Dec. 13, 1955 J. O. TURNER 2,726,713

CHAIR WIIH FLEXIBLE BOTTOM AND BACK

Filed March 17, 1951 4 Sheets-Sheet 1

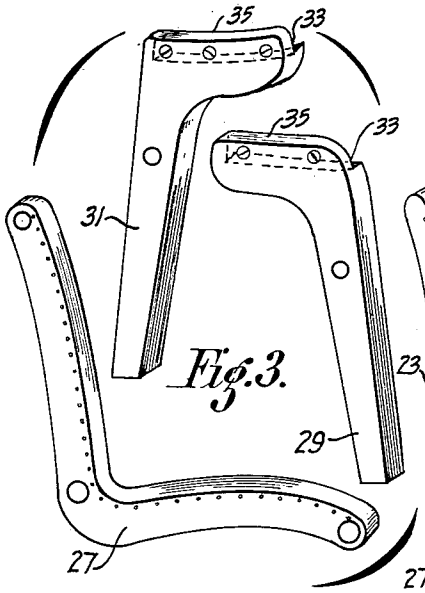


Fig. 3.

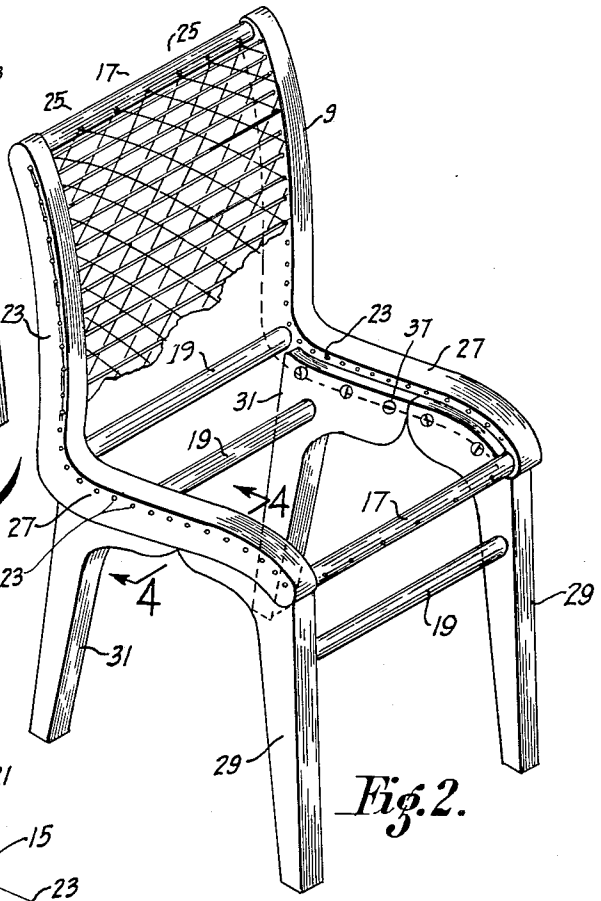


Fig. 2.

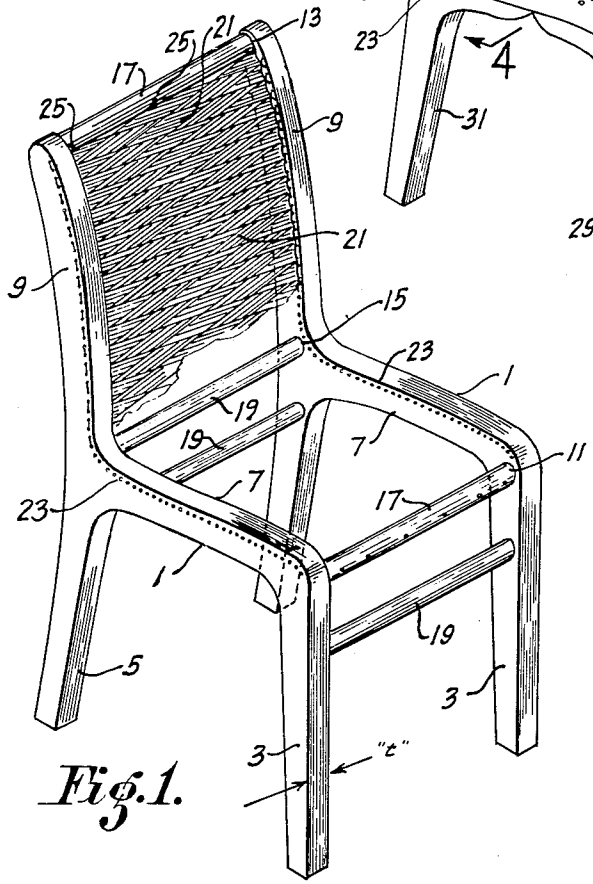


Fig. 1.

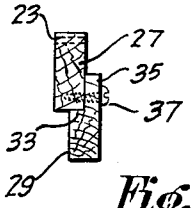


Fig. 4.

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CHAIR WIIH FLEXIBLE BOTTOM AND BACK

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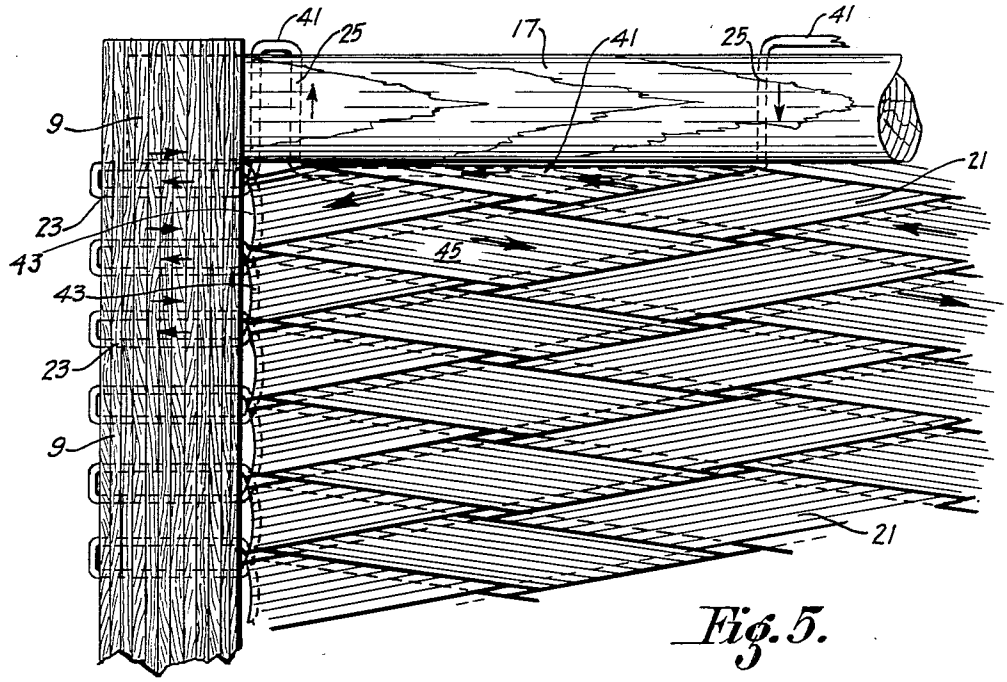


Fig. 5.

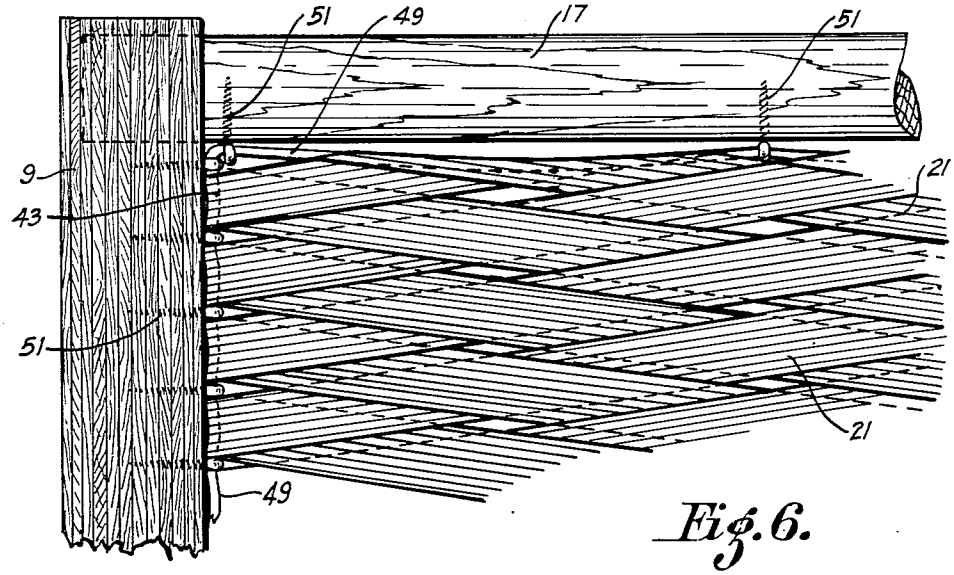


Fig. 6.

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CHAIR WIIH FLEXIBLE BOTTOM AND BACK

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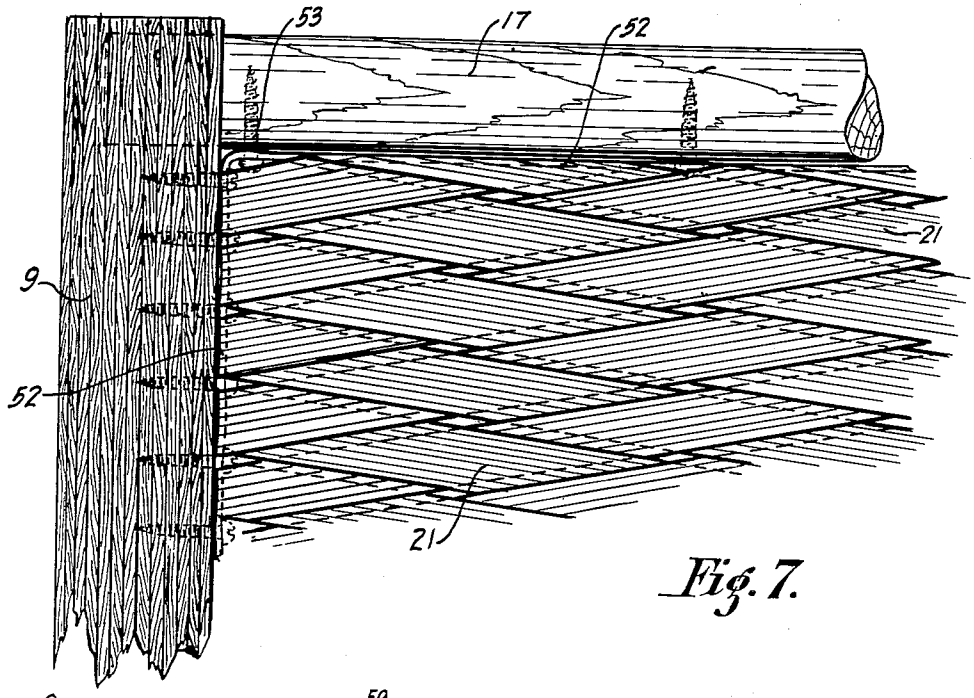


Fig. 7.

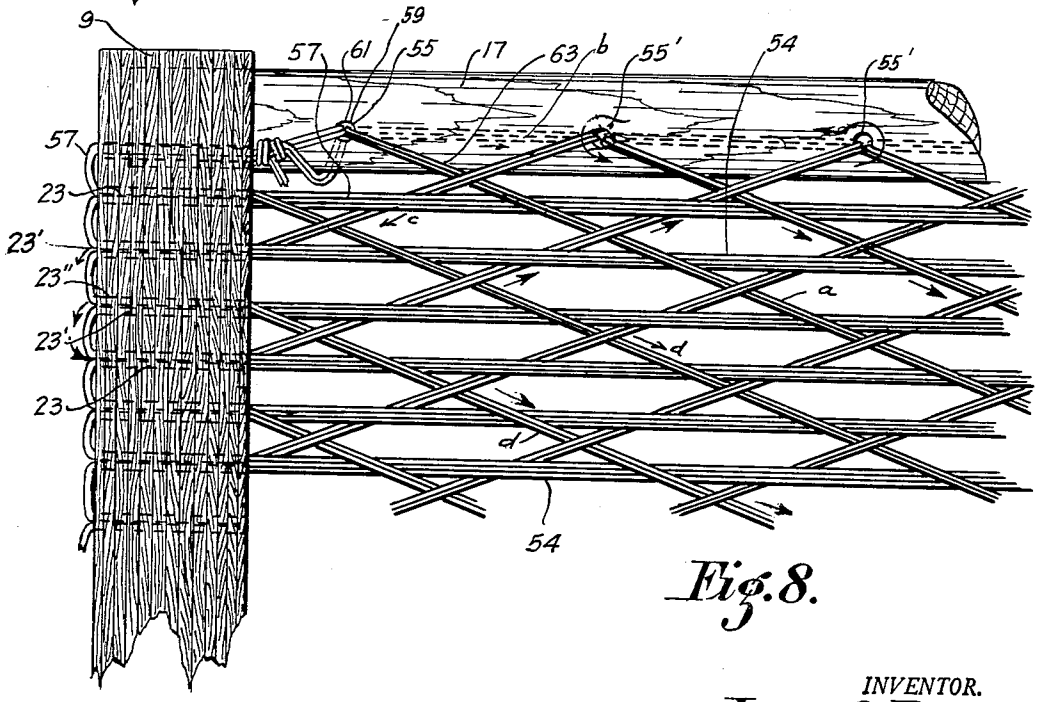


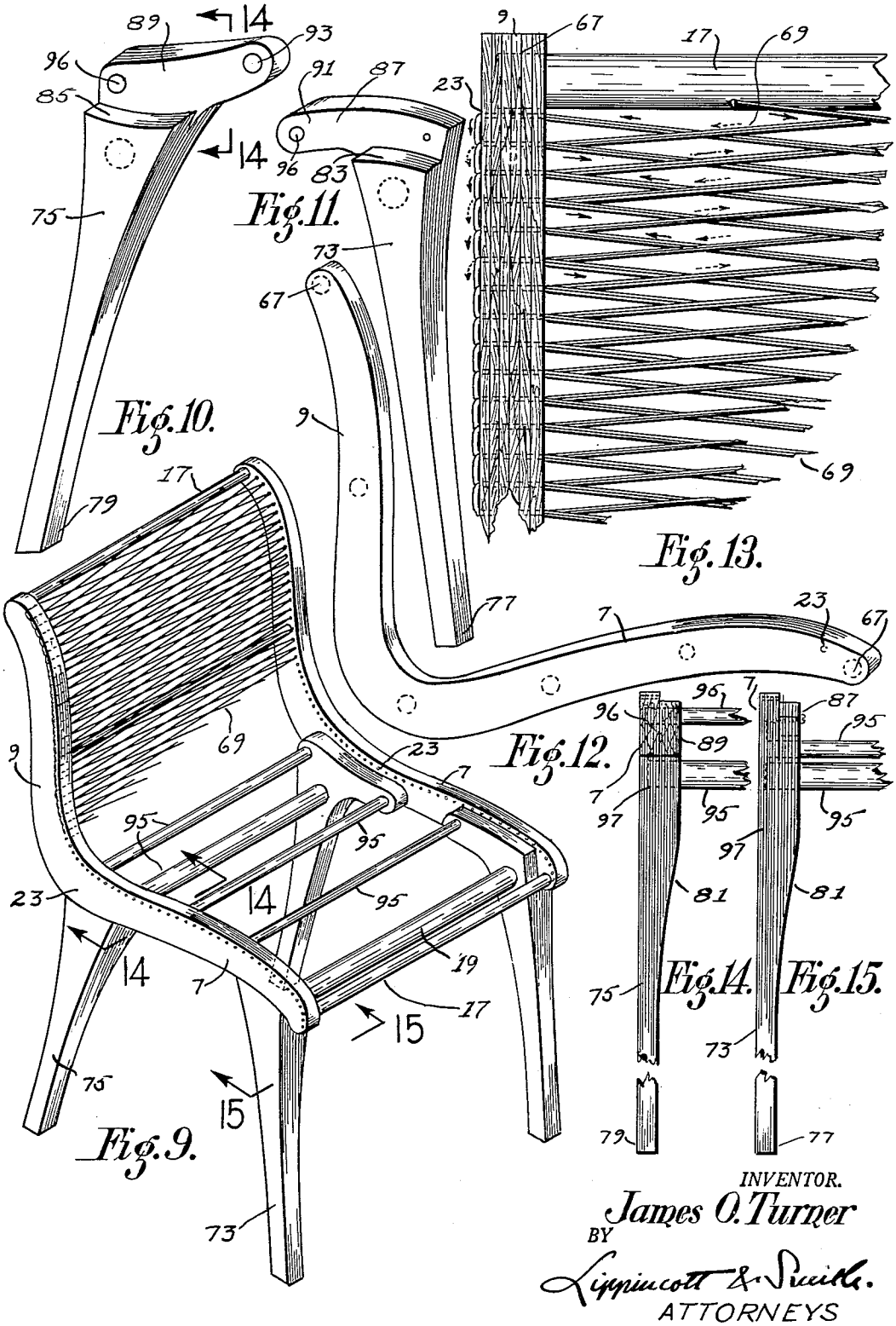
Fig. 8.

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CHAIR WIIH FLEXIBLE BOTTOM AND BACK

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2,726,713

CHAIR WITH FLEXIBLE BOTTOM AND BACK

James O. Turner, Berkeley, Calif.

Application March 17, 1951, Serial No. 216,121

2 Claims. (Cl. 155—187)

This invention relates to chair constructions. It is particularly directed to the type of chair construction where laterally-spaced chair frame-work sections, forming at least the outer support rails for the chair seat and the edge-supports for the chair back, are positionally-spaced from each other by suitable spacing members positioned at least generally at the front of the chair seat-support rails, at substantially the top of the back portions, and at some intermediate point. Suitable load-supporting strands are woven between the framework sections and serve, particularly when loaded, to hold the separate chair frame components in a state of compression with respect to each other.

The chair construction is such that between the framework support rails for the chair seat and the edge-supports of the chair back a resilient load-bearing seat and back surface is suitably strung. Such a construction is preferably in the form of continuous laceable strands strung back and forth to form generally only the weft portion of the pattern. The strands are looped or anchored to the edges of the framework at each point of reversal. In this manner the loading placed upon the so strung strands is always in a direction to tighten the spaced members relative to the spacing members and thereby give greater structural strength.

Further, as will later become more particularly apparent, the stringing extends only between the framework. It is so arranged that there are no lacings passed over the chair frame to obscure it. The overall effect of the lacing accordingly tends to simulate the effect of solid upholstery. The lack of any warp or substantially longitudinal strands in the woven pattern becomes of significant advantage from the standpoint of comfort in use of the article.

In one of its preferred forms, the chair framework herein to be described is formed competely from laminated plywood panel material, insofar as all side members, such as seat-supporting rails and the edge-supports of the chair back and the chair legs, are concerned. Spacing members, or cross members, also regarded in some instances as rungs, are preferably constructed from solid material of a character generally similar to dowels or rungs of the now-known variety. In one of the forms of construction herein proposed, the laminated plywood panel material of any selected number of plies may be cut out in a band-sawing operation in such a way that all of the chair back, the chair seat and the chair legs are cut from a flat piece of stock material, which may or may not be the same for all components. The components for each side of the chair are precisely similar, so that a multiplicity of sections for many chairs may be cut from flat pieces of plywood in one sawing operation in which the stock is stacked in a multiplicity of layers.

In another form which the invention may assume, the chair seat-supporting rails and the edges of the chair back may be cut out in a single sawing operation from one piece of plywood stock. The chair legs then may be individually cut from similar stock in other sawing operations. Alternatively, where desired, two of the chair legs may be cut in a single operation. This form of construction is such that the chair seat-supporting rail and the edges of the chair back form one generally L-shaped section, as do each of the chair legs. The chair legs are then so cut as to fit together with the seat and weight-supporting rail. Ready attachment and securement of these components with respect to each other is generally accomplished by adopting well-known lapping and gluing processes. Further, mechanical attachment means may also be used if desired.

The actual load-bearing surfaces of the seat and back are formed of fabrics, cords, lacings, tapes, webbing or other flexible material, which is suitably strung back and forth between the adjacent edges of the seat and weight-supporting rails and the edges of the chair back, but not overlapping any of them, to form a woven or interlaced pattern. As such, the seat and back-support strands or the like are secured or supported from only the adjacent edges of the frame-work members to which they attach, so that all loading is suspended between the frame members in such a way as to draw them more closely together with greater loading.

With the foregoing in mind, it becomes an object of this invention to provide a chair construction which is of strong structural design and yet which adopts manufacturing and construction formation and assembly operations of such character as greatly to simplify the manufacture.

Another object of the invention is to provide a chair construction of particularly pleasing aesthetic design having nonetheless exceptional structural strength. The plywood construction results in a striped edge pattern with the edges of the plywood left exposed.

Another object of the invention is to provide for chair lightness in weight without sacrificing chair strength. At the same time, through the use of a preferred laminated plywood panel construction, the chair components can be formed rapidly as cutouts, with a minimum material loss, in that the various individually similarly shaped components may be cut from a flat piece of stock with minimum waste.

A further object of the invention is to provide for increased structural strength while maintaining design attractiveness through the provision of load-bearing support surfaces which extend substantially only transversely of the support elements and create the general impression of an upholstered unit. As already noted, such arrangements, while increasing the strength of the finished product, serve, in addition, to insure greater comfort in use than would be possible were the weft-supports to be combined with longitudinally-extending warp strands running from the front edge of the chair seat to the top of the chair back. The load-support strands are so located between the supported rails or edges that they form a smaller angle with the direction of extent of the spacing members between the support components than with directions normal thereto, which thus tends continually to maintain the various components of the chair framework in compression.

It is a further object of this invention to provide a chair construction of the character described, wherein the load-bearing components are in the form of a continuous tape, cord, lacing, webbing, fabric or the like, which is strung between adjacent edges of the chair framework and reverses in direction continually without being rigidly attached to the chair framework at each point of reversal.

A further object of the invention is to provide a chair construction which is strong, light in weight, attractive in appearance, relatively simple and inexpensive to manu-

facture, and yet which maintains the feature of ease of use and assembly.

Other objects and advantages of the invention will become apparent from a consideration of the following description when read in connection with the accompanying drawings, wherein:

Fig. 1 is a general perspective view of a chair constructed according to one feature of the invention, wherein all of the legs, the seat-supporting rails and the back-supporting edges are cut from a single piece of stock and separated by spacing members which form the chair rungs and which are secured to such chair framework;

Fig. 2 is a similar view of a modified form of chair construction wherein the seat-supporting rails and the back-supporting edges are cut from one piece of stock, and the chair legs are separately cut and then attached thereto, with the spacing members joining the so-formed framework, as shown by Fig. 1;

Fig. 3 is a view to show particularly the individual L-shaped sections into which the various chair components of the arrangement of Fig. 2 are initially formed;

Fig. 4 is a section on the line 4—4 of Fig. 2 to show one arrangement whereby the weight-supporting rail section and the chair leg may be lapped in assembly;

Fig. 5 shows one form by which supporting strands or tapes may be strung between adjacent edges of the chair framework and secured at the said edges by means of supporting cords or the like, strung through the chair framework;

Fig. 6 is a modification of the construction of Fig. 5 showing the tape-supporting cords located through eyelets fastened to the chair framework;

Fig. 7 represents a still further modification of the structure of Fig. 5 for fastening the load-bearing tapes of Fig. 5;

Fig. 8 is a still further modification to show the construction and support of the load-bearing elements when these components are either in the form of narrow tapes or cords arranged to extend at their ends through the chair framework and to be lapped and interlaced generally as weft lacings of a woven pattern;

Fig. 9 is an isometric view of a modified form of construction;

Fig. 10 is a view of one of the rear chair legs of the Fig. 9 modification;

Fig. 11 is a view of one of the front chair legs of the Fig. 9 modification;

Fig. 12 is a view of the back-support and seat rail for securement to the leg members of Figs. 10 and 11;

Fig. 13 shows a modification of the strand lacing formation of Figs. 2 and 8;

Fig. 14 is a view, partly in section, taken on the line 14—14 of Figs. 9 and 10, looking in the direction of the arrows; and

Fig. 15 is a view showing the chair seat-support rail and one front leg looking in the direction of the arrows 15—15 of Fig. 9.

Referring now to the drawings, the chair construction comprises a framework 1 which is formed of a plurality of layers of wood of the desired thickness built up into a laminated stock which is generally known as plywood. The plywood construction is well known and provides the great solidity of structure. It is well understood that in any plywood structure the separate laminations are so positioned and secured with respect to each other as to be able to withstand either tensile or compression strains in all directions. Depending upon the structure to be formed, the number of separate plies in the stock from which the chair main-supports are cut may vary, although in present usage it has been found desirable to select a 7-ply stock for some forms and at least a 5-ply stock for other uses. In the majority of cases, stock with a greater number of plies is preferable in order that adequate strength of the finally-finished product shall be insured.

In the arrangement of Fig. 1, the main framework supports 1 may be cut, for instance, in a band-sawing operation, from flat stock in such a way that the thickness of the stock in the direction between the arrows *t* represents the thickness of the number of plies selected. As such, there is cut from this thickness of stock the front and back chair legs 3 and 5, matched into the seat-supporting rails 7 and the back-supporting edges 9. This cutting having been made, it will be appreciated that if duplicated, two suitable supports or frameworks for a chair will have been produced. These two so-produced supports then have symmetrically cut therein, at substantially the front 11 of the seat-supporting rail 7, a suitable hole, into which a spacing member may be secured. A similar hole is drilled in at least two other symmetrically located points such as 13, toward the top of the back-supporting edges 9 of the chair, and at least at one intermediate point 15. While it is not critical, the holes may be drilled to a depth of as much as seven-eighths the thickness of the frame (i. e., the plywood members) into which spacing members 17 which form the front edge of the chair, the chair back edge and an intermediate support are located and supported.

Of course the holes could extend completely through the framework but this is unnecessary and tends to detract from appearance and structural strength of the article. Suitable screw attachments may be made to secure the spacing members to the framework but usually this also is unnecessary. Securement of the spacing members to the framework by means of well-known methods, such as the use of glue, proves completely satisfactory, even despite drying, because the chair in its use, as will be apparent from what is to follow, is continually maintained in a state of compression, so that there is little likelihood of the spacing members loosening.

Particularly in the case of the single-section construction for the framework, it is desirable that additional spacing members 19, fastened also into the framework, shall be provided to give greater rigidity to the general constructional features, as well as particularly to strengthen the leg-supports 3 and 5 with respect to each other.

The chair seat and backing portion is formed as strands of laced fabric, cord, tape, webbing or any other flexible material, represented at 21. In order to secure these strands between the framework sections of the chair, that is, between the seat-supporting rail and the back edge-supports, small-size holes 23 may be drilled completely through the thickness *t* of the framework. Holes of this type provide openings through which cords or the like may pass to secure the tapes strung between the two framework members. The drawing (Figs. 1 and 2) shows the holes 23 merely as small-size circles without the appearance of penetrating through the entire width of the chair framework, but this is for convenience of illustration. In viewing Fig. 1 it will be appreciated from the circles at the outer edge of one section of the chair framework and on the inner edge of the other section of the chair framework that these are intended to pass completely through. This fact is made completely evident from the showing of Fig. 5.

Similar openings or holes are made both in the spacing element 17, forming the back edge of the chair, and the spacing element at the front edge of the seat although, as is evident from the showing of Fig. 5, for instance, these holes or openings 25 are spaced very considerably further apart than the holes 23 along the chair seat-support rail and the chair back-support edge.

Further reference will be made in the consideration of Fig. 5 as to the particular manner in which the load-supporting strands are secured.

Referring now to Fig. 2 of the drawings, a modification of the invention is represented in which the seat-support rails and the back-support edges are cut separately from the chair legs. In this form, the seat-support rail and the back edge-support are cut as one element

27 of generally L-shaped configuration. Likewise, the chair legs 29 for the front legs and 31 for the back legs are cut as L-shaped members of a form generally similar to one another, and also generally similar to the main framework member 27.

The separate components from which the modified chair of Fig. 2 is assembled are shown individually in Fig. 3.

In the assembly of the chair, the leg sections 29 and 31 each have a longitudinal recess 33 cut therein, in order that the upper edge 35 of each such leg section may lap the inner portion of the seat rail-support 27. The flanged surface area formed by the recess 33 will then serve to support the weight of the chair seat and back and such loading as may be provided. The chair frame-support is secured to the chair legs so formed in this lapping manner by gluing or other suitable adhesive means. If desired, fastening screws, as indicated at 37, may be used to provide additional support, particularly at the time of initial gluing.

The chair back and seat webbing, while being shown in Fig. 2 as that form shown in more detail by Fig. 8, is merely illustrative. Any form desired may be used in any construction provided the broad features outlined above are retained. For the form of pattern illustrated by Fig. 2, at the moment it may suffice to state that the lacing is composed of continuous strands forming the back and seat as continuous webbing. As was mentioned relative to Fig. 1, the back and seat may be separately formed with spacing between the rear portion of the seat and the lowermost portion of the back. The principles involved in the construction in each instance is identical. Continuity of lacing is generally to be desired since it can be regarded as following the body curvature to an extent such that there is support from the front the front of the seat to the back.

One manner in which the seat support rail may be secured to the chair legs is shown by Fig. 2 of the drawings. In this form, the seat rail rests upon the longitudinal recess 33 formed in the upper edge 35 of the leg sections 29 or 31. If desired, fastening screws 37 may serve as an additional means of attachment of the sections with respect to each other. This is particularly desirable in initial assembly when the legs are being glued to the seat-support rail.

All of Figs. 5 through 8 inclusive show one or another of various forms which the laceable strands or tapes may assume in the formation of the chair seat and back.

Referring to Fig. 5, for instance, the supporting strand or tape 21 is shown with an arrow at the upper right-hand corner of the figure. This arrow is intended to illustrate the direction in which it may be assumed the tape is passed in its interlacing to form the chair backing. As such, the tape extends to a position substantially adjacent the spacer or back terminating element 17. At the point where it reaches the chair back-support it is wrapped under an anchoring or fastening cord or strand 41. The cord 41 is arranged to be passed as a continuous looping through the various openings 25 in the chair back (with the direction of looping and stringing being illustratively designated by the arrows adjacent the indicated openings 25) as well as the openings 23 in the back-support edges and the seat-support rails. As the tape 21 is passed between the fastening-support cord 41 (which, incidentally, is strung rather tightly through the several openings 25) and the spacer member 17, the tape 21 reverses its direction to follow along the path designated by the arrow until it passes beneath that portion of the fastening-support cord 41 appearing in the location designated as 43. The fastening cord 41, if assumed initially to start in the direction shown as it passes through the opening 25 at the upper right-hand portion of the figure, will continue through the opening 23 passing through the chair back-support edge so as to form a loop at the location 43. As the tape 21 passes around the loop of the fastening-support cord 41 in the area 43 it again reverses its direction, as shown by dotted outline, to emerge from beneath the first-described portion of the tape to extend in a direction of the arrow extending from left to right at the location illustratively designated 45. In this manner the tape 21 is then drawn parallel to the first-described position, so as to extend slightly downwardly from left to right until it reaches the opposite back edge-support (not shown in Fig. 5) where it is wrapped around a similar anchoring strand which would be assumed to be placed at the right-hand chair back-support edge, as indicated more particularly by the showing of Fig. 1. Referring for the moment to Fig. 1, in this respect it can be seen that the webbing or lacing runs from right to left, and left to right, and, illustratively, from top to bottom and then bottom to top, weaving in and out, but generally as close to a straight-line pattern between the back-support edges and the seat-support rails as is reasonably possible. At each point where the webbing is intended to terminate or change its direction it is strung about supporting or anchoring cords, such as indicated at 41.

While it is indeed true that the webbing or lacing is anchored to the spacer member 17 insofar as positional location is concerned the main force between the frame-support members is nonetheless almost completely such as to hold the framework in compression. Any force tending to place the components in tension is small as compared to the force tending to place the components in compression, since it is a sine function of a small angle.

In the form in which the invention has been illustrated by Figs. 1 and 2, for instance, the formed webbing is assumed to extend continuously from the upper edge of the chair back, as at the spacer 17, to follow the general form of the back-supporting edges and the seat-supporting rails, and to terminate adjacent the front spacer 17 at the front edge of the seat-support rail. In this way the attachment or anchoring of the webbing or lapping to both the sides and the back or front of the chair may follow the explanation hereinabove made, particularly with respect to Fig. 5, and, as such, there is a continuously interlaced or woven pattern beneath the back and the seat of the chair.

This construction is particularly desirable because it is at once apparent that there is full support for the chair occupant. In the absence of any longitudinal or warp lacings there is no lengthwise stress on the webbing so as to cause the loading on the chair seat portion to cause the web to draw forward from its anchorage plane on the chair back and particularly at the area of change in its contour where it curves from the back section to the seat section. This is a feature regarded as particularly advantageous because the chair shape is preserved for all loadings with a resultant increased comfort to all users.

Where it is desired that an opening space be provided between the chair back and chair seat, that is, the lower portion of the back and the rear portion of the seat, an additional spacer member such as 17 may be provided to terminate the rear of the seat portion and the lower portion of the back. As such the additional spacer 17 will serve as the anchoring element for securement of the anchoring cords 41, such as described in connection with Fig. 5.

It will be apparent from what has been stated that in the stringing or securement of the tapes or cords 21 they will be positioned initially merely back and forth to form a more or less zig-zag pattern. However, as the tape comes to one extreme position of its extent, as, for instance, at the anchoring cord 41, which will be located on the spacer 17 at the front of the chair (e. g., see Fig. 1 or 2) it will be apparent that the next position and pattern which shall be followed may be slightly rearwardly and upwardly of the chair. In such a laced pattern the tape or strand is woven in and out with re-

spect to the other strands as it is stretched between the various anchoring points.

This may also be described by making reference to the fact that alternate strands or tapes are anchored about the chair back-support edges and stretched, for instance, from the left back-support edge downwardly to the right support edge, and then reversed to stretch downwardly from the right back-support edge to the left back-support edge. This pattern of lacing is followed until the edge-support at the front edge of the chair seat is reached, after which the direction of progress of the weaving operation, instead of being slightly downwardly will be slightly upwardly, with the left-to-right and right-to-left directions continued. The complete webbing will assume a pattern such as those indicated by any of Figs. 5 through 7, for instance.

The cords 41 in each instance serve as the anchoring means. Likewise the cords 41 are continuous from a point, for instance, at the front edge of one seat-support rail along that seat-support rail and thence along the chair back-support edge, the back spacer member, thence down the opposite back-support edge and along the opposite seat-support rail, and the front seat spacer to join or be secured at a point coinciding with the first point of securement of the tape anchoring cord.

The showing in Fig. 6 represents a modification of that form of the invention which is illustrated in Fig. 5, for instance. This modification is suitable for any form of lacing or stranding herein provided. The main difference from the Fig. 5 arrangement consists in the substitution for the anchoring cord 41 of an elongated cord 49 which need not be passed through holes in the chair frame, but which is anchored at suitable points by means of anchoring eyelets 51. These eyelets, like the holes 55, in the back-supporting spacer member 17 (or a similar front-support spacer at the front of the chair seat) are spaced considerably further apart than when located along the back-support edge, like the holes 23. The same is true with respect to the eyelets along the seat-support rail, wherein the spacing is generally similar to that shown in connection with the back-support edge in Fig. 6. As such, the anchoring cord 49 is threaded through the eyelets 51 and forms a continuous anchoring element functioning in the same manner as the anchoring cord 41 of Fig. 5.

The spacing of the eyelets 51 along the back-support edge 9 or the seat-support rail 1 is just slightly greater than the width of the selected tape or strand 21 which is to be strung to form the webbing of the back and seat. As such, the anchoring spaces 43 coincide with the showing in Fig. 5.

A further modification is shown by Fig. 7 where a substantially rigid rod 52 is secured to the spacer member 17 and the back-support edges 9, or similarly to the seat-support rails (not shown in Fig. 7) by means of suitable screws or nails or rivets or the like, 53. Otherwise the construction is substantially similar to that shown in connection with Fig. 6.

A modification of the invention is shown in Fig. 8, which corresponds to a similar form of construction shown illustratively in connection with the representation of Fig. 2. The Fig. 8 modification is such that the back and seat webbing may be formed from cords which are considerably smaller in diameter than the tape widths shown in connection with all of Figs. 1 and 5 through 7. In the Fig. 8 modification the arrangement is such that one set of cords 54 is strung back and forth between the back-support edges 9 and the seat-support rails in a direction substantially parallel to the spacing members 17 in such a way that the application of weight thereupon will act in a direction substantially to draw the back-support edges and seat-support rails more closely together, by placing them in compression against the spacer members 17. As such, the openings 23 along either the back-support edges or the seat-support rails, are placed considerably closer to one another than are the openings 55, located, for instance, in the spacer 17 at the upper portion of the chair back or at the front edge of the chair seat (or in additional spacers, as already explained, where the seat webbing and back webbing are formed as two separate parts). In connection with the showing of Fig. 8, however, it will be noted that in contrast to the more vertically positioned opening 25 in the spacer 17 (as in Fig. 5) the openings 55 are arranged in a more nearly lateral direction, although this again is largely a matter of choice. However, the webbing, as formed in the arrangement of Fig. 8, is such that certain strands 57 which may be assumed to be continuous are anchored, such as at a point 59, and extend back and forth between the back-edge support members 9 or the seat-support rails 27, with the direction of weaving or stretching being reversed each time the cord passes through one of the openings 23.

This part of the lapping forms strands of only the weft variety. The loading is such as to press the back-edge supports and the seat-support rails completely in compression even despite tightness of stringing. If only the transverse strands 54 were depended upon the webbing might be relatively loose and not form a sufficiently tightly woven pattern for general use. Accordingly, there is combined with this form of lapping an additional series of strands which extends at a relatively low angle with respect to the strands or cords strung directly between the spaced back-support edges and the seat-support rails. As such, it may be assumed, illustratively, that one of these diagonal strands is anchored at a point such as 61 in the opening 55 in the spacer member 17. Such cord then, as represented at 63, may extend in the direction shown by the arrow until it is opposite a selected opening 23 in either the chair back-support edge 9 or the seat-support rail 27 (or 1, as in Fig. 1) at which time it passes through such an opening and is wrapped and anchored therein in much the same manner as was the cord 41 in the showing of Fig. 5.

Without assuming the point of anchoring of the end of the strand or cord, it may be assumed that the cord 63 marked at *a* extends generally upwardly from right to left to the opening or hole 55 in the spacer member 17, at which time it passes through the spacer hole to emerge at the back thereof and to follow a path designated by the arrow at *b* until it comes opposite the hole 55'. At this point it is passed from the back of the spacer through the hole 55' to emerge as the cord *c*, following the direction of the arrow opposite this designation. As such, the strand follows the path of the arrow shown at *c* until it is opposite the opening 23' in the chair back-support edge 9, at which point it passes through the opening 23' in the direction shown by the arrow (the directly laced strands already described may be lapped through this opening in the same direction). The cord then wraps back about the outer edge of the edge-support 9 in the direction shown by the arrow (and this direction will now be opposite that at which the directly-laced cords are secured in the lacing between the chair back and seat, as already described). The diagonal lacing then passes through the openings 23, when it passes through in the direction shown by the arrow adjacent thereto, to emerge and to follow the path designated by the arrow opposite that portion of the cord shown at *d*. The lapping continues until the complete seat pattern is woven.

It is important in providing this form of lacing that the strands shall alternately be positioned in and out with respect to each other so that the overall pattern formed provides a tight webbing, as is clearly indicated by Fig. 8, and distributes the weight more uniformly. The angle formed between the thus-woven generally diagonally-positioned strands and the back-support edge of the seat-support rails is an acute angle such that the cords, when stressed bring the complete assembly into compression, along with the strands strung directly between precisely opposite openings 23 in either the back-support

edges or the seat-support rails, it being noted, however, in this instance that the points of securement of the diagonal strands are spaced longitudinally with respect to each other by a short distance. There is a complete absence of any of the woof stringing in this pattern and even with respect to the diagonally-laced strands the major portion of the stress is in such a direction as to maintain the chair back-support edges and the seat-support rails in compression.

In respect to the form of lacing shown by Fig. 8 it is interesting to note that the horizontal lacing can be omitted under some circumstances. When so done the pattern resembles to some extent that of the remaining figures except that the individual strands are of less width.

A modification of this variety is shown by Fig. 13. In this figure it will be seen that the spacer members 17 also extend inwardly into the recesses, such as 67, in the back-support members 9, or the seat-support rails 7, as the case may be. In this instance the laceable strands 69 extend back and forth, as indicated, to enter into the holes 23, extending through the back-support edges 9 or the seat-support rails 7. These strands then extend back and forth and are woven in and out with respect to each other to form the complete tightly-woven pattern. This form of back- and seat-construction is shown in part also in Fig. 9, where the woven strand members are shown as extending from the spacer member at the upper edge of the back-support member 9 down toward the seat-support rail 7. As already pointed out herein, the chair construction provides greater support to the occupant where the laceable strands extend completely from the front edge of the chair through to the upper edge of the back-support member continuously. This form of construction is indicated by Fig. 9 where the holes 23 through which the laceable strands 69 are assumed to pass extend through the length of these members.

In the modification of Fig. 9, various improvements in the attractiveness of the chair are provided, as well as greater structural strength. In contrast to the multi-part chair construction shown by Fig. 2, where the seat-support rails, for instance, protrude beyond the edge of the chair legs, the arrangement of Fig. 9 as exemplified by the showings of Figs. 14 and 15 particularly, is such that the outer edge of the chair legs 73 and 75 is generally coplanar with the outside edge of the seat-support rail 7.

In this construction, as exemplified by Fig. 12, the seat-support rail and the back-support edge may be cut from a flat section of plywood by the use of bandsawing operations. This forms the generally L-shaped configuration with the shaping of the seat-support rail and the back-support member forming the flat and upright portions of the L being controlled largely by the use to which the chair is to be put, since the angular relationship of these elements with respect to each other may be varied within reasonably wide limits without in any way affecting either the principles upon which the chair is formed or the utility of the product in commerce. In this sense the showing of Fig. 12 resembles the lower part of Fig. 3. It is, however, to be noted with respect to this showing that the upper portion of the chair legs, shown at 73 for the front legs and 75 for the rear legs, is generally much thicker than at the foot portion, 77 and 79 respectively. In this formation the chair leg construction generally involves the securement of two layers of plywood, such that one section may be bevelled with respect to the other as shown particularly by Figs. 14 and 15 at 81, with the upright section then forming a substantially straight edge with the seat-support rail 7.

This is indicated also by Figs. 10 and 11, where the inner section of the plywood construction has an upper shoulder portion 83 for the front legs and 85 for the rear legs, upon which the seat-support rail is adapted to be positioned and to rest so that the assembly may be held in a complete state of compression. The double thickness of the plywood leg formation is represented by the upper section 87 for the front legs, and 89 for the rear legs, with a rearward extension 91 for the front legs and a forward extension 93 for the back legs, which sections are adapted to rest adjacent the inner edges of the seat-support rail 7. The fastening of these elements with respect to each other is then provided by the spacer members 95, which pass through suitably drilled holes 96. Screws may be used to supplement the fastening (as in Fig. 2) if desired.

The main spacer members 17 extend into recesses 97 through both sections of plywood so that reasonably large-sized spacers may be provided to insure greater structural strength. By having the weight of the chair arranged in this manner so as to be completely in compression upon one complete width of plywood, and having the adjacently-secured section of plywood press this member from the side, it will be appreciated that a further improved construction is made possible. The aesthetic appearance of the chair is also improved in that a smoothness of edge design thus becomes possible, and further by reason of the possibility of arranging the lacing with respect to the different members the general appearance of an upholstered construction is made possible.

Various other modifications and changes are, of course, possible, and fully within the spirit of what is hereinabove set forth.

Having now described the invention, what is claimed is:

1. A chair construction comprising a pair of unitary matching rail sections forming the sides of back and seat portions of a chair and having rows of openings extending through the thickness of the rail sections spaced from the forward and upward edges thereof, cross members securing the sections in spaced relation, strand material laced through the rows of openings and forming anchoring bights extending therethrough, webbing strung between the rail sections and forming back and seat supports therebetween, said webbing being formed of loops of textile strands and having side reaches diverging from one rail section to the other and interwoven with adjacent reaches of adjacent loops and said loops being threaded through said bights.

2. A chair construction comprising a pair of unitary matching rail sections forming the sides of the back and seat portions of a chair and having rows of drilled holes extending laterally through said rail sections, said holes being spaced rearwardly from and below the forward and upward surfaces of said back and seat portions respectively of said sections, cross members securing the sections in rigid spaced relation, strand material laced through said holes and forming a plurality of adjacent bights along the inner surface of said sections, said bights being parallel to said forward and upper surfaces of said sections, relatively wide flexible textile fabric strips looped back and forth from the bights adjacent one section to the bights adjacent the opposed section with the flat surface thereof in the plane of the support formed thereby, the individual reaches of said looped webbing diverging from the point where said webbing is looped through each of said bights and each pair of said diverging reaches being interwoven with the reaches extending from the adjacent bights.

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