

[54] **MODIFIED L FURNITURE STRUCTURE**

[76] Inventor: **Pesach Lupinsky**, 2111 Ashby Avenue, Apt. No. 1, Berkeley, Calif. 94705

[22] Filed: **Dec. 20, 1971**

[21] Appl. No.: **209,916**

[52] U.S. Cl. **297/445, 297/419, 297/443, 297/449**

[51] Int. Cl. **A47c 7/54, A47c 7/20**

[58] Field of Search **297/118, 232, 244, 297/248, 440, 445-449**

[56] **References Cited**

UNITED STATES PATENTS

3,152,836	10/1964	Swan.....	297/445
3,131,970	5/1964	McGregor.....	297/445

OTHER PUBLICATIONS

Home Craftsman Magz., May-June 1950, pp. 11 to 13.

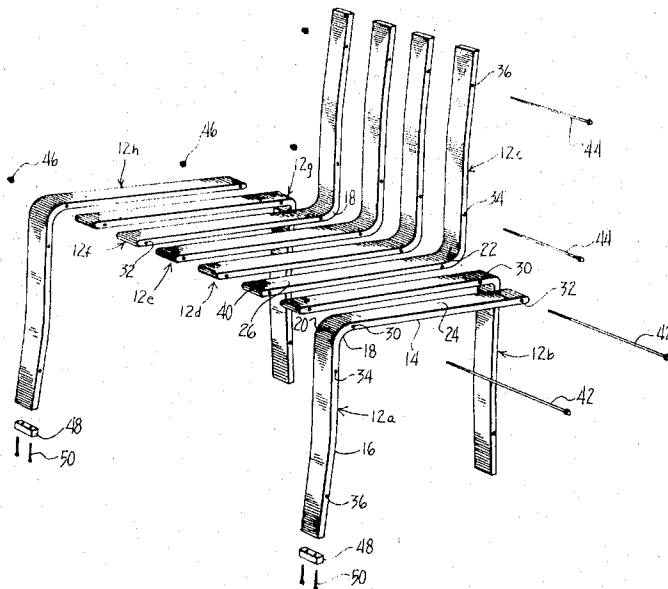
Primary Examiner—Casmir A. Nunberg
Attorney—Thomas H. Olson

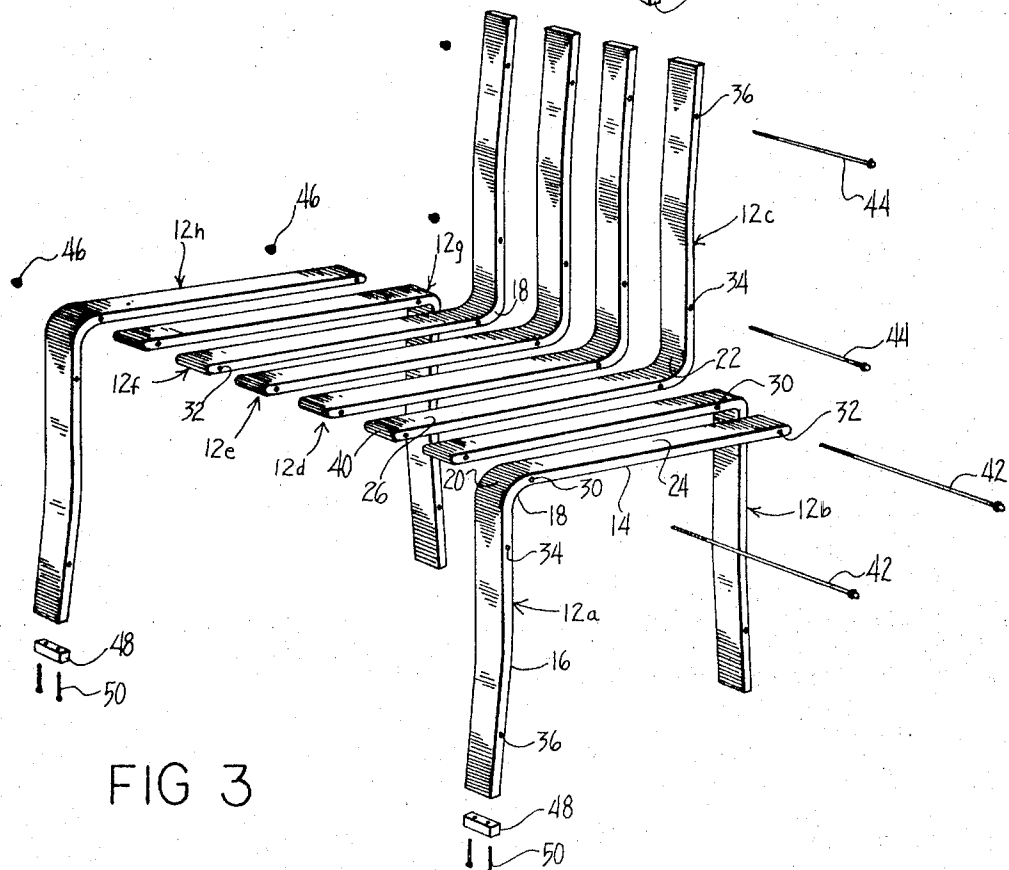
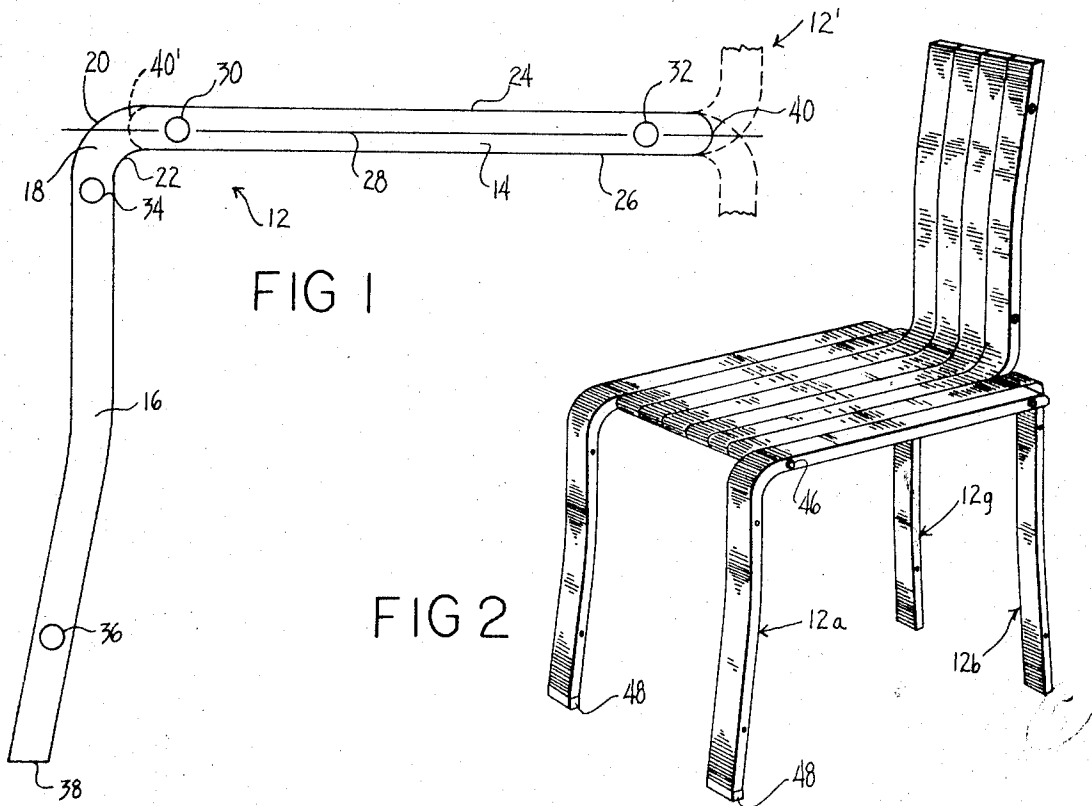
[57]

ABSTRACT

A generally L-shaped element, a plurality of which can be assembled to form a table, chair, sofa, or like article of furniture. Uniformly positioned holes in each element and rods which extend through the holes to retain the elements in a unitary assembly. L-shaped elements so formed that they can be assembled in numerous different configurations. An article of furniture that can be disassembled for transport.

6 Claims, 5 Drawing Figures





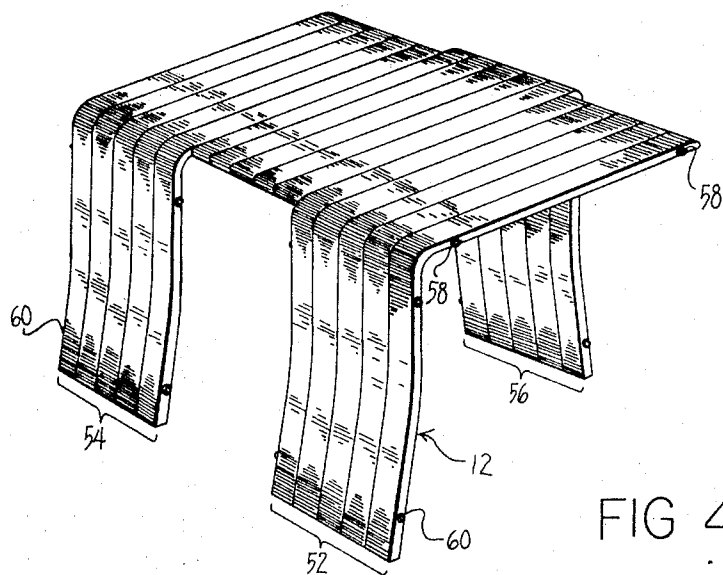


FIG 4

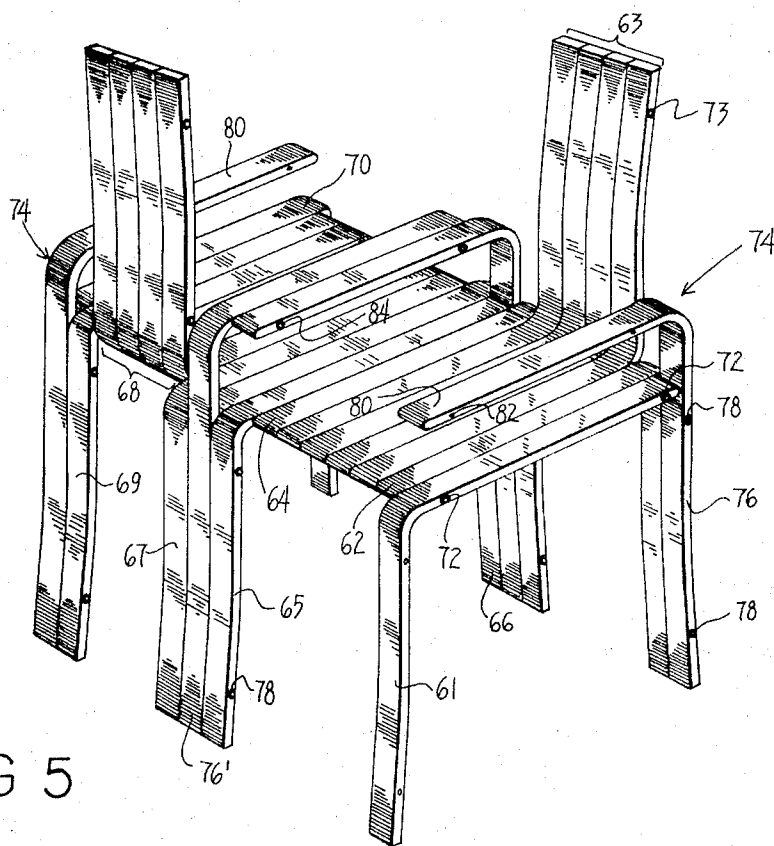


FIG 5

MODIFIED L FURNITURE STRUCTURE

This invention relates to an article of furniture and more specifically to an individual structural member, an identical plurality of which can be combined to form the article of furniture.

The basic structural element according to the present invention is of generally L-shaped form which is defined by a vertical plate and a horizontal plate rigid with and generally perpendicular to one another. The upper and lower surface of the horizontal plate are symmetrical so that a smooth horizontal surface is formed whether the vertical plates of the various members extend upward or downward from the horizontal plate. Upward extending vertical plates form the back of an article of furniture and the downward extending plates form the legs of an article of furniture. The structural elements are provided with laterally extending holes through which members, such as threaded bolts, are passed to retain a plurality of the structural elements into an assembled article of furniture.

A feature and advantage of articles of furniture made according to the present invention is that they can be shipped in a disassembled or knocked down condition thereby conserving shipping volume.

Another feature and advantage of the present invention is that a given set of the structural elements made according to the invention can be assembled in one of a plurality of configurations according to the taste and needs of the user of the same. Thus a given set of structural elements can be used to form a chair on an end table and a greater number of elements can be used to form a sofa or a coffee table.

Still another feature and advantage of the invention is that it affords functional and attractive furniture at extremely low cost because most, if not all, of the elements used to form the various articles are identical with one another and lend themselves to low cost, mass production.

The foregoing together with other features, advantages and objects of the present invention will be more apparent after referring to the following specification and accompanying drawings in which:

FIG. 1 is a side view of an L-shaped structural member of the invention;

FIG. 2 is a perspective view of a chair formed according to the present invention;

FIG. 3 is an exploded view of the chair of FIG. 1 showing the elements that comprise the structure of FIG. 1;

FIG. 4 is a perspective view of a coffee table, or the like, formed according to the present invention; and

FIG. 5 is a perspective view of a double chair formed according to the invention and showing a modification providing arms for the chair.

Referring more particularly to the drawings referenced numeral 12 indicates generally an L-shaped structural member according to the invention that is formed by a horizontal plate 14 and a vertical plate 16 which are rigidly joined to one another at an intersection 18. As can be seen most clearly from FIG. 1, intersection 18 has an outer arcuate surface 20 and an inner arcuate surface 22 concentric with the outer arcuate surface.

Horizontal leg 14 has a first surface 24 and a second surface 26 which in the embodiment shown herein are flat, mutually parallel surfaces. Such shape is exem-

plary of a requirement that surfaces 24 and 26 be symmetrical about an imaginary plane 28 extending through the center of the horizontal leg 14 in order that a substantially discontinuity-free horizontal surface is defined irrespective of whether vertical legs 16 extend upward or downward.

Horizontal leg 14 has two openings 30 and 32 therethrough, the former being adjacent the intersection 18 and the latter being adjacent the free end of the horizontal plate. Openings 30 and 32 are preferably cylindrical with their longitudinal axes disposed within plane 28 so that when elongate members such as bolts described in more detail hereinafter are extended through two or more of the horizontal plates, the surfaces 24 and/or 26 of the adjacent horizontal plates form a substantially smooth or discontinuity-free surface. The openings are perpendicular to the side edge surfaces of the L-shaped members so that such edge surfaces are drawn into firm contact by bolts or rods extending through the openings. If surfaces 24 and 26 are other than flat or planar each surface must additionally be symmetrical with respect to a line midway between openings 30 and 32.

Vertical leg 16 is provided with two similar openings 34 and 36, the former being positioned adjacent intersection 18 and the latter being positioned adjacent the lower end of the vertical leg. It will be noted from FIG. 1 that vertical leg 16 terminates in a flat, floor engaging surface 38 and that horizontal leg 14 terminates in a rounded surface 40. It is preferred that the distance from the center of opening 32 to end surface 40 is approximately equal to the distance from the center of opening 30 to the inner surface of vertical plate 16; such relationship has aesthetic value and a functional purpose which will be described hereinafter.

For exemplifying a combination of L-shaped members 12, FIGS. 2 and 3 show a chair formed of eight such members. Because each individual member is identical the various members will be referred to as 12a, 12b, 12c, etc. L-shaped members 12a and 12b are positioned with their respective vertical plates extending downward from opposite ends so as to form the legs on one side of the chair. L-shaped members 12g and 12h are similarly relatively positioned to form the legs on the opposite side of the chair. The intermediate L-shaped members 12c, 12d, 12e and 12f are arranged with their vertical plates extending upward at the rear of the assembly so as to form a back supporting structure. The members 12a-12h are retained in the assembled relation shown in FIG. 2 by two rods 42 that pass through openings 30 and 32 in the respective horizontal plates of each of the members and by two rods 44 that pass through the openings 34 and 36 in the respective vertical plates of members 12c-12f. Rods 42 and 44 are threaded at each end, and cup nuts 46 threaded onto the protruding threaded ends of the bolts. The cup nuts are both attractive and present a smooth exterior surface.

A preferred form of chair according to the present invention is completed by the addition of spacers 48 on the flat end surfaces 38 of vertical plate 16 of members 12a and 12h to elevate the front of the chair so that the top of the chair makes an angle of about 3° with horizontal. Such angle enhances the comfort of the user of the chair. Spacers 48 are fastened to members 12a and 12h by means of screws 50 which pass through suitable holes in the spacers and engage vertical plate 16.

It will be appreciated from the foregoing and from FIG. 3 that the parts for a chair can be efficiently packaged in a relatively flat shipping container thereby reducing both the first cost of a chair and subsequent moving costs, should the owner of the chair desire to move the chair from one location to another. Because the L-shaped members are identical, assembly of the chair can be achieved by those with little or no manual dexterity and skill.

Although the form of the chair shown in FIG. 2 is quite satisfactory and comfortable, it is obvious that cushions and/or padding can be added to the completed structure at the option of the user thereof. If a tapered set cushion is employed, it is feasible to delete spacers 48 in order to achieve the desideratum of providing a sloped seat surface.

A table in the form of a coffee table can be formed as exemplified in FIG. 4 by employing the L-shaped members of the present invention. The table in FIG. 4 is formed of 15 identical L-shaped members 12, the L-shaped members being arranged in three groups of five members each. The first group, identified by referenced numeral 52, forms one leg of the table, a second group 54 forms another leg of the table and a third group 56 forms a third leg of the table. The 15 L-shaped members are retained in assembled position by relatively long through bolts or rods 58 extending through the openings in the horizontal plates of all the L-shaped members and relatively short bolts or rods 60 which in the embodiment of FIG. 4 extends through the openings in the vertical legs of five juxtaposed L-shaped members of each group.

A final variation which demonstrates the versatility of the present invention is depicted in FIG. 5 in which 16 L-shaped members 12 are combined to form a double chair. Reference numeral 61 indicates the rightward most L-shaped member which forms one of the legs and is immediately adjacent another member 62 which forms the leg on the opposite side of the chair at the right hand end. Next in order is a group of four L-shaped members 63 which as seen in FIG. 5 are oriented with their respective vertical legs extending upward thereby forming the back supporting structure for one half of the chair. Next to group 63 is an L-shaped member 64 which is oriented similar to member 62 following which is a member 65 which is oriented the same as element 61. Proceeding leftward as seen in FIG. 5, a member 66 forms a leg corresponding in position to that formed by element 62 and a member 67 has its vertical plate on the same side of the article of furniture as the vertical plate of member 65. Continuing still further leftward in the figure, a group of four L-shaped members 68 is positioned as shown with the vertical plates extending upward in position on the opposite side of the chair from the vertical plates of the group of members identified by reference numeral 63. Finally, an L-shaped member 69 having its vertical plate on the same side of the chair as the vertical plate of member 61 and an oppositely positioned member 70 are provided. Members 69 and 70 are positioned with the vertical plates extending downward to define the legs for lefthand end of the structure. The 16 L-shaped members are retained in assembled condition by bolts or rods 72 which pass through the openings in all the horizontal plates of the members. Relatively shorter rods or bolts 73 retain the vertical plates of groups 63 and 68 in a rigid, assembled condition.

FIG. 5 shows a modification of the present invention which provides L-shaped elements compatible with but somewhat different from the L-shaped members 12 heretofore described. Such L-shaped element is designated by referenced numeral 74 and includes a vertical plate 76 that is longer than vertical plate 16 of L-shaped member 12. The lower portion of vertical plate 76 is substantially identical to plate 16 in that the shape of plate 76 is similar to shape of vertical leg 16 and plate 76 is provided with openings that register with openings 34 and 36 on vertical plate 16. Accordingly, element 74 is bolted to the side of the assembled structure by bolts that are engaged with nuts 78 which nuts are shown in FIG. 5.

Element 74 includes a horizontal plate 80 that, because of the length of vertical plate 76, is spaced above the top surface of the chair defined by the respective surfaces 24 and 26 or horizontal member 14. Horizontal legs 80 are provided with two or more openings 82 which are so positioned that the two centrally located elements can be bolted together as at 84. It will be noted from FIG. 5 that elements 74 have the same width as L-shaped members 12 so that they interfit with one another (see e.g. 76' the vertical leg of centrally located element which fits between and is fastened to the vertical plates of L-shaped members 65 and 67).

It will be appreciated from FIG. 5 that termination of end 40 of horizontal plate in alignment with the inner surface of vertical plate 16 affords clearance for the vertical plate of L-shaped element 74 to fit properly to form the arm support for the chair.

An alternative structure to that shown in FIG. 5 is a sofa which is made by reversing the group of L-shaped members designated by reference numeral 68 so that they are on the same side of the structure as the group of members identified by reference numeral 63. Such structure can be made with or without an arm formed by L-shaped element 74 in the center. The specific configuration for articles of furniture is extensive and only several examples have been given herein for the purpose of illustrating the invention.

The width of the L-shaped members is determined by both aesthetic and strength requirements. Because the members are identical because they are placed in juxtaposition during fabrication of a furniture piece, the width is not critical since two members can be combined to form an element having a width equal to that shown in the drawings. Although economy of production dictates that all elements be of the same width, such condition is not essential since additional versatility can be achieved by combining L-shaped members of relatively narrow width with L-shaped members of relatively wide width.

Although several embodiments of the invention have been shown and described it will be obvious that other adaptations and modifications can be made without departing from the true spirit and scope of the invention.

What is claimed is:

1. An article of manufacture comprising a generally L-shaped member formed by a horizontal plate and a vertical plate, each said plate having an inner end and an outer end and being rigidly joined at respective inner ends in generally perpendicular relation, said horizontal plate having upper and lower surfaces that are symmetrical of a plane centrally of said horizontal leg, said horizontal leg having opposed parallel edge faces generally normal to the extending between said sur-

5

faces so that plural said horizontal legs can be placed in juxtaposition to form a substantially continuous surface, there being at least two openings through said horizontal plate, said openings being symmetrical of the mid-region of said horizontal leg and elongate along a central axis lying in said central plane and terminating in said faces so that a plurality of said members can be fastened together to form an article of furniture by aligning the openings in said horizontal plate of each said member, irrespective of whether the vertical legs extend upward or downward and whether the inner end of the horizontal plate of one said member is aligned with the inner or outer end of the horizontal plate of the adjacent member.

2. The article defined by claim 1 wherein said vertical leg includes at least one opening therethrough, said opening being elongate along an axis parallel to the axis of elongation of the openings in said horizontal leg.

3. The article defined by claim 1 wherein said vertical leg is curved so that the outer and thereof extends beyond the inner and thereof in a direction parallel to the plane of symmetry of said horizontal leg.

4. The article defined by claim 1 in combination with a plurality of identical said members, there being at least three said members oriented such that the vertical plates extend downward, all said members being aligned in lateral juxtaposition so that said openings align with one another, and tension elements extending through said aligned openings for retaining said members in assembled condition, thereby forming an article of furniture in which said downward extending members constitute the legs of said article of furniture.

5. The article defined by claim 4 wherein the vertical legs of said member are formed with at least two spaced apart openings therethrough in combination with first and second generally L-shaped elements each having a vertical plate and a horizontal plate rigidly attached to said vertical plate, the vertical plate of said element being formed with openings therethrough that are positioned so that the horizontal plates of said element are parallelly spaced above the horizontal plates of said

6

generally L-shaped members when last said openings register with the openings in said vertical plate of said generally L-shaped members, and means extending through the registered openings for retaining the vertical legs of said elements to the vertical legs of said generally L-shaped members so that the horizontal plates of said L-shaped elements form arm rests.

6. An article of furniture comprising in combination a plurality of identical generally L-shaped members each of which is formed by a horizontal plate and a vertical plate, each said plate having an inner end and an outer end and being rigidly joined at respective inner ends in generally perpendicular relation, said horizontal plate having upper and lower surfaces that are symmetrical of a plane centrally of said horizontal leg, said horizontal leg having opposed parallel edge faces generally normal to and extending between said surfaces, there being at least two openings through said horizontal plate, said openings being symmetrical of the mid-region of said horizontal leg and elongate along a central axis lying in said central plane and terminating in said faces, a first pair of said L-shaped members being oriented with respective horizontal plates juxtaposed so that the respective vertical plates depend from opposite ends of the first juxtaposed pair to define one pair of legs for the article of furniture, a second pair of said L-shaped members being oriented with respective horizontal plates juxtaposed so that the respective vertical plates depend from opposite ends of the second juxtaposed pair to define another pair of legs for the article of furniture, the remainder of said plurality of said L-shaped members disposed between said first and second pairs, said remainder of L-shaped members being oriented with the horizontal plates thereof in juxtaposition to the horizontal plates of said first and second pair, the vertical plates of said remainder extending upward to define the back of the article of furniture, and means extending through said openings for retaining said members in juxtaposed assembly.

* * * * *

45

50

55

60

65