April 8, 1969 H. KETTLER 3,437,375

FURNITURE PIECE HAVING A FABRIC ATTACHABLE THERETO

Filed June 8, 1967 Sheet 1 of 2

Fig. 1

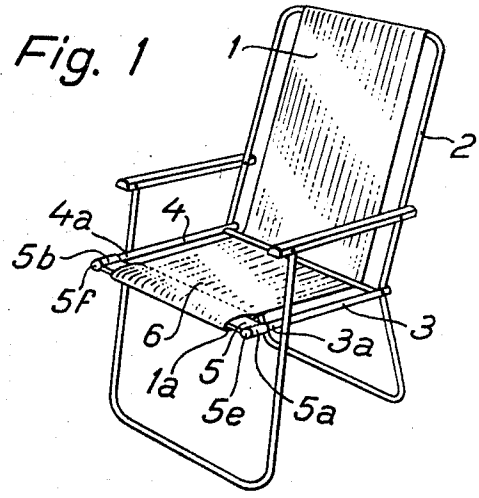


Fig. 7

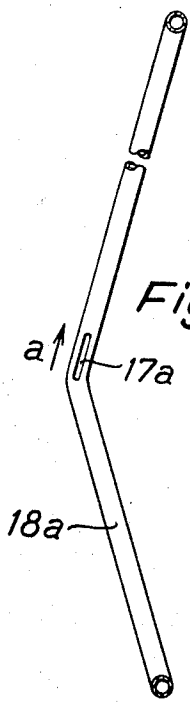
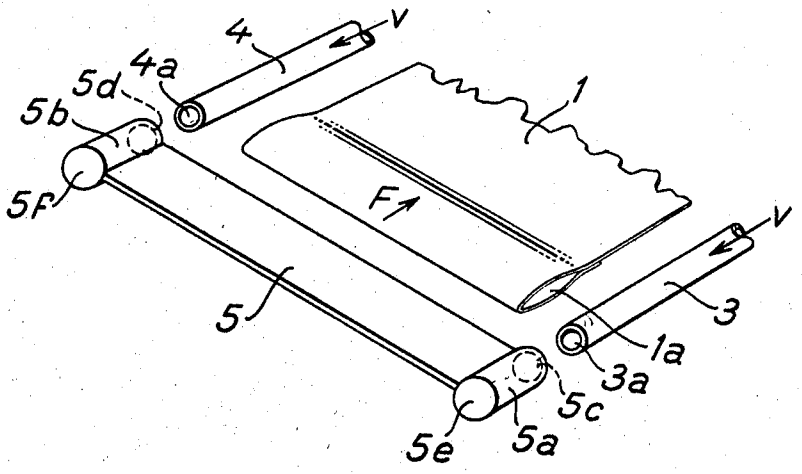


Fig. 2



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Filed June 8, 1967 Sheet 2 of 2

Fig. 3

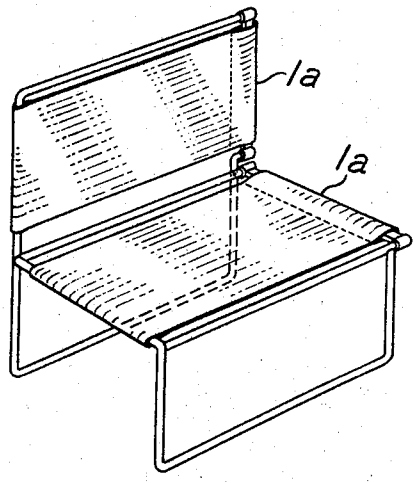


Fig. 4

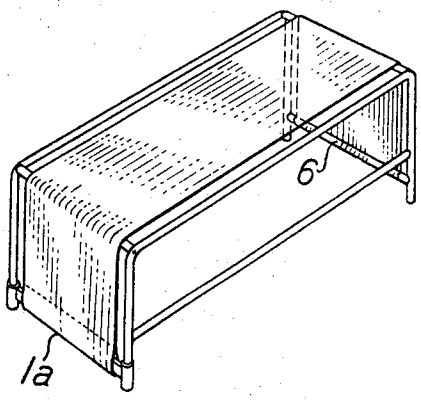


Fig. 6

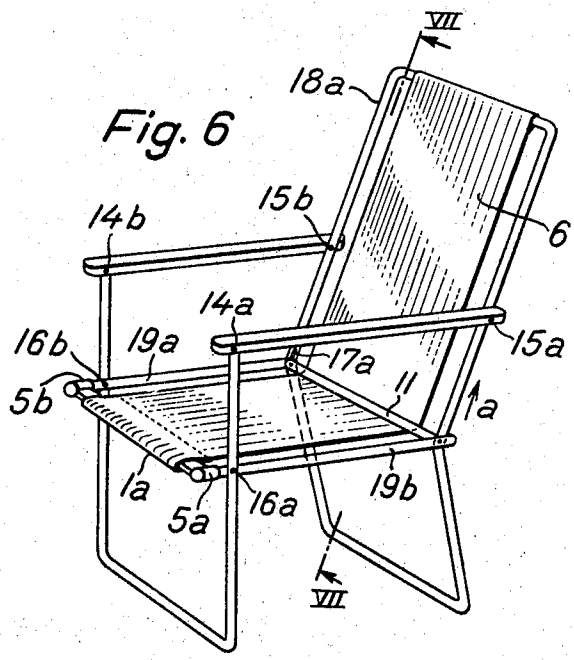
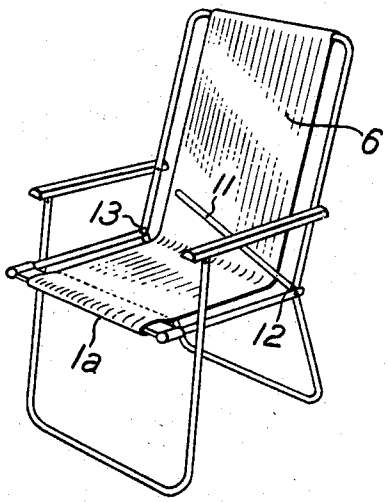


Fig. 5



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FURNITURE PIECE HAVING A FABRIC ATTACHABLE THERETO

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11 Claims

ABSTRACT OF THE DISCLOSURE

A furniture unit or component part thereof providing one or more planes of fabric on U-frames, the fabric being attached with one end to the U-bar of the frame and with its other end to a crosspiece detachably attachable to the ends of the U-legs. Preferably the means of attachment of the fabric to the crosspiece is a loop in the end of the fabric and preferably means are provided to tension the fabric within the frame.

Field of the invention

The invention relates to a furniture piece and a holding and tensioning means for its fabric cover.

Description of the prior art

In furniture and particularly in camping and lawn furniture of the collapsible type, such as collapsible chairs, the fabric cover is attached to the seat and to the back rest. For this purpose, the fabric covers are usually completely sewn beforehand and provided with ears, loops or hooks serving for fastening to the furniture frame. In this connection, the frames are made of tubes and/or of appropriate wooden or plastic parts. The covering materials are incorporated during the assembly of the frame. This practice always leads to difficulties during assembly, since the covering materials get in the way either by swinging loosely or by causing cumbersome tensioning of the frame.

It is already known to stretch the covering fabrics into place after the frame has been assembled, by means of additional strings, rods, or anchoring wires. However, this requires additional operating steps, resulting in greater manufacturing expenditures.

Summary of the invention

It is the object of this invention to provide a holding means for fabric covers in a furniture piece, in order to make possible a simple and inexpensive mounting of fabrics after the frame has been assembled.

According to the invention, the holding means comprises a tie member provided on both ends with end pieces. The tie member is first inserted in a loop of the cover fabric and its end pieces are then pushed onto the front ends of lateral U-legs of the frame of the furniture piece.

It is advantageous to close the front ends of the end pieces. In this embodiment, the end pieces have the form of cartridges and the closed ends serve as abutments for the inserted lateral U-leg front ends.

In a particularly advantageous embodiment of the invention, the seat tie member is fashioned as a broad strap, forming at the same time the front edge of the seat of the furniture piece. The seat tie member is made of metal if small physical bulk is desired or of plastic if low heat conductivity is sought.

It is advantageous not to attach the seat tie member permanently to the lateral legs, but to leave it detachable in order to make it possible to exchange or clean the cover in a simple manner.

According to a further embodiment of the invention, the strap is elastically resilient, whereby a particularly comfortable seating is made possible, at the same time eliminating cutting of the front end of the seat into the user's thighs.

The tension force of the covering material of the invention is directed so as to hold the tie member in place on the lateral members.

In a further development of the invention, the frame of the furniture piece has a means to tension the fabric cover after it has been attached at both ends. Such a means is especially advantageous in the case of a collapsible furniture piece. The furniture piece of the invention may be for instance stools, chairs, couches, davenports, beds, tables, cushions or any other type of furniture, or a container such as a luggage compartment on a car roof with a fabric cover. It may be used for such purposes for instance as prestretched tapestry units for walls. Consequently the frame may have various type shapes, depending upon the furniture for which it is being used, having however in each instance at least a portion requiring the attachment of a fabric, preferably to be stretched or kept taut.

The assembly of the frame and fabric preferably is to be rigid and for this purpose the taut fabric is an aid in increasing the rigidity of the assembly.

The frame usually is of the least mass necessary to maintain stability and rigidity of the furniture and the assembly is preferably prestressed by means making it an integral unit.

The furniture in all embodiments has as a basic unit a frame for supporting the fabric in at least one plane. While such frame has been shown as a U-shaped member, with a rectangular fabric stretched over it, and claimed as such, it is to include other two dimensional configurations such as a triangle with the corresponding triangularly shaped fabric, or a polygon, or it may be circular or oval instead. Furthermore, it is understood that the legs of the U-member may be crooked or linked. Various conventional attachments to the frame in accordance with the desired design, such as legs, one or more additional units, and combinations of variously shaped units make furniture such as a chair, a sofa, a davenport or similar furniture.

The invention is hereinafter described on a chair embodiment only for purposes of disclosure of a practical example thereof and is in no way limited thereto.

Other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings in which like reference numbers designate like parts throughout the figures thereof.

Brief description of the drawing

FIGURE 1 is a perspective view of the invention.

FIGURE 2 is a perspective, detail, exploded view of part of the invention.

FIGURES 3–6 are perspective views of modified forms of the invention.

FIGURE 7 shows a detail of FIGURE 6, as viewed from VII—VII of FIGURE 6.

Description of the preferred embodiments

In the armchair **2** covered with the fabric cover **1**, the two lateral legs, lateral rods **3**, **4** of the seat are tubes on whose front, free ends **3***a*, **4***a*, the holding means, tie member **5**, for the cover is attached by its tubular end pieces **5***a*, **5***b* being pushed over these front ends. It is understood that the words, rod and tubular, cover other cross-sectional shapes than the circular ones shown. Thus, the rods and tubular end pieces can have square cross-sections. The holding means has the form of a broad strap and simultaneously serves as the front edge of the seat **6** of the armchair. The fabric cover is attached to the frame by any conventional means, such as screws.

A detail of FIGURE 1 is shown in FIGURE 2.

During assembly, the holding means **5** is inserted through the loop **1***a* of the covering fabric **1** and is then pushed onto the front ends of the lateral rods **3** and **4**, respectively, by the open ends **5***c*, **5***d* of the end pieces **5***a* and **5***b*, respectively, until the front ends abut the closed ends **5***e*, **5***f* of the end pieces **5***a*, **5***b*. The armchair **2**, or its frame, can be constructed so that only after it is unfolded into the position wherein it is used is the covering fabric **1** stretched. In this embodiment, the mounting of the holding means **5** is facilitated. The end pieces are in frictional engagement with the lateral rods **3**, **4**, and there is thus no danger that the mounting means can slide off the side rods **3**, **4** when the chair has been folded. The holding means can be pulled off from the lateral rods only with the use of force. In addition to the frictional attachment, it is to be considered that a locking action occurs due to canting, which acts against an inadvertent detachment of the holding means. It is also evident in FIGURE 2 that the directional vectors *v* of the securing ends of the lateral members are directed oppositely to the vector tension force F of the covering material. As long as parallel components of these vectors are oppositely directed, material tension tends to hold said end pieces on the securing ends.

FIGURES 3–6 show other embodiments of the invention, all of which utilize the holding means of FIGURE 2.

FIGURE 3 shows a couch having two connected panels, each having the holding means of FIGURE 2.

FIGURE 4 shows a cot made according to the invention.

FIGURE 5 shows a chair modified from FIGURE 1. Here, back rod **11** is pivotably mounted on the chair frame at **12**. During assembly of the chair, the fabric cover **6** is first placed as described for FIGURES 1 and 2. Then, the back rod is pivoted against the fabric cover and locked into the frame at **13**, thereby tensioning the fabric. The structure of FIGURE 5 thus includes a means to tension the fabric cover. This form of the invention is advantageous when the fabric cover does not have any stretch.

FIGURES 6 and 7 show a second chair modified from FIGURE 1. The frame of this chair is pivotably connected at points **14–16**. Its back rod **11** is slidably mounted at its ends in slots **17***a* and **17***b* of uprights **18***a* and **18***b*. When this chair is collapsed by pushing **6** forward until rods **18** are aligned with rods **19**, the ends of back rod **11** slide from their bottom positions in the slots **17** in the direction of arrow *a*, relative to uprights **18**. This results in a shortening of the distance between **6** and **1***a* and enables easy mounting of tubes **5***a* and **5***b* in the collapsed position, while maintaining a taut fabric cover in the opened position of the chair. It is thus seen that a means to tension is combined with a means to enable collapsing and opening in this embodiment.

The stretched fabric-frame assembly described may serve as a component part to a furniture unit, such as those shown in FIGURE 3. The stretched fabric-frame assembly however itself may serve as an independent unit having its own specific purposes, such as a space dividing wall or a wall cover. If, for instance, the unit is employed as a car luggage carrier, the protruding contents of the carrier themselves become a component means for tensioning the cover.

While the invention was described and shown with reference to a tensioning in one direction only, it will be obvious to those skilled in the art that tensioning simultaneously in a direction perpendicular to that shown, or in several directions at angles to each other, may be provided by analogous means.

While the tensioning means have been shown and described as manual by pushing a back rod **11** across the fabric to stretch it, a mechanical means such as a ratchet roller attached in FIGURE 1, for instance, to crossbar **6**, or in FIGURE 4 to the fixed end *b* of the fabric or to the end of the loop of the fabric in FIGURES 1, 3, 4, 5 and tie rod **5** or to the end of the loop of the fabric in FIGURES 1, 3, 4, 5 and 6 may be used instead.

Optionally, the fabric may be resilient or the controllable tensioning thereof may be zero, as desired.

It should be understood, of course, that the foregoing disclosure relates to only preferred embodiments of the invention and that it is intended to cover all changes and modifications of the examples of the invention herein chosen for the purposes of the disclosure, which do not constitute departures from the spirit and scope of the invention set forth in the appended claims.

I claim:

1. As an article of manufacture, a furniture piece having a frame and a fabric cover; said frame comprising a rigid U-shaped member including a pair of U-legs and a U-crossbar connecting the legs at one end, the other ends of said legs being freely exposed; said frame further comprising a broad tie member having a length substantially equal to the distance between the free other ends of said legs and having attachment means integral therewith for attachment to said other ends of said legs; said fabric cover being secured with one end to said crossbar and having, at its other end, means of connection to said tie member; said fabric cover having a length substantially equal to the length of said legs and a width less than the length of said tie member; said fabric cover being connected to said tie member; said tie member being attached to said U-legs.

2. A furniture piece as claimed in claim **1**, the attachment means of said tie member including sliding means to slide on and mate with said other ends of said legs.

3. A furniture piece as claimed in claim **2**, said means of connection being a loop, said tie member inserted through said loop.

4. A furniture piece as claimed in claim **3**, said sliding means being tubular pieces.

5. A furniture piece as claimed in claim **4**, and means to tension said fabric in assembly with said frame.

6. A furniture piece as claimed in claim **5**, said frame having means to enable collapsing and opening of the furniture piece, said means to tension placing said fabric cover under tension in the opened position of said frame, said fabric cover being at least sufficiently loose when the frame is collapsed to allow sliding of said tubular pieces on and off of said other ends without necessitating stretching of said fabric cover.

7. A furniture piece as claimed in claim **2**, said attachment means including stop means limiting the distance of sliding onto the front ends of said legs.

8. A furniture piece as claimed in claim 1, said tie member being a, resilient strap, said strap lying substantially in the plane of the fabric cover near said tie member. member.

9. A furniture piece as claimed in claim 1, said fabric being elastically resilient.

10. A furniture piece as claimed in claim 1, said frame and said fabric having relative lengths determining the tension of said fabric cover upon assembly of the tie member, with the fabric attached thereto, with the other ends of said legs.

11. A furniture piece as claimed in claim 1, said tie member being detachable from said U-legs.

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U.S. Cl. X.R.

5—98; 108—153; 297—218