

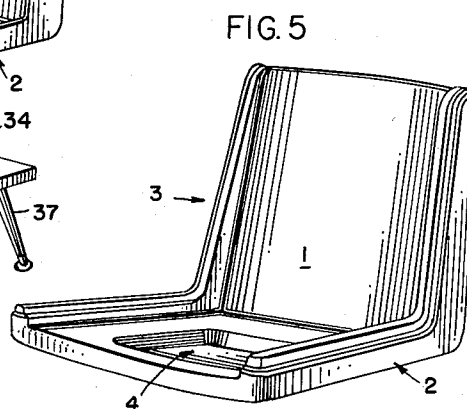
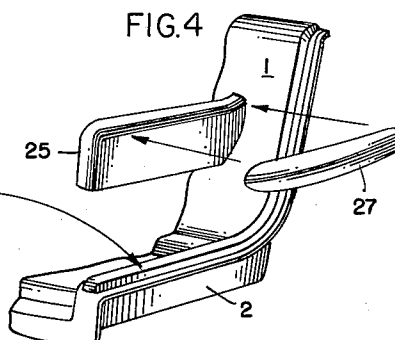
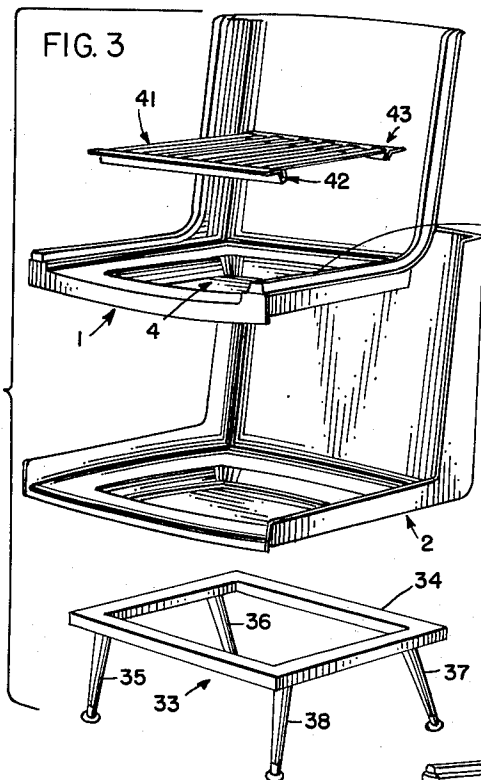
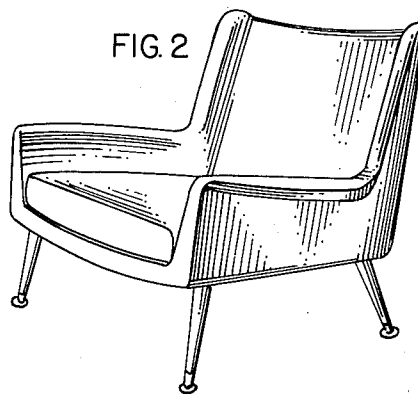
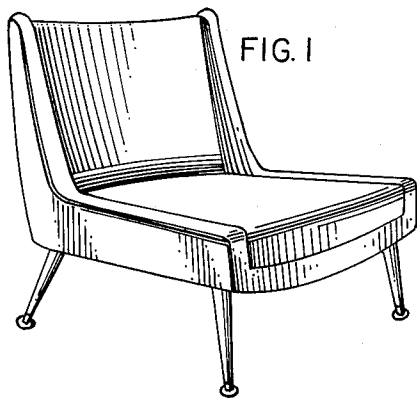
Sept. 25, 1962

W. P. BAERMANN
SEATING ARTICLE

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2 Sheets-Sheet 1



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FIG. 6

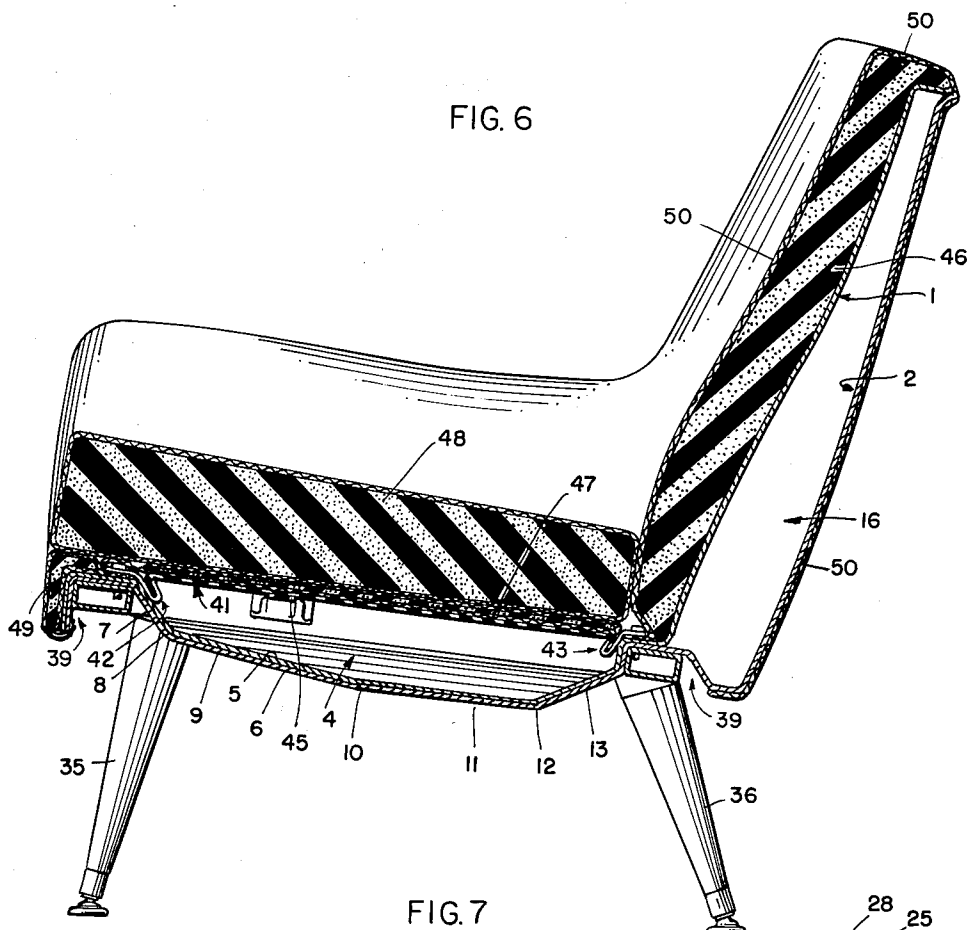
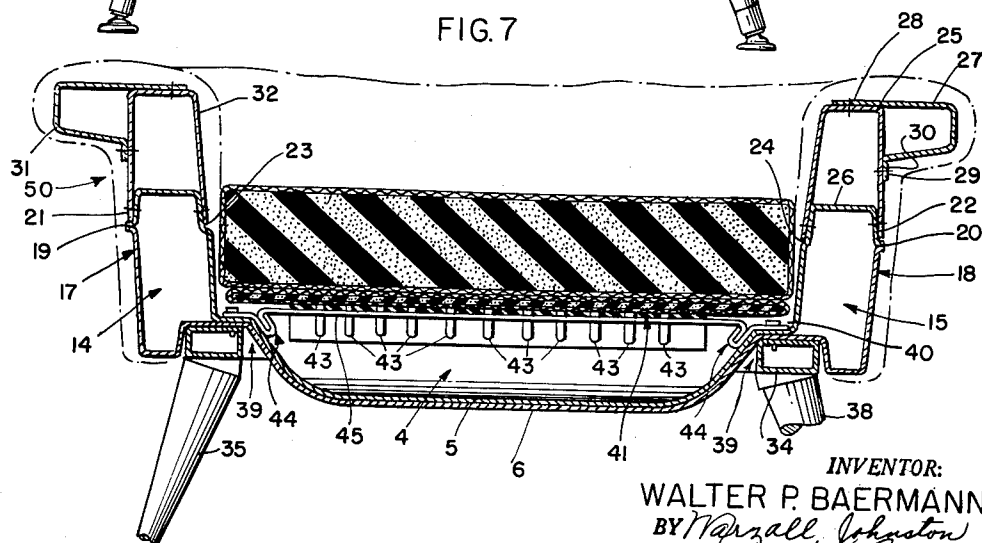


FIG. 7



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3,055,708

SEATING ARTICLES

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6 Claims. (Cl. 297-445)

This invention relates to furniture and more particularly to articles of seating. The invention is especially concerned with upholstered furniture and more specifically with chairs, sofas and the like for use in living rooms, lounges and similar locations.

One of the objects of the invention is to provide upholstered articles of seating that are lighter in weight than conventional upholstered seating articles.

Another object of the invention is to provide upholstered furniture having uniform weight distribution and greater stability and comfort.

Still a further object of the invention is to provide new and improved upholstered furniture having good strength and durability.

Another object of the invention is to provide a new and improved type of upholstered chair structure which eliminates many of the requirements for present day manufacture of upholstered chairs.

An additional object of the invention is to provide a new and improved chair structure characterized by the fact that arm chairs, armless chairs and chairs having wings on the arm or back can be made readily from the same basic structure.

Another object of the invention is to provide a new and improved seating structure manufactured from strong but light weight molded materials.

Other objects and advantages of the invention will appear from the following description in conjunction with the accompanying drawings in which:

FIGURE 1 represents one embodiment of an armless upholstered chair provided in accordance with the invention;

FIGURE 2 illustrates an embodiment of the invention consisting of an upholstered arm chair with wings on the arms;

FIGURE 3 is an exploded view illustrating the component parts of the essential main structure of the chair shown in FIGURE 1;

FIGURE 4 illustrates a modification of the structure shown in FIGURE 3 which makes it possible to manufacture a chair having the structure shown in FIGURE 2;

FIGURE 5 illustrates a partial assembly of the combined seat and back formed by uniting two of the components shown in FIGURE 3;

FIGURE 6 is a sectional view taken vertically from front to back through the center of the chair shown in FIGURE 2; and

FIGURE 7 is a sectional view taken vertically and transversely through the chair shown in FIGURE 2.

Referring to FIGURE 3 of the drawings, it will be seen that the main supporting structure of the chair illustrated consists of a front or upper shell 1 and a back or lower shell 2. Each of these shells is a unitary molded structure which is preferably made by felting cellulose fibers from an aqueous slurry on a porous former or die on which the fibers accumulate to the desired thickness. In practice, it is preferable to make each shell as a pre-form of molded fibers and each pre-form is dried to produce a final shell having a thickness from about $\frac{3}{16}$ inch to $\frac{1}{4}$ inch. The two shells are so shaped that they telescope into each other and have coinciding edges along the front, bottom, sides and back with an air space in the sides and back. The two shells are then bonded to-

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gether at the points where they contact and more particularly at the edges either by means of adhesive or by stapling to produce a unitary structure 3 as shown in FIGURE 5.

The unitary structure affords excellent resiliency and unusual durability and, at the same time, it is relatively light in weight.

The bottom or seating part of the unitary structure has the corresponding areas of both shells contacting throughout as shown in FIGURES 6 and 7. In the bottom area therefore the shells provide an unusually strong laminated structure.

It will be observed from FIGURES 3, 5, 6 and 7 of the drawings that the bottom or seating area of the skin stress structure has a recess or re-entrant space 4. The laminated parts 5 and 6 in this area provide an unusually strong supporting structure for springs or other types of resilient means that are employed to give the seating area resiliency. The invention is not limited to the use of any particular type of resilient means. Conventional steel springs can be employed, sponge rubber can also be used, or elastic bags containing air or other compressible fluid can be used. In any case, the portions 5 and 6 of the shell structure provide an unusually strong support and make it virtually impossible for the resilient means such as springs to break through the bottom of the chair as so often happens in conventional upholstered furniture. As shown in FIGURE 6, the well or recess area 4 is preferably deeper toward the back of the chair. This is made possible by providing a rather sharply inclined area 7 which forms an obtuse angle 8 with a less sharply inclined area 9 extending approximately to the center of the chair as measured from front to back where there is a greater obtuse angle 10 with respect to a less sharply inclined area 11. The latter makes another obtuse angle 12 with an upwardly inclined area 13.

As shown by FIGURE 7, the two shells are spaced from each other at the sides so as to provide hollow spaces 14 and 15. A hollow space 16 is also provided between the two shells at the rear of the chair as shown in FIGURE 6.

As shown in FIGURE 7, the side portions 17 and 18 of the shell structure are provided with flanges generally shown at 19 and 20 where the two shells meet and are united by an adhesive or other means. Flanges 19 and 20 provide inset or recessed areas 21 and 22 and the upper shell is molded in such a way as to provide opposing inset or recessed areas 23 and 24.

When it is desired to make an arm chair, a separate piece 25 is molded in such a way that it will fit in telescoping relationship over the portion 26 of the upper shell 1 and seat in the recesses 22 and 24. The opposite arm is constructed in a similar manner. The arm piece 25 in each case is riveted or otherwise fastened to the upwardly extending portion 26.

Where it is desired to provide a wing on the arm, a wing piece 27 is molded and riveted or otherwise fastened to the arm piece 25 as shown in FIGURE 7. By constructing the shells, the arm pieces and the wing pieces from a felted cellulose material, it is easily possible to staple these pieces together. Thus wing piece 27 can be fastened to the top of the arm piece 25 by means of a staple 28 and the flange 29 of the wing piece 27 can be fastened to the side of the arm piece 25 by a staple 30. It will be understood, of course, that a number of staples may be required for this operation. In a similar manner, the wing piece 31 on the opposite side of the chair is fastened to the arm piece 32.

The legs and frame of the chair generally shown at 33 in FIGURE 3 preferably consist of a welded steel base 34 to which the legs 35, 36, 37 and 38 are suitably fastened in any conventional manner.

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The shell structure in the perimeter of the seating area is molded with a marginal portion 39 where the upper and lower shells coincide as shown in FIGURE 7. This seats on the top of the welded steel frame 34 and the shell structure is fastened to the welded steel frame by means of screws 40 or other suitable means.

A preferred type of spring arrangement is illustrated in FIGURES 3, 6 and 7 and consists of a plurality of rubber webs 41 which extend from front to back of the chair and are held in place by fasteners 42 and 43. Each of fasteners 42 and 43 consists of a bent metal bar which has a clamping portion adapted to clamp one end of the rubber webbing. The rubber webbing is preferably reinforced with fabric at the clamping portion. The other end of the fastener is attached, for example, by means of one of the screws 40 to the shell structure and the frame. A similar support webbing 45 runs from side to side either above or below the webbing 41 and is held by fasteners 44. In the embodiment shown, the webbing 45 is below the webbing 41. While only a single webbing 45 is shown, it will be understood that a plurality of webs can be employed substantially corresponding in number to the webs that run from front to back of the chair.

In order to obtain a cushioning effect in the seat and back of the chair, it is preferable to use molded filler pieces made from polyether-type urethane foam. These pieces are pre-formed to the contours of the chair's basic structure. As shown in FIGURE 6, the pre-formed molded polyurethane foam section 46 is adhesively secured to the upper shell 1 to form the back of the chair. Another piece of polyurethane foam 47 is provided beneath the seat cushion over the springs. Seat cushion 48 may also be composed of a molded polyurethane foam. Another molded resilient piece 49, preferably consisting of polyurethane, is provided across the front of the chair. The entire upper part of the chair is then covered with a suitable fabric 50. Polyurethane foam or other suitable padding material can be provided between the fabric and the shell on the arms of the chair.

Where an armless chair is desired of the type shown in FIGURE 1, the telescoping arm and wing sections are omitted.

The thickness of the pre-molded foam cushioning may vary substantially, for example, from $\frac{3}{4}$ inch on the arms to $2\frac{1}{2}$ to 3 inches on the backs.

While the multiple shell structure is preferably made from cellulose, other materials which are moldable to self-sustaining structures 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 ($\frac{1}{2}$ 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 invention provides a simple method of manufacturing light durable upholstered articles of seating. Dowel joints and the like are eliminated. Contours of any de-

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sired shape can be obtained. Armless and arm chairs for living rooms and lounges are readily produced with or without arm wings and back wings.

This invention is hereby claimed as follows:

1. A seating article having a combined seat, side and back structure comprising a pair of molded shells contacting one another substantially throughout the seat portion of said structure and at the edges of said shells and having hollow spaces between said shells in the side and back portions of said structure.
2. A seating article having a combined seat, side and back structure comprising a pair of molded shells contacting one another substantially throughout the seat portion of said structure and at the edges of said shells and having hollow spaces between said shells in the side and back portions of said structure, said seat portion being recessed and having resilient means disposed in said recess.
3. A seating article having a combined seat, side and back structure comprising a pair of molded shells contacting one another in the seat portion of said structure and at the edges of said shells and having hollow spaces between said shells in the side and back portions of said structure, and molded arm sections telescopically arranged on said side portions of said structure.
4. A seating article having a combined seat, side and back structure comprising a pair of molded shells contacting one another in the seat portion of said structure and at the edges of said shells and having hollow spaces between said shells in the side and back portions of said structure, molded arm sections telescopically arranged on said side portions of said structure and molded wing sections fastened to said arm sections.
5. A seating article having a combined seat, side and back structure comprising a pair of molded shells contacting one another substantially throughout the seat portion of said structure and at the edges of said shells and having hollow spaces between said shells in the side and back portions of said structure, the portions of said structure normally subjected to direct pressure by the user being covered with a plastic resilient cellular material, and a covering material over said resilient cellular material and the other parts of said structure normally exposed to view.
6. A seating article having a combined seat, side and back structure comprising a pair of molded shells contacting one another substantially throughout the seat portion of said shells and at the edges of said shells and having hollow spaces between said shells in the side and back portions of said structure, the perimeter of the contacting shells in the seat portion of said structure being shaped to sit on a rectangular frame member to which legs are attached.

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