March 11, 1969 M. P. SPITZ ET AL 3,431,567

MEANS FOR ANCHORING FLEXIBLE FABRICS IN SOFA-BEDS

Filed May 15, 1967

FIG. 1.

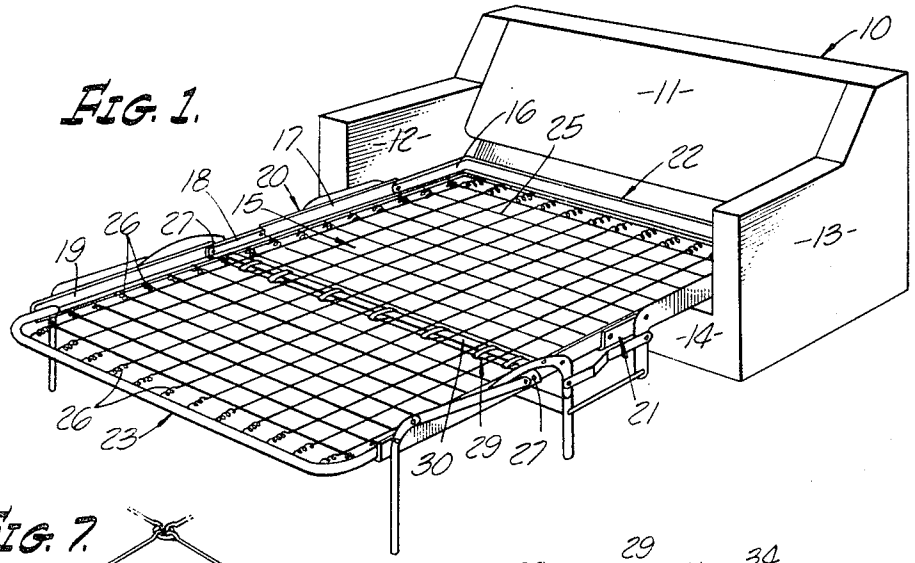
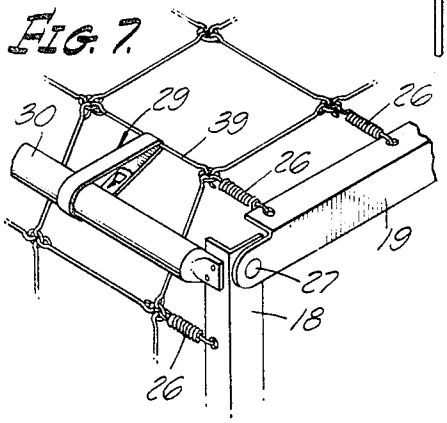


FIG. 7.



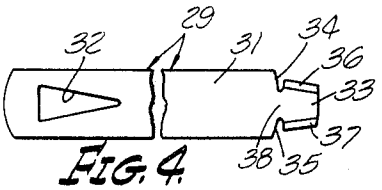


FIG. 4.

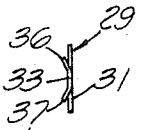


FIG. 5.

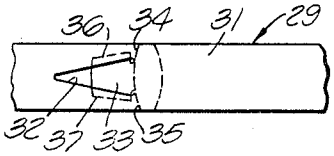


FIG. 6.

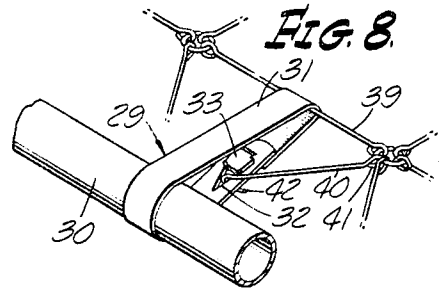


FIG. 8.

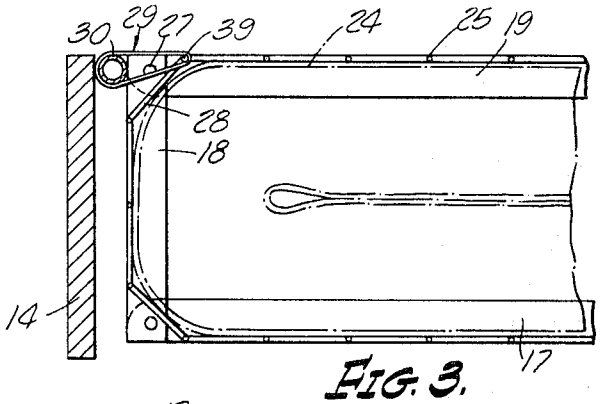


FIG. 3.

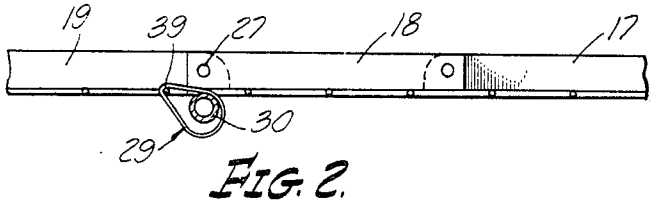


FIG. 2.

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MEANS FOR ANCHORING FLEXIBLE FABRICS IN SOFA-BEDS

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Int. Cl. A47c 17/00, 17/04

ABSTRACT OF THE DISCLOSURE

Means for anchoring by means of linking members, the forward end of the flexible fabric of a seat forming section of a foldable bed-frame of a sofa-bed, when the seat forming section is in a seat forming position, the linking member comprising a flexible metal strap which can be secured at its ends into a loop with one end of the loop extending around a transverse frame member of an adjacent connected frame section at the front of the seat forming section, and with the other end of the loop extending around a part of the adjacent flexible fabric. The strap ends are respectively formed with a triangular slot at one end, and a T-shaped tongue portion at the other end, which can be interlockingly engaged when the ends are brought into juxtaposition.

BACKGROUND OF THE INVENTION

The present invention relates generally to sectionalized foldable bed-frame structures and means for anchoring and tensioning the flexible fabric which provides the support for the bed mattress.

In sectionalized bed-frames as utilized for sofa-beds, davenports, and the like, in which the bed-frame is arranged for selective movements to an extended bed forming position and a folded seat forming position, the folded supporting fabric at the front of the folded seat forming section has its normal tension released and tends to sag to such an extent that the seat cushions are improperly supported and the seat rendered generally undesirably uncomfortable.

The problem of providing an adequate support for the seat cushions presents an extremely acute factor in the construction of bed-frame structures which are to be utilized under conditions where the frame structure provides both a bed and a seat function. In the Melvin P. Spitz Patent No. 3,245,091, a structure is disclosed wherein the foot section, which forms the seat section when the bed-frame is folded, is provided with a canvas fabric, while the other sections are provided with conventional wire link fabric. The two fabric sections of different materials are connected in end-to-end relation so as to be tensioned as a unit when the sections are extended to form a bed. In order, however, to independently tension the canvas section, when the sections are folded to provide a seat, the canvas section is provided with an auxiliary flap portion which is brought into play and serves to connect the front margin of the canvas section to a transversely extending frame member carried by the adjacent frame section at the front of the seat section.

In the present invention, it is an important primary concept to provide an arrangement which is greatly simplified in that it is only necessary to utilize one type of flexible fabric, and which is preferably of the link type. Also, instead of using a canvas flap as disclosed in the above mentioned patent, the adjacent link fabric is in the present embodiment connected to the transverse frame member at spaced intervals by linking members in the form of strap connectors of unique construction such

that they may be quickly and easily connected into operative positions without the utilization of tools.

SUMMARY OF THE INVENTION

The present invention relates generally to improvements in sectionalized bed-frame structures of the type utilized in sofa-beds, davenports and the like, and which may be folded to provide an extended bed or a sofa seat, and is more particularly concerned with improved means for anchoring and tensioning the conventionally provided flexible fabric of the structure, particularly in the seat forming section, when the bed-frame is folded to form a seat.

With the foregoing in mind, it is one object of the herein described invention to provide a foldable bed-frame of the type, which can be extended to provide the bed structure and folded to form a sofa-seat, and wherein a link type flexible fabric may be utilized for all the sections and at the front of the seat section connected by spaced auxiliary linking members which will act to independently stress the fabric of the seat section, but when the sections are extended will become ineffective.

Another object of the present invention is to provide as an article of manufacture, a uniquely constructed connector in the form of a strap member of flexible material, permitting it to be formed into a loop, the ends of the strap member having coengageable interlocking ends for connecting the strap into the loop, such ends being engageable and interlocked without the use of tools.

Further objects and advantages of the invention will be brought out in the following part of the specification, wherein detailed description is for the purpose of fully disclosing the invention without placing limitations thereon.

BRIEF DESCRIPTION OF THE DRAWINGS

Referring to the accompanying drawings, which are for illustrative purposes only:

FIG. 1 is a perspective view showing a bed-frame embodying the features of the disclosed invention, the bed-frame being shown as embodied in a sofa-bed or davenport, and the bed-frame being in extended bed forming position;

FIG. 2 is a fragmentary view of the bed-frame showing the relationship of certain of the sections thereof in the extended position;

FIG. 3 is an enlarged fragmentary sectional view, illustrating the bed-frame sections in folded position to form a seat within the sofa-bed or davenport;

FIG. 4 is a plan fragmentary view showing the details of construction of one of the linking members prior to its being deformed into a position of use;

FIG. 5 is a view showing the end construction of the T-shaped tongue connection end of the linking member;

FIG. 6 is a fragmentary view showing the ends of the linking member in juxtaposition coengaged interlocked relationship, as formed into a loop;

FIG. 7 is a fragmentary perspective view illustrating the manner in which the linking members are connected, and the position of these members when the bed-frame sections are in seat forming relation; and

FIG. 8 is an enlarged similar view illustrating the use of an anchor link member for retaining the linking member in its operative position.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring more specifically to the drawings, for illustrative puropses, the present invention is shown as being incorporated in a sofa or davenport frame structure as generally indicated by the numeral **10**. This frame structure is conventional and provides a box-like configuration

fabricated to have a sofa back **11**, and the usual arms **12** and **13**, these arms being connected at the front of the frame structure by a front panel or a board **14**. Frame structures of the above type are well known, and as supplied by the furniture manufacturer provide a pleasing upholstered unit in which the back, arms and front board cooperate to form a hollow box base for receiving a foldable bed-frame unit, as generally indicated by the numeral **15**.

The bed-frame unit is adapted to be assembled in the sofa or davenport frame structure to form the completed unit. As best shown in FIG. 1, the bed-frame unit includes a plurality of pivotally interconnected transversely extending frame sections arranged in end-to-end relation. These connected frame sections are shown as comprising a head section **16**, a body section **17**, and intermediate section **18** and a foot section **19**. These sections, as thus arranged, form a foldable bed-frame structure which may be extended, as shown in FIG. 1, to provide a substantially rectangular frame structure having articulated side rails as generally indicated by the numerals **20** and **21**, respectively, which are interconnected by a transversely extending head end member **22** and a foot end member **23**.

For supporting a bed mattress **24**, as shown in phantom lines in FIG. 3, there is provided a flexible fabric, which in this case comprises an interconnected link fabric means **25** which is stretched within the bed-frame unit and connected with the respective side rails **20** and **21**, head end member **22** and foot end member **23** by means of coiled springs **26**. These springs in the extended position of the bed-frame, as shown in FIG. 1, operate to tension the fabric in both a transverse and longitudinal direction.

It will be observed that the bed-frame structure in its extended position, as shown in FIG. 1, is positioned above the front board **14** and extends forwardly thereof. On the other hand, when the bed-frame structure is moved to a folded position, as best shown in FIG. 3, it will be disposed rearwardly of the front board **14**, and in this position, the foot section **19** will be disposed uppermost, and that the flexible fabric in this section will be in a position to provide a sofa seat. At the same time, the flexible fabric in the intermediate section **18** and body section **17** will extend around the folded mattress so as to form a retaining medium therefor. It will also be evident that as a result of the angular change in the relative positions of the intermediate section and foot section with respect to their pivotal connection **27**, the adjacent flexible fabric in the portion **28** along the forward edge of the seat forming section will have its tension released, and in the absence of some additional supporting means will tend to sag.

In order to provide a support which will prevent this sagging tendency and also independently tension the flexible fabric portion in the seat forming section, a plurality of linking members **29** are provided for interconnecting at spaced intervals the flexible link fabric with a bar **30** extending transversely of the bed-frame structure and rigidly connected by suitable means at its ends to the respective intermediate sections of the side rails adjacent the pivots **27—27**. As thus arranged, it will be observed in FIG. 3 that the upper side of the bar **30** will lie substantially in the plane of the link fabric of the seat section, when the bed-frame is in folded position. Moreover, the bar **30** will be closely disposed at this time adjacent the upper edge of the front panel board **14**, and that the linking members **29** tend to bridge the usual gap which would exist at the forward end of the seat forming section.

The linking members will now be described. Each of the linking members is formed from an elongate strap of suitable material which in the present instance comprises a high tensile steel. As best shown in FIGS. 4, 5 and 6, the strap is initially formed with a body portion **31** which terminates at its opposite ends in end portions that may be interlockingly engaged when the ends of the strap are brought into juxtaposition. For such interlocking engagement, one end of the strap is provided with a triangular shaped slot **32** which is positioned symmetrically on tht strap axis with the pointed end of the slot being directed inwardly from the strap end. The opposite end of the strap is fabricated to provide a T-shaped tongue extension **33**. This tongue extension is of less width than the width of the strap and is slightly tapered outwardly. More specifically, the tongue extension extends from inwardly end disposed V-notches **34** and **35** respectively in the opposite side edge margin of the strap. The tapered tongue extension has its side edge margins **36** and **37** angularly deflected as best shown in FIG. 5. The notches **34** and **35** have their innermost ends in spaced relation to provide a neck portion **38** which is of a proper width to be received transversely within the wider end portion of the slot **32**, when the opposite ends of the strap are interconnected.

As shown in FIG. 6, the tongue extension **33** is insertable into the slot **32**. Since the extension **33** is of slightly greater width than the maximum width of the slot **32**, the insertion of the tongue extension may be readily accomplished by slightly twisting the tongue, whereupon it may be easily inserted into the slot **32**. The connected ends may then be tensioned to pull the tongue extension towards the end of he slot, the lateral edges of the slot extending into the V-notches **34** and **35** so as to interlockingly connect these ends of the strap. Means are thus provided for quickly connecting the strap ends into interlocked engagement which does not necessitate the use of any tools whatsoever.

In order to utilize the linking members for the interconnection of the flexible fabric and the bar **30**, as shown in FIG. 7, it is only necessary for the workman to loop the open strap around the bar **30** and an adjacent transversely extending link member, as indicated by the numeral **39**, of the flexible link fabric means **25**. The opposite ends of the strap are then brought into juxtaposition and the tongue extension **33** interlockingly engaged ino the slot **32**. The interlocked ends are preferably positioned on the underside of the loop as seen in FIG. 7. In the folded position of the bed-frame structure, it will be observed that the linking members will be under tension and the upper side of the loop will lie substantially in the plane of the link fabric of the seat section, as shown in FIG. 3. However, when the bed-frame is manipulated to its extended position, as shown in FIG. 2, the linking members will have their tension released due to a decrease in the distance between the bar **30** and the adjacent link **39**. Accordingly, the loop end at the bar **30** will loosely surround the bar and the linking member will drop down under its own weight to a position extending below the tensioned flexible fabric so that there will be no interference with the mattress supported thereon.

With the linking members **29** mounted as described above, the linking member would normally be free to move within the end limits of the associated link **39**. Under some circumstances, it may be desirable to restrain the linking member against such movement. This may be accomplished by the provision of an anchor link **40** which is shown as being provided at one end with a looped connection **41** which fastens it to the link fabric means. The other end of the anchor link is provided with a hooked end portion **42** which is connectible into the slot **32** of the adjacent linking member that is to be anchored against movement.

From the foregoing description, it is believed that it will be clearly apparent that the stated objects of this invention will be obtained by the structure according to the foregoing description.

Various modifications may suggest themselves to those skilled in the art without departing from the spirit of our invention, and, hence, we do not wish to be restricted to the specific form shown or uses mentioned, except to the extent indicated in the appended claims.

We claim:

1. In a folding bed structure of the type utilized for sofa-beds and the like, the combination comprising:

(a) a foldable frame including a plurality of frame sections pivotally interconnected for selective movements to an extended position to form a bed and to a folded position with one of said frame sections uppermost in a substantially horizontal position to form a sofa seat, and another adjacent section in a substantially vertical position at the front of the seat forming section;

(b) a transversely extending frame part carried by and rigidly affixed to said other adjacent section and having an upper side thereof adapted to lie substantially in the plane of the seat forming section, when the sections are in said folded position;

(c) flexible fabric supporting means carried by said frame sections and being longitudinally tensioned over said frame sections in said extended position and folded inwardly of said frame part in the folded position of said frame sections; and

(d) linking members extending between said bar and the adjacent fabric in the seat section at spaced intervals for tensioning the fabric when the sections are folded, each of said linking members comprising a flexible strap having coengageable interlocking ends for connecting the strap into a loop having one end tightly engaged with the transversely extending frame part and the other end tightly engaged with an adjacent part of the flexible supporting means so that

with the sections folded the upper leg of the loop extends from the upper side of the frame part substantially in the plane of the tensioned fabric of the seat forming section, and said loops in the extended position of the frame sections being released at said one end from tight engagement with the frame part so as to permit the loop to swing under its weight about its other end to a different position below the tensioned fabric.

2. A combination according to claim 1, including an elongate anchor member connected with at least one of said linking members, said anchor member extending at an angle to the linking member and having one end engaged with the link member loop and its other end engaged with a part of the link fabric in spaced relation to said other end of the loop.

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CASMIR A. NUNBERG, *Primary Examiner.*

U.S. Cl. X.R.

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