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SEAT CONSTRUCTION FOR ARTICLES OF FURNITURE

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FIG. 1

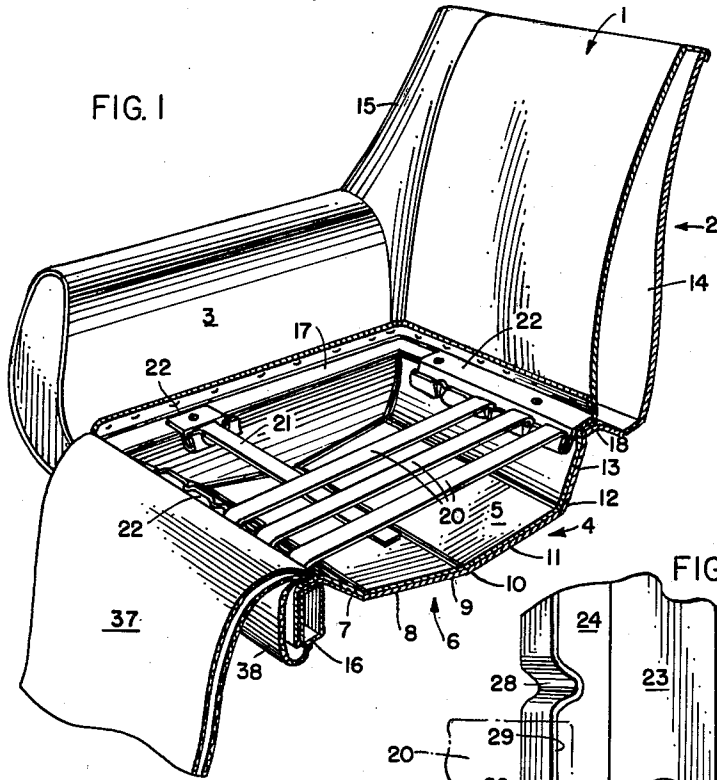


FIG. 3

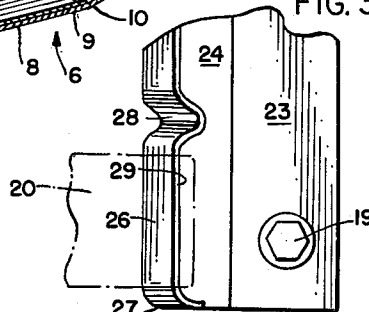


FIG. 2

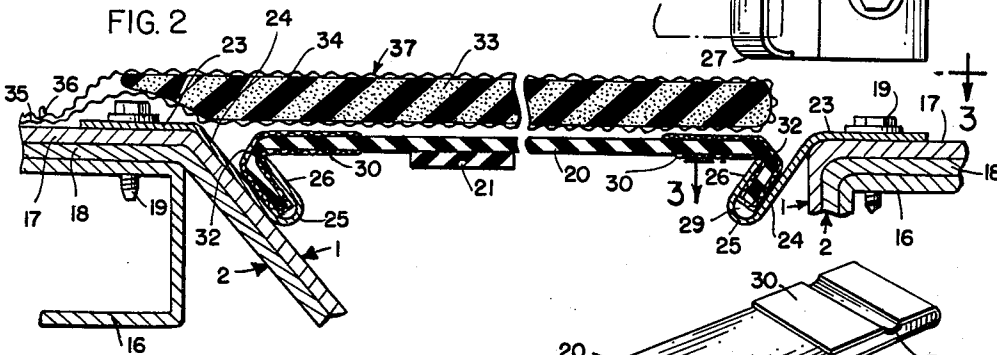
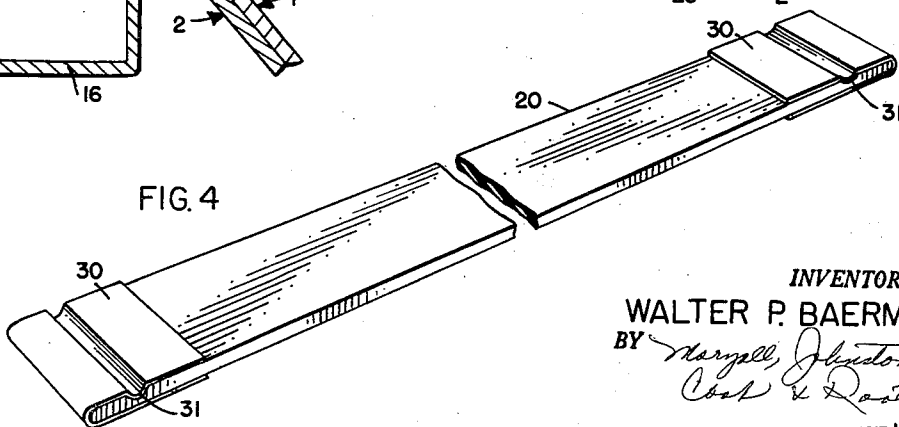


FIG. 4



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## SEAT CONSTRUCTION FOR ARTICLES OF FURNITURE

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5 Claims. (Cl. 297—452)

This invention, in general, relates to seating construction useful in articles of furniture and the like. The invention has application to single or multiple seating units in which a resilient seating construction is utilized. The invention is applicable to chairs, love seats, sofas and the like for use in living rooms, lounges and similar locations. It is also useful in seat construction of a general nature, including seating employed for various types of vehicles, such as automobiles, airplanes and trains.

One of the objects of the invention is to provide improvements in seating construction for articles of furniture and the like.

Another object of the invention is to provide a resilient support in the seating portion of articles of furniture and the like.

A further object of the invention is to provide improvements in the mounting of resilient webbing serving as a resilient support in articles of furniture and the like.

Still a further object of the invention is to provide resilient seating support in an article of furniture or the like which can be used in place of spring construction commonly used in upholstered furniture.

Other and further objects of the invention will be apparent from the following description and claims together with the accompanying drawing which, by way of illustration, shows a preferred embodiment of the invention and the principles thereof. Other embodiments of the invention utilizing the same or equivalent principles may be used and structural changes may be made as desired by those skilled in the art without departing from the true spirit and principles of the invention.

In the drawing:

FIG. 1 is a perspective view of a fragmentary part of the frame and resilient seating support of an article of furniture in which the principles of the invention can be utilized;

FIG. 2 is a fragmentary view of the seating portion in front to rear cross section of the article of furniture of FIG. 1;

FIG. 3 is a fragmentary view in top plan of a bracket forming pockets in which the ends of resilient bands forming the resilient seating support are mounted; and

FIG. 4 is a perspective, fragmentary view of one of the resilient bands.

Briefly, the invention relates to seating construction in which a plurality of resilient bands or strips are stretched across a seating portion with the ends of said elastic bands being bent at an acute angle and seated in pockets provided on opposite sides of the frame of an article of furniture. The tension in these bands, coupled with the acute angle bend in the end portions thereof, hold the end portions tightly in the pockets so that they do not become accidentally displaced. By utilizing the principles of the invention, the tension in the bands acting upon the bent ends thereof is sufficient to keep the ends of the bands seated in the pockets without the utilization of any other fastening means.

Referring to the embodiment shown in the drawing, the framework for the article of furniture is of a generally new type disclosed in detail in my copending ap-

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plication Serial No. 81,080, filed January 6, 1961, now Patent No. 3,055,708, issued September 25, 1962, and copending application Serial No. 91,017, filed February 23, 1961, the disclosures of which are herein incorporated by reference as if they had been set forth in their entirety. The drawing herein shows only those details of construction which are directly pertinent to the subject matter of this invention. The main supporting structure of the chair or like article of furniture illustrated in the drawing is a front or upper shell 1 and a back or lower shell 2. Each of these shells is a unitary molded structure which may be made by felting cellulose fibers from an aqueous slurry on a porous former or die on which the fibers accumulate to the desired thickness. Other materials which are moldable into self-sustaining structure, however, may be used, including, for example, thermoplastic sheet materials, mixtures of cellulose fibers and cut bundles of glass filaments (cut rovings), mixtures of cellulose fibers and synthetic fibers (e.g. polyamides such as nylon, polyesters such as Dacron), mixtures containing rubber, mixtures containing synthetic rubber, and the like. The various mixtures may also contain binders or reinforcing substances. Thus, mixtures of cellulose fibers and cut glass rovings (1/2 inch to 6 inches in length) containing 5% to 95% cellulose based on the weight of the total fibers and 5% to 25% by weight of a polyester resin afford excellent shell structures for the purpose of the invention. Similarly, asbestos and other fibers can be used. The final shell thickness is in the order of about 3/32" to 3/16".

The seating portions of the two shells are so shaped that the upper shell telescopes into the lower shell with coinciding edges of the two shells along the front and bottom, sides and back with an air space in the sides and the back. The two shells are bonded together at points where they coincide either by means of adhesive, stapling or other suitable fastening means to produce an unitary shell structure of the type shown in FIG. 1.

If arms are desired on the article of furniture, the frame structure for the arms may be molded separately and attached to the shells 1 or 2. In the embodiment shown in FIG. 1 a framing portion 3 for an arm of the furniture is molded into a curved form and attached to the shells 1 and 2.

As will be observed from FIG. 1, the bottom or seating area of the shells 1 and 2 is constructed so as to provide a recess or seating well 4. The laminated parts 5 and 6 of the upper and lower shells 1 and 2, which form this seating well, give a strong supporting structure in the furniture framework.

The seating well or recessed area 4 is preferably tapered toward the back of the article of furniture. This is achieved by making the segments 5 and 6 of the upper and lower shells with a rather sharply inclined segment 7 forming an obtuse angle corner 8 with a less sharply inclined segment 9 extending to approximately the center of the chair as measured from front to back. The segment 9 forms an obtuse angle corner 10 with an even lesser sharply inclined area 11. The latter area merges at the obtuse angle corner 12 with an upwardly inclined segment 13.

The back of the article of furniture framework is made by the upstanding portions of the shells 1 and 2 which are spaced apart to form a hollow space 14.

The article of furniture may have, if desired, a wing 15 molded integral with one of the shells or separately therefrom and attached to the shells by suitable means.

The framework of the article of furniture is a hollow or U-channel, rectilinear steel base 16 forming an open, rectilinear framework. The shell structure of the chair has a marginal portion about the seating area 17 in the

upper shell and a marginal portion 18 about the seating area of the chair in the lower shell forming grooves or seats resting on top of the metal framework 16. The shell structure is secured to the metal framework 16 by metal screws, metal bolts, or other suitable means 19 extending through the marginal portions 17 and 18 of the upper and lower shells.

Instead of the usual spring construction, the seat of the chair or like article of furniture is supported on a series of stretched, elastic bands 20 running from front to rear and stretched, elastic bands 21 running from side to side, the bands forming a criss-cross network or webbing. Only a portion of the bands 20 are shown in FIG. 1 for sake of illustration of other details. Also, while only one band 21 is shown in FIG. 1, there may be as many as desired or the bands 21 may even be omitted.

The ends of the bands 20 and 21 are held in the band mounting or supporting brackets designated generally by number 22. These brackets may be made as individual units for supporting one band each or may be made in the form for supporting a plurality of bands in side-by-side relationship. The band mounting or supporting members 22 are brackets comprising a plate portion 23 resting on the marginal edge 17 which runs around the periphery of the seat well 5. The brackets are held in fixed position by the screws or bolts 19. The remainder of the bracket comprises a pocket portion which is made up of a sloping wall 24 situated at an obtuse angle with respect to the plate 23, a reverse bend portion 25, and a short wall 26. The ends 27 of the wall 26 preferably are bent or crimped to close the opening which would otherwise exist at the ends of the walls 24 and 26. Where the bracket is designed to support a plurality of elastic bands, the wall 26 has indentations 28 at spaced intervals slightly greater in width than the width of bands 20 or 21 so that there is formed in the bracket a plurality of band-receiving pockets 29 which slope downwardly into the seat well 5 and pockets on opposite sides of the frame, converging toward each other.

The ends of the bands 20 and 21 are seated in the sloping pockets 29. To avoid excessive wear by the edges of the pockets on the elastic material of the bands, the ends preferably are covered with a heavy, wear-resistant, but flexible material such as a heavy fabric or the like. Also, the covered end portions of the bands preferably have transverse indentation 31 which forms a bending zone 32 when the ends of the bands are seated in the pockets. The indentations 31 are in the upper surface of the bands when they are placed in the pockets 29 so that the extra amount of fabric in the indentations 31 is sufficient to permit the bands to bend in the manner shown in FIG. 2.

By utilizing pockets which slope toward each other on opposite sides of the frame, whereby the elastic bands seated in the pockets form an acute angle between the bent ends and the remainder of the band, the ends of the bands 20 and 21 will remain seated in the pockets without additional attaching means. This is achieved by tension in each band which works against the angular bend of the band seated in the pockets. The ends of the bands need not even be a size so that they are compressed when they are inserted in the pockets. They may, in fact, be of a slightly smaller depth than the distance between the walls 24 and 26 as is shown in FIG. 2.

The novel seat supporting structure has the advantage of simple construction and simple installation. The brackets 22 are easily mounted on the frame of the article of furniture, after which the bands 20 and 21 are mounted in the pockets by inserting one end of a band into a pocket, stretching the band across the seat portion and inserting the other end in the opposite pocket.

It is important that at least some tension be provided in the mounted bands 20 and 21 so that the bent ends remain secured in the pockets 29.

The webbing comprising the bands 20 and 21 preferably is covered with a shallow pad 37, which pad comprises foam rubber or other spongy synthetic material 33 covered with a fabric 34. The forward end of the pad 37 may be secured to the frame by driving staples or other suitable fastening means 36 through the fabric marginal portion 35. A seat cushion (not shown) is laid over the pad 37. It is also convenient to use the same fabric of the pad 37 as a cover for the front panel 38 which covers the metal frame member 16. Accordingly, fabric 34 of the pad 37 continues over the forward edge of the frame 16 and extends to the under side of the frame where it is attached by suitable means thereto, i.e., by adhesives, snaps or the like. A padding material may be inserted between the two fabric plies forming the front cover panel.

It will, thus, be seen from the foregoing description, considered in conjunction with the accompanying drawing, that this invention provides new and improved seat construction for articles of furniture and other similar articles having novel features, advantages and characteristics and accomplishing its intended objectives, including those hereinbefore pointed out and others which are inherent in the invention.

The invention is hereby claimed as follows:

1. A supporting structure for the seat of an article of furniture which comprises a furniture frame defining a seat portion, brackets attached to said frame along opposite sides of said seat portion, a rigid, depending plate on each bracket having a reverse bend defining a pocket in said plate, the plates of opposing brackets and the pockets therein sloping toward each other, and a series of elastic bands stretched across said seat portion with the ends of each band being bent more than 90° and less than 180° and seated and held in opposing pockets on said brackets only by the tension in said bands acting upon the bent ends of said bands seated in said pockets.

2. An article of furniture comprising a molded frame defining a seat well and a peripheral flange on said well, brackets attached to said peripheral flange along the upper side thereof and having rigid walls defining a pocket, the pockets of brackets sloping downwardly into said seat well, and a series of elastic bands stretched across said seat portion with the ends of each band being bent more than 90° and less than 180° and seated and held in opposing pockets on said brackets.

3. In an article of manufacture, a supporting webbing comprising a supporting frame, a series of elastic bands stretched between opposite sides of said supporting frame with the end segments of said bands being bent more than 90° and less than 180°, walls on said frame defining opposing pockets sloping toward each other with the ends of each elastic band seated and held in opposing pockets on said frame by the tension in said bands acting upon the angularly positioned ends of said bands seated in said pockets.

4. In an article of manufacture, a supporting webbing comprising a supporting frame, a series of elastic bands of substantially uniform cross-section excepting a short segment near but spaced inwardly from each end of said band, which short segment is smaller in cross-sectional area than the remainder of said band, said bands being stretched across said frame with the ends of said bands being bent more than 90° and less than 180° at said segments, members on opposite sides of said frame forming converging pockets, and said bent ends of said bands being seated in said pockets on opposite sides of said frame.

5. In an article of manufacture, a supporting webbing comprising a supporting frame, a series of elastic bands

of substantially uniform cross-section excepting a short segment near but spaced inwardly from each end of said band, which short segment is smaller in cross-sectional area than the remainder of said band, a covering of wear-resistant, flexible sheeting affixed to the ends of said bands, said bands being stretched across said frame with the covered ends of said bands being bent more than 90° and less than 180° at said segments, members on opposite sides of said frame forming converging pockets, and said bent covered ends of said bands being seated in said pockets on opposite sides of said frame.

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