

MULTIPLE TRIANGULAR STRUCTURE FURNITURE

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2 Sheets-Sheet 1

FIG. 1.

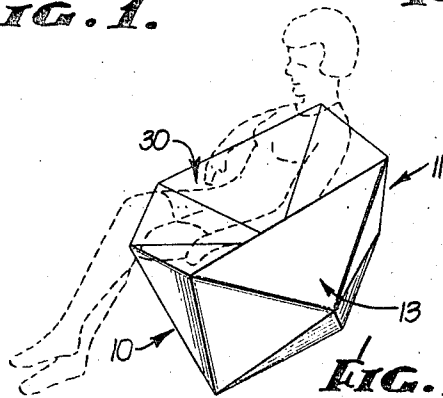


FIG. 4.

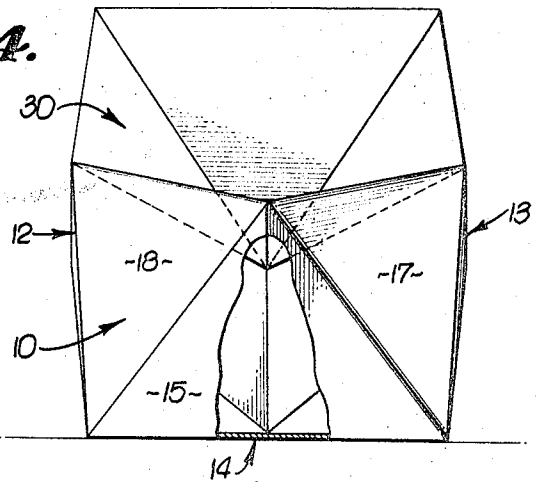


FIG. 12.

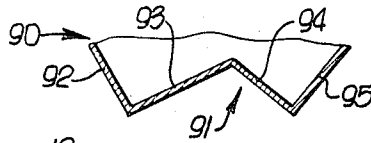


FIG. 2.

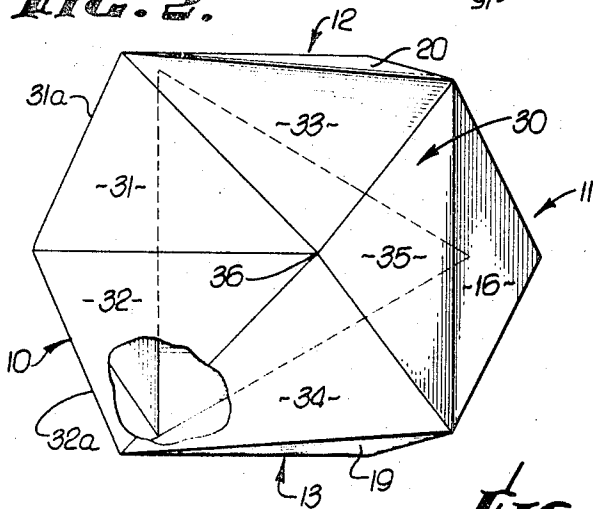


FIG. 5.

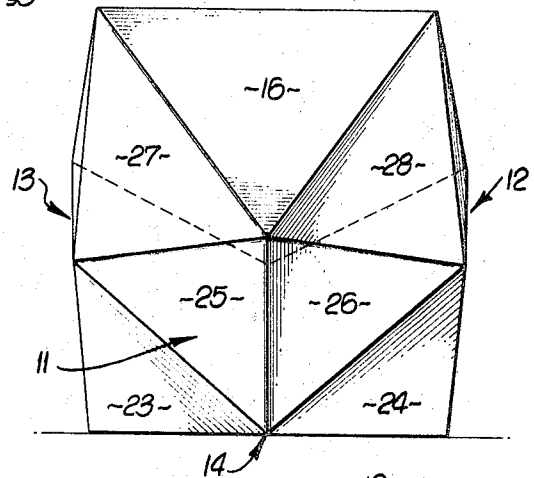


FIG. 3.

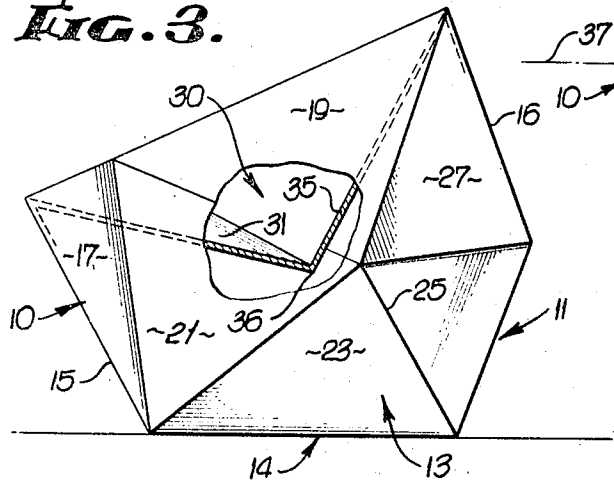
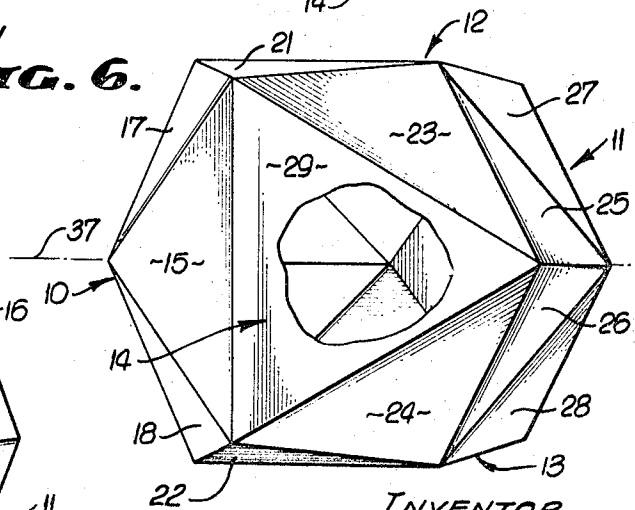


FIG. 6.



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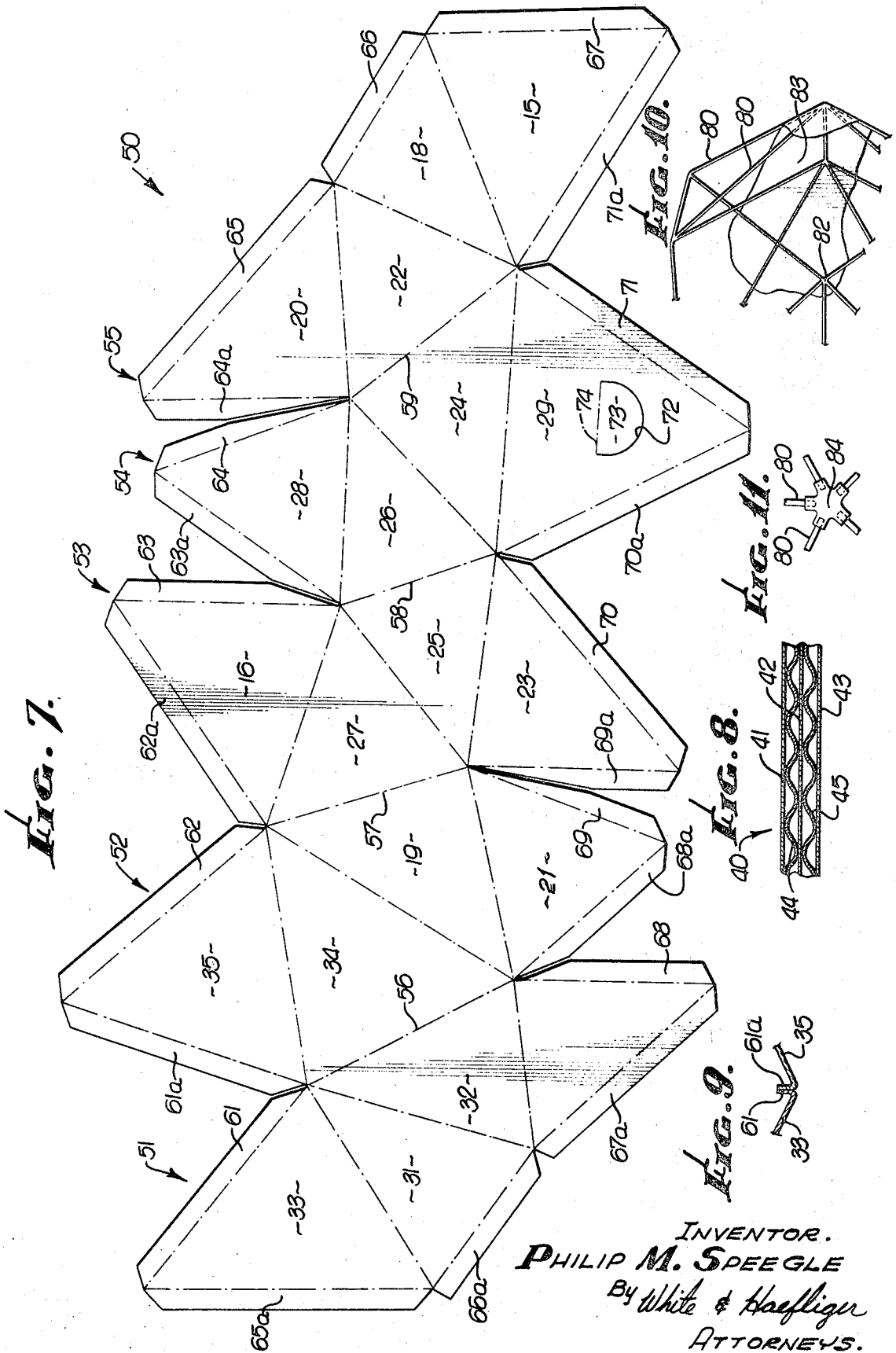
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3,556,593

MULTIPLE TRIANGULAR STRUCTURE FURNITURE

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2 Sheets-Sheet 2



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3,556,593

## MULTIPLE TRIANGULAR STRUCTURE FURNITURE

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10 Claims

### ABSTRACT OF THE DISCLOSURE

The disclosure concerns furniture comprising a multiplicity of interconnected triangular structures defining planes bounding the furniture interior, with certain planes defining a re-entrant recess or pocket usable as a seating zone, the furniture being of sturdy yet inexpensive construction.

### BACKGROUND OF THE INVENTION

This invention relates generally to furniture, and more particularly concerns an easily and quickly assembled piece of furniture such as a chair of sturdy, yet inexpensive construction.

Past chair structures have not, to my knowledge, afforded those combinations and sub-combinations of structural features, functions and unusual advantages characterizing the present invention. Among such advantages are the provision of a chair possessing unusual strength, stability and durability yet of a surprisingly economical and light weight construction; the provision of capability for rapid assembly by the user; and the provision of such an advantageous chair which is further characterized by desirable comfort.

### SUMMARY OF THE INVENTION

It is a major object of the invention to provide furniture such as a chair structure characterized as overcoming the deficiencies of prior chairs, as outlined above. Basically, the chair comprises a multiplicity of interconnected triangular structures defining planes bounding the chair interior, with certain of the planes defining a vertically exposed re-entrant recess or pocket. The latter may open upwardly to form a seating zone, or may open downwardly. The use of triangular structures affords the greatest strength and rigidity to the chair, using the minimum of material to achieve maximum strength. Further, the structure may comprise triangular panels having interconnected edge portions and enclosing the chair interior, and one particularly advantageous structure comprises a modified icosahedron employing twenty triangular panels, five of which are so located as to form the seating recess. Further, the interconnection of the panels is made surprisingly effective in one form of the invention wherein edge portions of adjacent panels are interconnected by tabs at the chair interior sides of the panels, access to the interior being had through one or more of the planes defined by the triangular structure to enable such interconnection.

It is another object of the invention to provide one or more easily cut or shaped flat patterns each of which defines a plurality of the triangular panels, and adapted to be folded at predetermined locations to form the described chair.

It is a still further object of the invention to provide a chair wherein the above-mentioned triangular structures comprise frame members extending lengthwise of the edges defined by adjacent triangles. In this environment, a flexible sheet covering may be carried on the frame members to bound the chair interior.

These and other object and advantages of the invention, as well as the details of illustrative embodiments, will

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be more fully understood from the following detailed description of the drawings, in which:

### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective of a form of chair incorporating the invention;

FIG. 2 is an enlarged top view of the FIG. 1 chair; FIGS. 3-6 are, respectively, side, front, rear and bottom views of the chair as seen in FIG. 2;

FIG. 7 is a plan view of a flat pattern adapted to be folded to form the chair of FIGS. 1-6;

FIG. 8 is section showing one form of triangular panel interior construction;

FIG. 9 is a section showing one form of interior connection of adjacent panels;

FIG. 10 is a bottom view of a chair of modified construction;

FIG. 11 is an enlarged showing of linear member connection to form joints in the FIG. 10 chair; and

FIG. 12 is a fragmentary view of a modified chair.

### DESCRIPTION OF PREFERRED EMBODIMENTS

As mentioned, the chair basically comprises a multiplicity of interconnected triangular structures defining planes bounding the chair interior, certain of the planes defining a re-entrant recess which opens upwardly to form a seating zone. One example is found in the FIGS. 1-6 chair having triangular panels at the front 10, rear 11, opposite sides 12 and 13, and bottom 14 of structure. In that example, panel 15 is exposed at the front of the chair; panel 16 is exposed at the rear of the chair; and panels 17 and 18 are exposed at opposite sides of the chair front. On the other hand, panels 19, 21, 23, 25 and 27 are exposed at side 13; symmetrically opposite (with respect to vertical plane 37) panels 20, 22, 24, 26 and 28 are exposed at side 12, as seen in FIG. 6; and of these, panels 17 and 18 also are exposed at the front 10 and panels 23-28 are exposed toward the rear.

A single panel 29 forms the lower horizontal plane of the chair, and panels 15, 23 and 24 slant upwardly from its three edges. Further, a number of panels are downwardly exposed as seen in FIG. 6.

A re-entrant recess forming seating zone 30 is defined by five panels, namely 31-35, as seen in FIG. 2, spaced above bottom panel 29. These five panels form a downward apex at 36. Further, the design is such that lower panels 31 and 32 taper rearwardly and are adapted to seat the hips of the sitter; side panels 33 and 34 are slanted upward to support the hips and sides and/or arms of the sitter; and back panel 35 is slanted upwardly and rearwardly to support the back of the sitter. Thus, there is such mutual cooperation of the panels 31-35 as to afford a surprising degree of comfort to the human torso, all with such mutual cooperation with the other panels as to afford remarkable chair sturdiness, strength and stability, which features are only best appreciated by actually sitting in the chair. Note that these features are present in a light weight chair which may be hollow and wherein the panels may have thin, paperboard construction, as for example is represented by the section showing in FIG. 8. As there seen, the paperboard or boxboard panel 40 comprises layers 41-43 interconnected by corrugations 44 and 45 bonded to such layers. Further panels 31 and 32 have front edges 31a and 32a which taper forward and downward, affording a surprising degree of freedom of movement and comfort.

While the chair described is in the form of an icosahedron, it will be understood that the invention extends to chairs with other numbers of triangular structures, there always being at least three such structures forming the seat.

Referring now to FIG. 7, the illustrated flat pattern 50 forms a series of triangular panels identified by numerals corresponding to those in FIGS. 2-6. Note that, proceeding from left to right, five groups 51-55 of panels (four in each group) are defined, groups 51 and 52 connected at fold 56; groups 52 and 53 connected at fold 57; groups 53 and 54 connected at fold 58; and groups 54 and 55 connected at fold 59. The pattern is adapted to be folded at the indicated fold lines to form the completed chair. Tabs are provided along certain edges of the panels and the chair is formed when pairs of tabs are connected in the following sequence of steps, with folding of the tabs along their fold lines to extend at the inside of the chair.

Step:	Connect tabs
1 -----	61, 61a
2 -----	62, 62a
3 -----	63, 63a
4 -----	64, 64a
5 -----	65, 65a
6 -----	66, 66a
7 -----	67, 67a
8 -----	68, 68a
9 -----	69, 69a
10 -----	70, 70a
11 -----	71, 71a

Note in FIG. 9 the pair of tabs 61 and 61a glued or stapled (or otherwise connected) together to project at the inside of the chair. Toward near completion of the assembly, the remaining tabs may be connected via access to the chair interior provided through an opening 72 in the bottom panel 14, which may be covered by a flap 73 fold-connected at 74 to the body of that panel.

FIG. 10 illustrates a modified chair wherein the triangular structures are defined by linear frame members such as at 80, extending lengthwise of the edges, and defined by adjacent triangles. The view of FIG. 10 is taken looking up into the chair frame the bottom thereof and toward the underside of the seat, the apex of which is seen at 82. Thus, the view corresponds to the right hand portion of FIG. 6. The chair in this form may be covered with a suitable sheet material, or left open; however, the seat triangles are covered as indicated for example by the canvas at 83. The joints at the terminals of the linear members 80 may be joined by the connector 84 seen in FIG. 11, and the members 80 may comprise wooden or aluminum rods.

Finally, FIG. 12 illustrates a chair 90 having a re-entrant recess 91 at the bottom thereof, the chair being formed of triangular structures certain edges of which are indicated at 92-95.

I claim:

1. Furniture comprising a multiplicity of interconnected generally triangular structures defining planes bounding the furniture interior, certain of said planes defining a vertically exposed downwardly re-entrant seating recess with respect to said interior.
2. The furniture of claim 1 in which said structure comprises triangular panels having interconnected edge portions and enclosing said interior.
3. The furniture of claim 1 in the form of a chair, and in which said structure comprises about twenty generally triangular panels, at least five of which form said recess which opens upwardly.
4. The furniture of claim 2 in which the furniture bottom comprises a flat horizontal panel located directly below said recess.
5. The furniture of claim 2 including tabs on and interconnecting said edge portions of certain adjacent panels at the interior sides of the panels.
6. The furniture of claim 1 in which certain of said structures comprise frame members extending lengthwise of the edges defined by adjacent triangles.
7. The furniture of claim 6 including a flexible sheet covering on said members and forming said recess.
8. For use in forming furniture as defined in claim 2, flat pattern means forming a series of said triangular panels and adapted to be folded at predetermined location to form said furniture.
9. The flat panel as defined in claim 1 wherein one of said generally triangular panels contains an opening through which access may be had to the furniture interior.
10. The furniture of claim 1 wherein two of said triangular structures at the bottom of said recess have frontwardly exposed edges which taper forwardly and downwardly, said two structures adapted to support the legs of a sitter.

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U.S. Cl. X. R.

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