed to the side of the frame behind the backrest and is thus stationary and normally concealed. Support link 28 is assisted in suspending the bed mechanism by a forward swing link 36 whose lower end is pivoted at 38 to a frame-mounted bracket.

S-link 28 extends for a short distance beyond its pivot point 30 to another pivot point 40 where it is attached to an arm-like bracket 42. As seen best in FIGURE 3, the upper end of this bracket embraces and supports one end of a headboard 44, the other end of which is supported in a second bracket (not shown) the mirror image of the first. Near its center, bracket 42 has through itself an elongated slot 46 which is engaged by a pin 48. The latter is carried by a link 50 which is pivoted at 52 to S-link 28 and at 54 to the rear end of a long link 56. This long link is pivoted to inner section 20 at point 58 and its forward end is pivoted at 60 to the upper end of support link 36.

As the mechanism is unfolded from the position of FIGURE 2 to that of FIGURE 4, headboard bracket 42 unfolds at first slowly so that in passing through the position of FIGURE 3, the top edge of the headboard clears the bottom edge of backrest 16. Thereafter this bracket moves quickly to upright relation as shown in FIGURE 4. On the other hand when the bed is folded as seen in FIGURE 2, the lowest part of the headboard is above the top surface of end section 26 and slightly below and behind the bottom front edge of the backrest. Also, in this position the headboard allows sufficient space between itself and inner section 20 for the mattress (seen only in FIGURE 3). For the bed mechanism illustrated, links 28 and 50 are present whether there is a headboard or not. Thus, a headboard can be added to the mechanism merely by providing brackets 42, pins 48, and pivots 40.

The above description of the invention is intended in illustration and not in limitation thereof. Various changes in the embodiment described may occur to those skilled in the art and these can be made without de-

parting from the spirit or scope of the invention as set forth.

I claim:

1. An improved headboard arrangement for a sofa-bed, said arrangement comprising a plurality of bed sections serially pivoted together and including an inner section, a rear support link having one end adapted to be pivoted to a stationary frame and being pivoted inward of its other end at point number one to said inner section, a long link pivoted to said inner section and connected to said sections forward of said inner section, a short link pivoted between said rear support link and said long link, an arm-like headboard bracket pivoted at its lower end to said other end of said rear support link, at point number two, said point two lying generally below said point one when said bed is unfolded and rotating backward relative to point one when said bed is folded so that the swing of said bracket is enhanced, the upper end of said bracket being adapted to carry one end of a headboard, and cam means inter-connecting said short link and said bracket.

2. The structure in claim 1 wherein said cam means comprises a pin carried by said short link engaging a slot in said bracket.

3. A sofa-bed and headboard comprising a stationary frame having a backrest, a bed mechanism including four bed sections serially pivoted together and suspended in said frame for unfolding into horizontal bed position and for folding into a figure-four sofa position, a rear support link pivoted at one end to said frame and adjacent its other end to the rear one of said bed sections, a short link pivoted to said rear support link and connected forward thereof to said mechanism, a movable headboard bracket pivoted at its lower end to said rear support link, a headboard connected to said bracket at the upper end thereof, and means carried by said short link for moving said bracket relative to said rear section in a tight arc beneath the lower edge of said backrest when said mechanism is folded and unfolded whereby said headboard operates with a minimum of clearance space and the lower edge of said backrest can be low to the floor, said means carried by said short link comprising a pin which captively engages a curved slot in said bracket.

4. The structure as in claim 3 wherein said rear support link is S-shaped and is pivoted to said frame above and behind the lower edge of said backrest, said support link inward of its other end being pivoted to said rear section and being pivoted at its other end to said bracket.

5. An improved headboard arrangement for a sofa-bed, said arrangement comprising a plurality of bed sections serially pivoted together and including an inner section, a rear support link having one end adapted to be pivoted to a stationary frame and being pivoted inward of its other end to said inner section, a long link pivoted to said inner section and connected to said sections forward of said inner section, a short link pivoted between said rear support link and said long link, an arm-like headboard bracket pivoted at a first point at its lower end to said other end of said rear support link and pivoted at a second point near the center of said bracket to said short link, the upper end of said bracket being adapted to carry one end of a headboard, the pivot at one of said points comprising a pin and slot connection, said bracket being approximately at right angles to said inner section when said bed is unfolded, and approximately at 45° downward and forward relative to said inner section when said bed is folded.

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