United States Patent [19]

Shaw

[11] **3,751,110**

[45] **Aug. 7, 1973**

[54] **STRAP FASTENING ARRANGEMENT**

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[22] Filed: **June 5, 1972**

[21] Appl. No.: **259,937**

[52] **U.S. Cl.**..... **297/452,** 5/191, 160/404, 297/445

[51] **Int. Cl.**..... **A47c 7/20,** A47c 7/14, A47c 31/04

[58] **Field of Search**..... 160/403, 404; 297/445, 452, 460; 5/191; 52/717

[56] **References Cited**

UNITED STATES PATENTS

3,565,487	2/1971	Reiter	297/452
2,856,990	10/1958	Thomas	160/404

FOREIGN PATENTS OR APPLICATIONS

1,138,818	6/1957	France	160/404

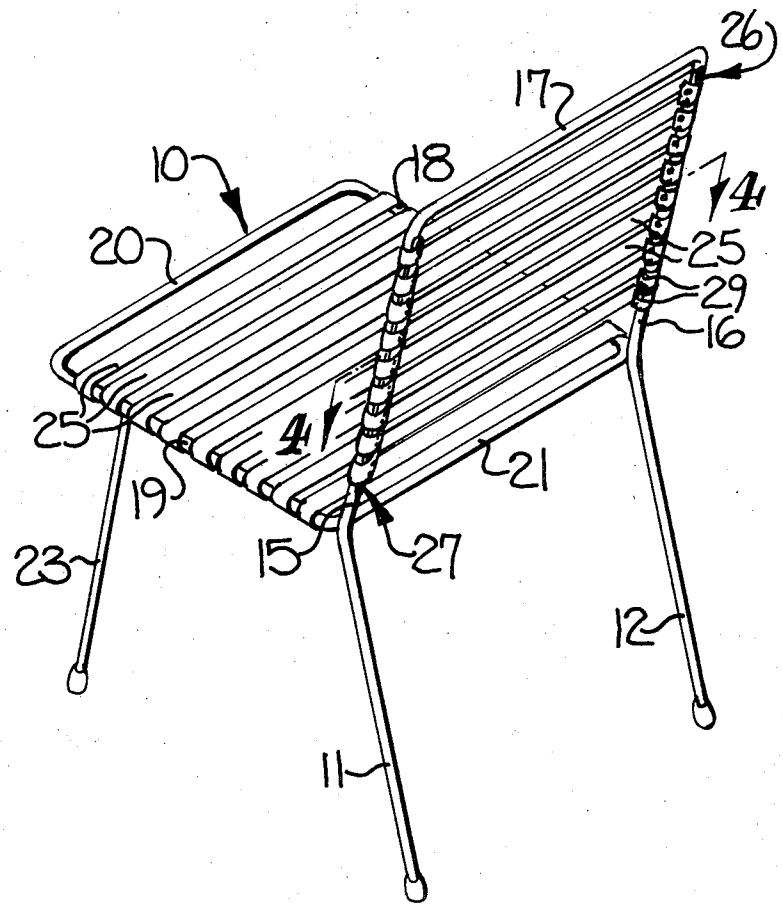
Primary Examiner—Casmir A. Nunberg

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[57] **ABSTRACT**

Upholstery straps used in providing body supporting surfaces for a seating furniture piece such as a lawn chair are maintained in a desired spaced relation through the use of elongate, comb-like fastener means secured to the structural skeleton of the furniture piece. Terminal ends of the upholstery straps are wrapped about the structural skeleton of the piece and are secured by being penetrated by the teeth of the comb-like members.

1 Claim, 4 Drawing Figures



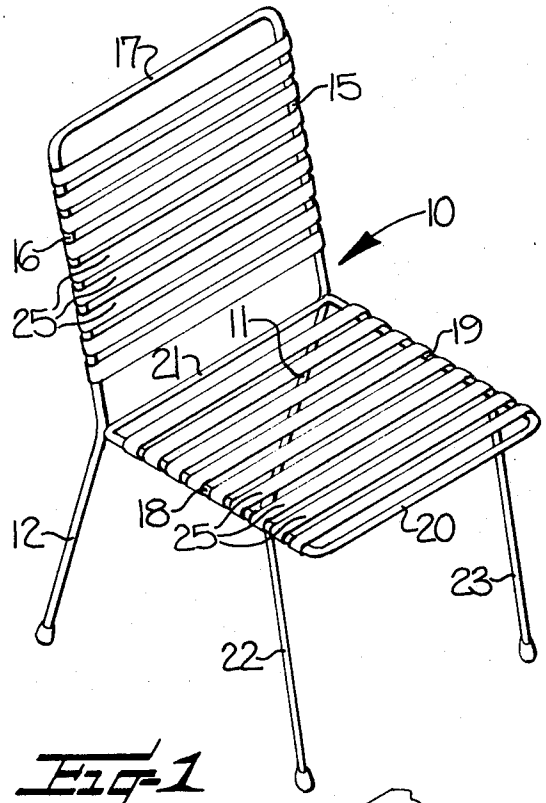


Fig-1

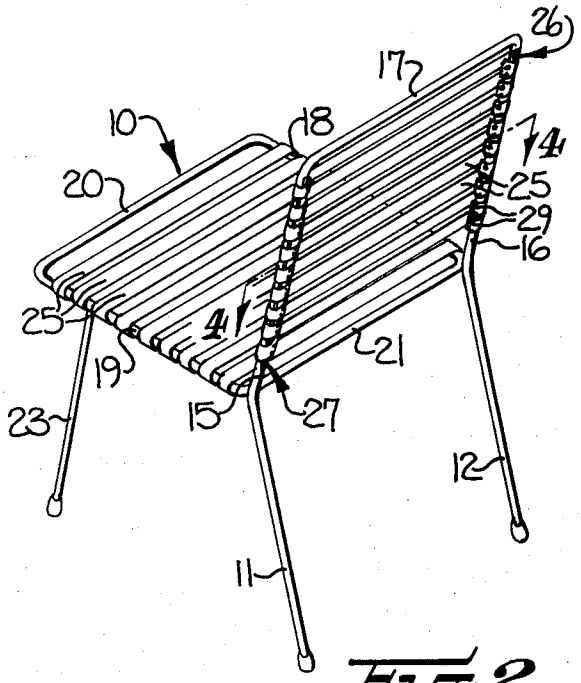


Fig-2

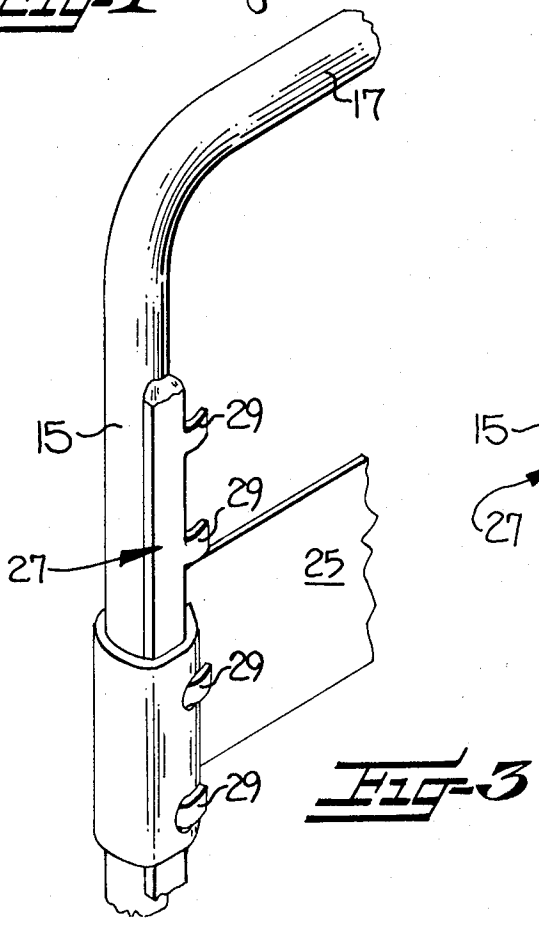


Fig-3

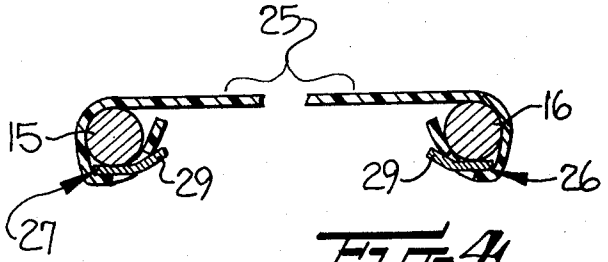


Fig-4

STRAP FASTENING ARRANGEMENT

In many circumstances of casual or outdoor use, seating furniture pieces, such as chairs lounges and the like constructed with metal frames and webbing or strap upholstery have come into wide use. In many high quality lines of such furniture, the upholstery straps used to form body supporting surfaces of the furniture piece, such as seats and backs, are chosen to have elastomeric qualities so as to provide for comfort of an occupant of the furniture piece. Particularly where such upholstery straps are used in conjunction with relatively sturdy and heavy weight metal frames, difficulties have heretofore been encountered in properly fastening the straps to the structural skeleton of the furniture piece and maintaining the straps in the desired position. More particularly, recently preferred practice has been to employ solid metal rods of square or rectangular cross-sectional configuration to form the frame or structural skeleton of the furniture piece. Upholstery straps of the type described are then secured to the rectilinear frame members by means of clips, in such a manner as to span the distance between portions of the frame and thus define body supporting surfaces of the furniture piece. Following such prior practice imposes certain undesirable limitations on the design of the furniture produced and additionally introduces certain unappealing characteristics.

First, the rectilinear cross-sectional configuration of the metal rods bent to form the furniture frame limits the direction and nature of the bends which can be made. Thus, a person designing furniture of the general class referred to herein has heretofore been restricted as to the possible design features to be adopted. Additionally, the upholstery straps exhibit a tendency to stretch during imposition of a load, such as the forces applied to the straps during support of an occupant while the furniture piece is in use. Heretofore, slipping of the clips along the frame immediately after an occupant rises from the furniture piece has been a frequent experience due to the somewhat slow recovery of tension in the upholstery straps. As the clips slip relative to the frame, the spacing of the straps one from another is disturbed and the comfort and appearance of the furniture piece is adversely affected. Further, replacement of straps secured in place by means of the clips is not readily accomplished by an owner of the furniture should such become necessary.

It is an object of the present invention to fasten upholstery straps in predetermined locations on the structural skeleton of a seating furniture piece while overcoming the difficulties and deficiencies heretofore encountered. in realizing this object of the present invention, a plurality of straps are positively positioned in predetermined spaced relation along the structural skeleton of a furniture seating piece and are maintained in such spaced relation irrespective of forces applied to the straps during support of an occupant. Further, the manner in which the straps are secured to in position particularly facilitates replacement of the straps should such become necessary.

It is a further object of this invention to accomplish the fastening of the upholstery straps irrespective of the cross-sectional configuration of metal rod members which define the structural skeleton of the furniture piece. Through the realization of this object of the present invention, possibilities for significantly greater design variations are opened due to the availability of

round cross-sectional structural members which may be bent in any direction.

Some of the objects and advantages of the invention having been stated, others will appear as the description proceeds, when taken in connection with the accompanying drawings, in which

FIG. 1 is a perspective view of a seating furniture piece in accordance with the present invention;

FIG. 2 is a perspective view of the furniture piece of FIG. 1, taken from the side opposite the view of FIG. 1;

FIG. 3 is an enlarged detail perspective view of a portion of the chair of FIGS. 1 and 2; and

FIG. 4 is a sectional plan view taken generally along the lines 4-4 in FIG. 2.

The strap fastening arrangement of the present invention has been illustrated in the accompanying drawings, to which reference will be made in a following detailed description of this invention, as embodied in a relatively simple chair intended for use by single occupant. While this specific embodiment has been chosen for illustration in the drawings and for detailed description hereinafter, it is to be understood at the outset that the present invention contemplates a wide range of utility for this invention and that the drawings and detailed description are to be taken as illustrative only and not as limiting upon the general utility of this invention, which will be recognized by persons skilled in the design of seating furniture pieces.

In the illustrated chair, a structural skeleton is provided by furniture frame means generally indicated at **10** and formed by a number of lengths of rod material having a circular cross-sectional configuration. While a relatively simple chair form has been illustrated, the use of material of round cross-sectional configuration will accommodate virtually any design configuration chosen by a designer. Referring particularly to the chair illustrated, a single length of rod has been bent to form rear legs **11, 12**; vertically uprising back rest portions **15, 16**; and a top back crossbar **17**. Another length of rod material has been bent into a generally square or rectilinear form to define side bar members **18, 19**; a front crossbar **20**; and a rear cross bar **21**. As will be understood, the back side members **15, 16** outline an occupant supporting back rest area of the furniture piece while the seat side bar members **18, 19** outline an occupant supporting seat area of the furniture piece. Front legs **22, 23** are provided to complete the furniture frame means.

A plurality of straps **25** span the distance between the elongate portions **15, 16, 18, 19** of the frame means for defining body supporting surfaces of the furniture piece. Desirably, the straps **25** are formed of a suitable polymeric material having certain elastomeric qualities. As herein used, the term "elastomeric" is intended to refer to an attribute of the material of the straps **25** which causes the straps to return to a prior dimension subsequent to the imposition of a load thereon. In point of fact, the vinyl commonly used for upholstery straps such as the straps **25** has elastomeric qualities as herein defined but may tend to have such characteristics reduced by lengthy subjection to load forces.

Secured to the elongate portions **15, 16, 18, 19** of the frame means are elongate fastener means in accordance with the present invention and taking the form of at least first and second spaced apart elongate comb members (such as the comb members **26, 27** in FIG. **4**).

In accordance with this invention, the first and second elongate comb members are spaced apart by being mounted upon differing ones of the elongate portions **15, 16, 18, 19** of the frame means, such as being welded thereto. While it is preferred that each of the elongate comb members **26, 27** extend for the entire length of the body supporting surface to be defined by straps secured thereto, it is recognized that the comb members may be of any desired length less than or greater than the length of such portions of the frame which are to receive upholstery straps.

Each of the fastener means **26, 27** have a plurality of projecting teeth directed toward the other of the comb members (such as the teeth **29** of the comb member **27** shown in FIG. 3). Each terminal end portion of each of the straps **25** has at least one perforation therein, which is penetrated by a corresponding one of the projecting teeth **29** when the upholstery strap is in the installed position (FIGS. 3 and 4). Preferably, and in accordance with the illustration, each of the terminal ends of the straps **25** has a pair of preforations therein and the teeth are distributed by pairs along the comb members so that each terminal end of each of the straps is penetrated by a corresponding pair of teeth. Desirably, the elongate fastener means cooperate with the plurality of straps to space the straps uniformly across the body supporting surfaces thereby defined, leading to a non-uniform spacing or distribution of the teeth along the comb members.

In order to aid more positive retention of the straps **25** in tensioned condition on the furniture frame means, each of the straps **25** passes about the front surface of the frame members and passes beyond the elongate fastener means secured to the rear surfaces thereof (FIGS. 3 and 4). Additionally, the teeth of the comb members preferably project toward the body supporting surface defined by the cooperating pluralities of straps, with this projection aiding in tucking away the free terminal ends of the straps and in secure locking thereof between the teeth of the comb members and the frame portions to which the comb members are secured.

In initially installing the straps **25**, the straps are heated to permit more ready stretching of the straps into the installed position. Upon cooling, the elastomeric characteristics of the straps **25** return them to their earlier shorter length and thereby tension the straps about the furniture frame means. Should later replacement of any straps be required, the process may be reversed or repeated at will with the new or replacement strap being positively positioned in the same manner as the original strap due to the securement of the fastener means to the elongate portions of the furniture frame.

In the drawings and specification, there has been set forth a preferred embodiment of the invention, and although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation.

That which is claimed is:

1. In a strap fastening arrangement for a seating furniture piece which has a frame defining a structural skeleton of the piece with elongate rod-like portions thereof extending in predetermined directions and outlining occupant supporting areas of the piece, first and second spaced apart elongate toothed comb members secured to parallel portions of the frame which define opposite side edges of an occupant supporting area, and a plurality of elastomeric straps each having opposite terminal end portions penetrated by teeth of the comb members and extending transversely between the parallel portions of the frame to span the occupant supporting area and to define a portion of a body supporting surface, an improvement which facilitates positioning and retention of the straps in a desired uniform spacing and comprising:

each of said straps having a predetermined width longitudinally of the parallel portions of the frame,

each of said comb members having a plurality of projecting teeth distributed non-uniformly therealong with a plurality of first adjacent pairs of teeth spaced one from another at a predetermined distance less than the predetermined strap width for penetrating a terminal end portion of a common one of the plurality of straps and with alternate adjacent pairs of teeth spaced one from another at a predetermined distance greater than the predetermined strap width for penetrating terminal end portions of adjacent straps,

said comb members being secured to said frame portions with said first pairs of teeth aligned transversely thereof, and

said comb members and said straps cooperating for uniformly spacing the plurality of straps one from another at a distance about the same as the predetermined strap width.

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