

June 27, 1967

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3,328,075

BASE CONSTRUCTION FOR FURNITURE AND UTILITY CHAIR

Filed April 20, 1966

3 Sheets-Sheet 1

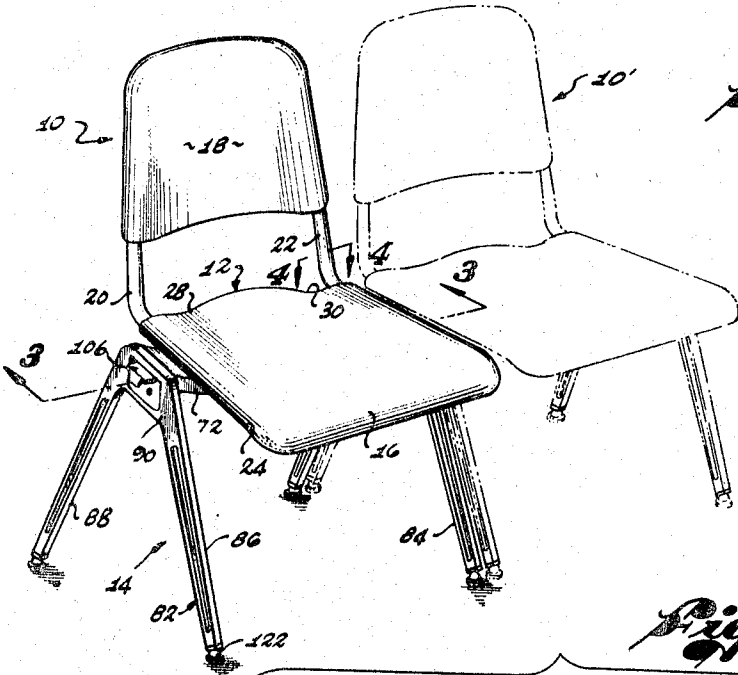


Fig. 1

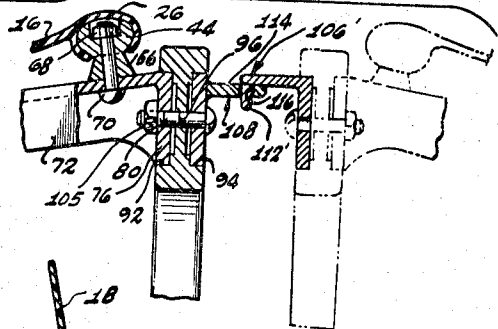
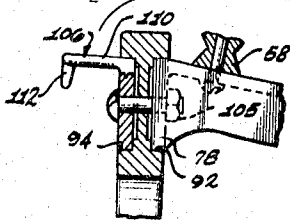


Fig. 3

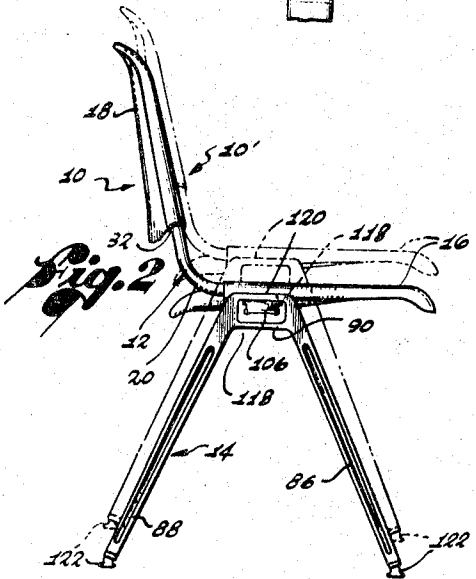


Fig. 2

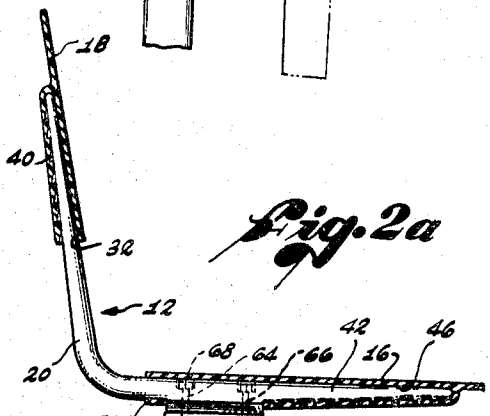


Fig. 2a

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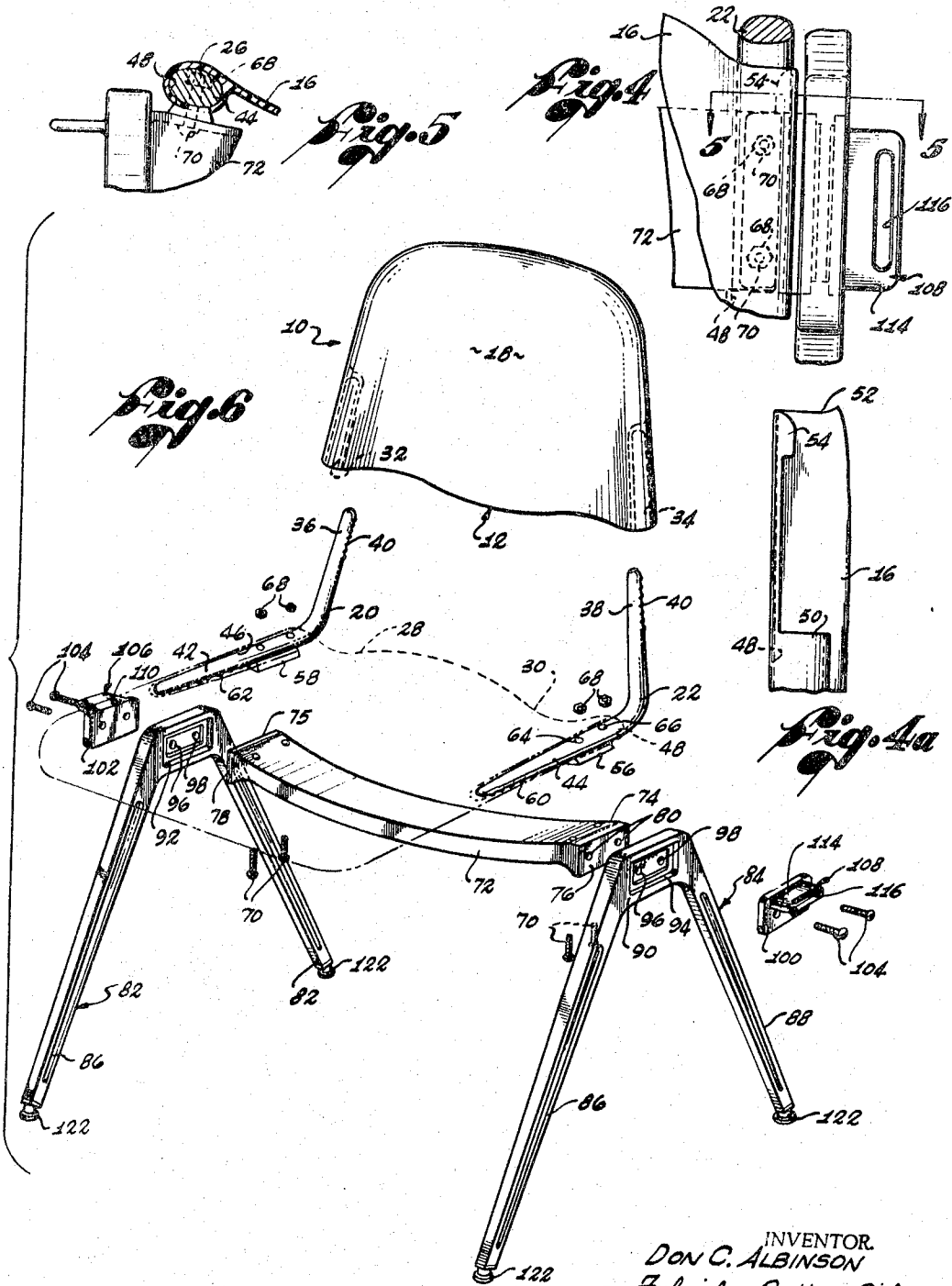
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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

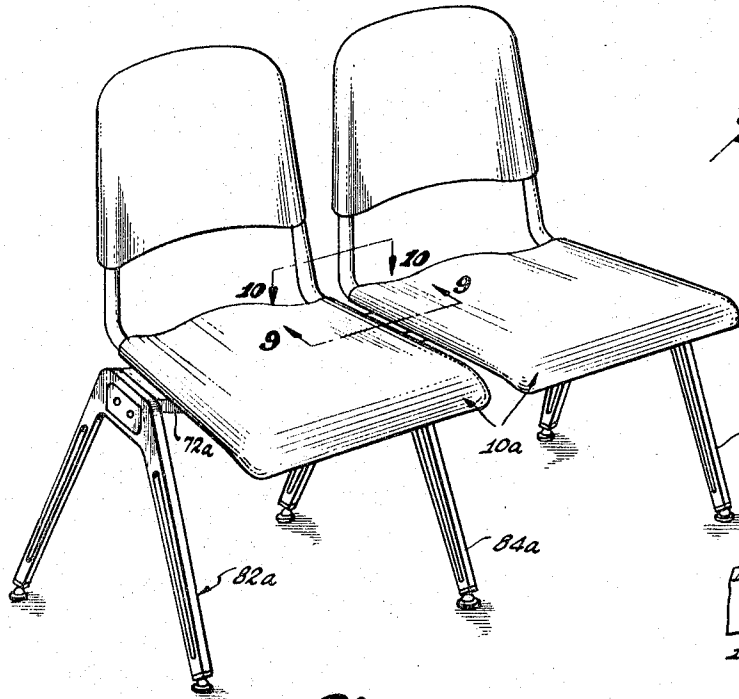


Fig. 8

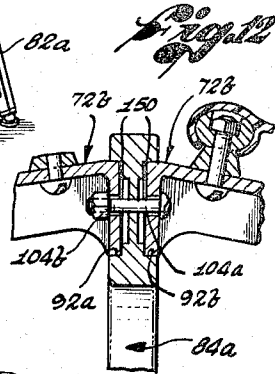


Fig. 7

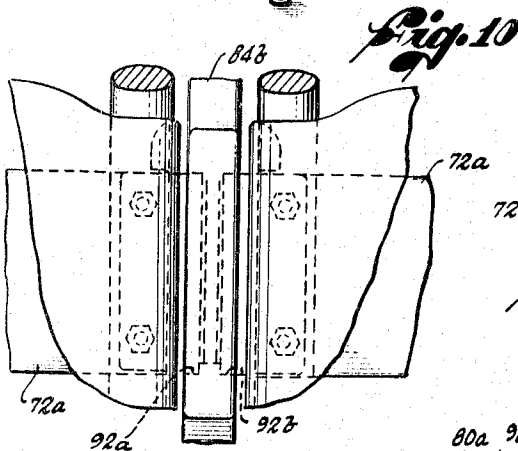


Fig. 10

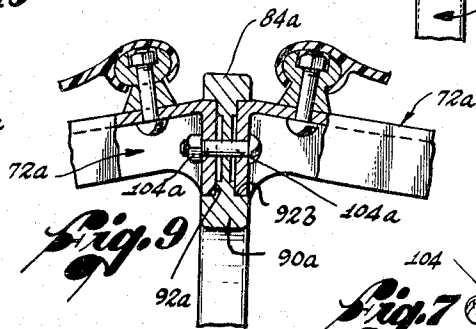


Fig. 9

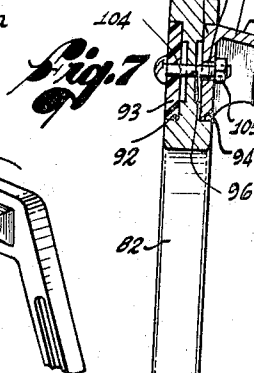


Fig. 11

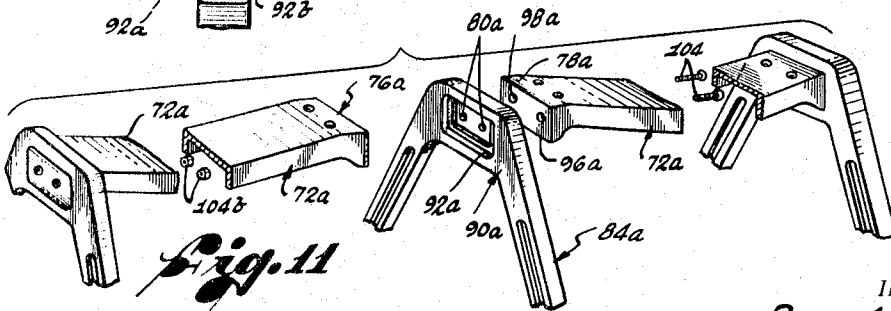


Fig. 11

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3,328,075
BASE CONSTRUCTION FOR FURNITURE AND
UTILITY CHAIR

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Filed Apr. 20, 1966, Ser. No. 543,928

25 Claims. (Cl. 297—239)

The present invention relates to improvements in base constructions for furniture, more particularly relates to improved utility seating units, bench units, table units, etc., capable of being permanently or temporarily joined with like or dissimilar units in an orderly row or placed atop like units in a stable stack for storage or transport.

This application is a continuation-in-part of my co-pending application, Ser. No. 364,184, filed May 1, 1964, for Utility Chairs.

In auditoriums, churches, schools, and various halls it is often desired to provide additional seating units on a temporary basis. For years, folding type chairs have filled this need. Unfortunately, folding chairs are very uncomfortable to sit in for any length of time. Also, folding chairs are somewhat unstable and easily moved. This is particularly annoying in schools and school auditoriums where it is desired to maintain the utility chairs in orderly rows.

In recent years, non-folding chairs have been developed for the same utility purposes. The non-folding chairs are much more comfortable than conventional folding chairs and include side extensions whereby the chairs may be coupled together in orderly rows on either a permanent or temporary basis.

The non-folding chairs, however, suffer from several problems which to date have severely limited their acceptance as a substitute for conventional folding chairs. Since the chairs are not foldable, they present a storage problem when not in use. To a great extent this has been overcome by designing the chairs to be stackable one atop another. Unfortunately, present designs for non-folding chairs do not accommodate stacking of many chairs without creating an unstable column. Thus, in practice, appreciably more space is required to store non-foldable than conventional folding type chairs.

Moreover, after a non-folding chair is stacked atop another chair, the chairs are still somewhat movable relative to each other. Thus, during stacking, the non-folding chairs tend to bind and scrape against each other. This produces undesired wearing and scratching of the chairs which impairs their outward appearance.

Another drawback to the acceptance of non-folding chairs has been their cost of manufacture. To allow the chairs to be stacked one atop another, each chair must be of a relatively sturdy construction. This has resulted in relatively high manufacturing costs which, in turn, maintain relatively high retail prices for the chairs.

In view of the foregoing, it is an object of the present invention to provide improved non-foldable seating units, or other furniture units, which can be easily joined together in an orderly row on either a permanent or temporary basis and which may be placed one atop the other in a stable stack during transport from one location to another or to storage.

A further object of the present invention is to provide a stackable seating unit, or other furniture unit, which is light-weight and sturdy, yet simple in design and inexpensive to manufacture.

An additional object of this invention is to provide a seating unit or other furniture unit system which may be shipped in a light-weight, compact package of component parts, and which upon reaching its destination may be easily and quickly assembled into a rugged,

2

permanent individual or multiple seating structure or other individual or multiple unit.

Another object of the present invention is to provide a means for rigidly and permanently joining two or more stackable seating units or other furniture units together wherein one leg is common to two adjacent furniture units, the provision of a common leg between two adjacent furniture units enabling substantial cost reduction to be effected without loss of structural strength, or loss of stacking stability.

Still another object of the present invention is to provide seating units which are stackable one atop another without marring the outer surfaces of the seating portions of the units.

Yet another object of the present invention is to provide a stackable chair which is easy to clean and which requires little servicing.

The foregoing, as well as other objects and advantages of this invention, may be more clearly understood by reference to the following detailed description when considered with the drawings, in which:

FIGURE 1 is a perspective view of one form of stackable utility chair of the present invention with a broken line representation of an identical chair adjacent the utility chair and removably coupled thereto;

FIGURE 2 is a side view of one form of stackable utility chair of the present invention with a broken line representation of an identical chair atop the utility chair to illustrate the position of the chairs when stacked for storage;

FIGURE 2a is a sectional side view of the seating portion of a utility chair embodying one form of the present invention, taken along a marginal edge, illustrating the inner construction of the seat and back of the chair as well as the means for coupling the seat to the back;

FIGURE 3 is a partial sectional view along the line 3—3 of FIGURE 1, illustrating the mode of coupling utility chairs in an orderly row;

FIGURE 4 is a partial sectional view along the line 4—4 in FIGURE 1, illustrating the mode of coupling the seat to a cross piece extending under the seat, as well as to an angle connector supporting the seat and the back;

FIGURE 4a is a bottom view of the left rear corner of the seat with the angle connector removed;

FIGURE 5 is a sectional view along the lines 5—5 in FIGURE 4, illustrating the mode of coupling the angle connector to the cross piece;

FIGURE 6 is a perspective view of the utility chair of the present invention with the component parts slightly separated to illustrate the mode of assembling the chair;

FIGURE 7 is a partial sectional view similar to FIGURE 3 taken along the line 7—7 showing a modification of one end of the base construction of my invention;

FIGURE 8 is a perspective view of a modified form of stackable chair units of the present invention, showing the common leg coupling feature between adjacent chair units;

FIGURE 9 is a partial sectional view, taken along the line 9—9 of FIGURE 8, illustrating the common leg coupling adjacent utility chairs in an orderly row;

FIGURE 10 is a partial sectional view, taken along the lines 10—10 in FIGURE 8;

FIGURE 11 is an exploded perspective view of a leg assembly and cross pieces of the common leg coupling modification of this invention; and

FIGURE 12 is a partial sectional view similar to FIGURE 9, showing a modification of the base structure of this invention.

Reference will first be made herein to the embodiment of the invention shown in FIGURES 1-6 of the drawings relating to a single stackable seating unit, and relating also to a means for removably coupling (or ganging) said seating unit to adjacent seating or other furniture units (such as an end table). Reference will be made thereafter to multiple seating units, permanently joined to each other, but which multiple units can themselves be stacked and ganged.

The seating unit, shown in FIGURES 1-6, is designated generally by the numeral 10. The adjacent seating unit, shown in FIGURE 1 by a broken line representation, is designated generally by the numeral 10'. The seating and/or utility chair 10 includes a structure or portion 12 supported by a leg or base structure 14.

The seating portion 12 is body-contoured and of a two-piece construction including a seat or seating shell 16 and a back or back shell 18 fixedly joined by a pair of cast aluminum angle connectors 20 and 22.

The two-piece construction has several advantages over the one-piece construction of conventional non-foldable utility chairs. First, it provides the seating portion 12 with a degree of flexibility which enhances the comfortable seating provided by the utility chair. The two-piece construction also provides more room for the buttocks of the occupant and allows free air circulation between the back and seat of the chair to aid in seating comfort, particularly during hot weather. Further, water drains freely from the seating structure to shed rain when used outdoors, and to simplify cleaning of the chairs when formed of a waterproof material. In this regard, the seat 16 and the back 18 are preferably molded polyethylene or polypropylene plastic pieces having high strength, yet slight flexibility to further aid seating comfort. In addition, the back 18 is slightly hollow to comfortably receive the back of an occupant, while the seat 16 includes substantially flat upper marginal surfaces 24 and 26 adjacent depressed portions 28 and 30 for comfortably receiving the upper legs and buttocks of the occupant. The flat marginal surfaces allow the chair to be turned over and stably rested on a table top or counter while the floor under the chair is being cleaned.

As illustrated most clearly in FIGURES 2, 2a and 6, the back 18 includes upwardly extending left and right side cavities or sockets 32 and 34 along the upwardly extending sides of the back. The cavities are formed in the molding of the back and are preferably elliptical in cross section with upwardly and inwardly converging sidewalls. Also, the cavities 32 and 34 are upwardly inclined toward each other. The angle of incline of each upwardly extending cavity is somewhat critical to the design of the present invention. In particular, it has been found that a substantially 10° or greater angle of incline from true vertical for each cavity effectively locks the upwardly extending upper arms 36 and 38 of the angle connectors 20 and 22 within the cavities 32 and 34, respectively. A positive arm-in-socket lock is thereby formed between the back 18 and the angle connectors 20 and 22 when the angle connectors are also coupled to the leg assembly 14.

The positive locking action of the upper arms 36 and 38 within the inclined cavities 32 and 34 may be improved by serrations 40 formed in each arm. The arms themselves are upwardly tapered to allow easy insertion into the cavities 32 and 34. Once within the cavities, however, the serrations bite into the sidewalls of the cavities and resist removal of the back 18 from the angle connectors 20 and 22.

A somewhat similar coupling arrangement is provided between the lower portions of the angle connectors 20 and 22 and the seat 16. The angle connectors 20 and 22 include forwardly extending, substantially horizontal arms or lower extremities 42 and 44. The lower arms 42 and 44 are forwardly tapered and toe-in towards each other slightly after the insertion of the upper arms 36 and 38 into the cavities 32 and 34. Thus positioned, the

lower arms 42 and 44 slip easily into forwardly extending, substantially horizontal side cavities or sockets 46 and 48 formed at the outer edges of the seat 16. The cavities 46 and 48 are formed in the molding process of the seat 16, are preferably elliptical in cross section and are tapered to tightly receive the lower arms 42 and 44 of the angle connectors, as shown in FIGURES 2a, 4 and 6.

As illustrated most clearly in FIGURES 4 and 4a, the forwardly extending cavities 46 and 48 in the seat 16 each have their rearward open ends 50 terminating a predetermined distance from the rear edge 52 of the seat 16. A pair of tabs 54 extend from the opposite sides of the seat 16 and at the rear edge 52 thereof. Each of the tabs 54 and the open ends 50 of each side cavity 46, 48 define opposing shoulders for tightly receiving cleats 56, 58 extending from and along the lower surfaces of the lower arms 44 and 42, respectively. The tabs 54 are slightly flexible and snap around the ends of the cleats 56 and 58 as the lower arms are slipped into the cavities 46 and 48. Since the cleats 56 and 58 are fixably secured to the lower arms 42 and 44, the snapping action of the tabs 54 locks the seat 16 to the lower arms to form a permanent arm-in-socket connection between the lower arms and the seat.

As with the back 18, the permanency of the connection of the seat 16 to the angle connectors 20 and 22 may be improved by the addition of serrations 60 and 62 at the bottom surfaces of the forwardly extending arms 44 and 42 beyond the cleats 56 and 58. The serrations are shaped to not interfere with the easy insertion of the arms into the corresponding cavities in the seat 16, yet dig into the inner surfaces of the cavity walls to prevent removal of the seat from the angle connectors.

The seat 16 and the back 18 are thus firmly secured to the angle connectors 20 and 22 and form a permanent seating unit for attachment to the leg structure 14. To accomplish this, vertical openings 64 and 66 extend upwardly through each of the cleats 56, 58 and the lower arms of the angle connectors 20 and 22. The openings 64, 66 have enlarged head portions at the upper surfaces of the lower arms 42, 44 for receiving nuts 68. The nuts do not rotate within the openings 64, 66. To accomplish this, the nuts may have a serrated outer perimeter and may be pressed into head portions of the openings to resist turning, or the head portions may be hexagonal in shape to receive hexagonal nuts. In assembly, the nuts 68 are positioned into the enlarged heads of the vertical openings 66 and 64 prior to the insertion of the lower arms into the corresponding cavities in the seat 16. The nuts 68 are thus locked within the vertical openings 64, 66 under the seat 16 and are adapted to receive screws 70 to couple the angle connectors 21 and 22 to the leg structure 14. In this regard, screws 70 pass upwardly through aligned openings in a channeled, cast aluminum cross piece 72 extending under and beyond the sides of the seat 16, thence through the cleats 56, 58 and screw into the nuts 68. The screws thus tightly and firmly secure the lower arms 42 and 44 of the angle connectors and hence the seating structure 12 to the cross piece 72 with the cleats firmly pressing against the upper surfaces of the cross piece, as best shown in FIGURE 2a.

As represented most clearly in FIGURE 6, the cross piece 72 is bowed sufficiently downward to give clearance when the seat 16 is occupied. Also, opposite end portions 74 and 75 of leg brace or cross piece 72 extend beyond the sides of the seat 16 and terminate generally in vertical end sections or flanges 76 and 78 having openings 80 therein. As will be described later herein, with reference to FIGURE 7, a modified cross piece 72b, having slightly sloping flanges may be provided. Whether the end surfaces of a cross piece are substantially vertical or nearly vertical, the end surfaces are usually flat and dimensioned so as to index with portions of leg assemblies 82 and 84, respectively, as will be seen.

5

Each leg assembly 82 and 84 is of cast aluminum and includes a front leg 86 and a rear leg 88 joined by a substantially horizontal, thickened connector or bridge portion 90. The bridge or connecting portions 90 each have an inner rectangular recess 92 and an identical outer rectangular recess 94 with communicating openings 96 and 98 which align with the openings 80 in the end flanges 76 and 78 of cross piece 72 when the rectangular flanges are indexed with correspondingly rectangular recesses 92 of the leg assemblies, as shown in FIGURE 3. The leg assemblies may then be fixedly secured to the cross piece 72 by screws passing through the aligned openings 80, 96 and 80, 98.

From the foregoing discussion of the leg assemblies, it should be noted that the leg assemblies are identical and symmetrical about the bridge portion 90 and that the upper edges of the bridge portions extend beyond the sides of the seat 16. The symmetry of the leg assemblies allows for free interchange between the left and right side legs of the utility chair of the present invention, thereby simplifying both the manufacture and assembly of the chair. As will be described hereinafter, the sideward extension of the bridge portion 90 of the leg assemblies beyond the sides of the seat 16 allows the utility chairs of the present invention to be stacked in stable columns without scratching or wearing the seat structure of the chair.

The base structure shown in FIGURES 1-6 enables the legs 82 and 84 to be substantially parallel to one another. This is because the end flanges 76, 78 of the leg brace 72 are substantially vertical. If, for some reason, it is desired to have the legs of the base structure spread slightly apart, the leg brace or cross piece 72 is slightly modified, as shown by reference to FIGURE 7.

The modified cross piece of FIGURE 7 is designated by the numeral 72b. The end flanges 76b of this cross piece 72b each slope outwardly from top to bottom, as shown in FIGURE 7. The slope is properly characterized as generally vertical in nature, since the slope is only of the order of 0.5° to 1.5°, but it is sufficient to spread the legs 82 and 84 apart a very slight amount.

When the utility chairs of the present invention are to be used on an individual basis, rather than ganged in orderly rows, a trim plate 93 (FIGURE 7) having a smooth, continuous exterior may be positioned in an outer recess 94 with screws passing through the aligned openings to secure the trim plate to the leg assemblies and the leg assemblies to the cross piece 72. Also, the trim plates may have a socket or hook portion to receive removable arms, book racks, or other special fittings, as will be described.

Interlocking of the individual chair or furniture unit is achieved by either a readily dismantlable hook and eye coupling, as will be described, or by a permanent fastening of one furniture unit of this invention to an adjacent furniture unit to form rigid multiples of two, three, or more, if desired. Each multiple unit, in turn, may be provided with hook and eye couplings, as will be described, in order to gang a long series of multiple furniture units together.

Whether one chooses to use single furniture units, each having readily dismantlable coupling means, or whether one desires to use permanent multiple furniture units, each unit of which is readily dismantlable from another, will depend upon one's particular seating needs. In some installations a need for a particular spacing of a single seating unit would dictate use of the single unit, whereas if ganging of long series of closely spaced seating units were particularly desired, permanent multiple seating units would be employed, all other factors being equal. It is probable that in many installations, both single units and multiple units, each having readily dismantlable hook and eye couplings attached thereto, will be employed.

Turning now to the specific means of interlocking individual units by means of readily dismantlable hook and eye couplings, reference is made to FIGURES 1, 3 and 6

6

particularly wherein molded plastic end pieces 102 and 100 are secured in outer recesses 94 of legs 82, 84. The end pieces 102 and 100 are fastened by means such as screw 104 passing through the aligned openings 80, 96 and 80, 98 in the leg assemblies 82, 84 and cross piece 72 and through corresponding openings in said end pieces. The screws receive nuts 105 which press against the inside of the end flanges 76 and 78 of the cross piece 72 to firmly clamp the leg assemblies to the cross piece. The end pieces 100 and 102 include extensions which allow the chairs to be releasably interlocked to prevent inadvertent displacement of the chairs relative to one another. As illustrated most clearly in FIGURES 3 and 6, the interlocking means take the form of a hook member 106 extending from the end piece 102 and an eye or socket member 108 extending from the end piece 100. The hook member 106 includes a horizontal extension 110 from the end piece 102 and a downwardly extending outer hooking lip 112, while the eye member includes a horizontal extension 114 having an elongated opening 116 adapted to receive a hooking lip extending from an identical chair (see FIGURE 3).

To releasably interlock identical individual chairs together, the chairs are first placed side by side. One of the chairs is then raised slightly and the hooking lip of the chair lowered into the opening in the eye member of the other chair. This operation is repeated to add as many chairs as desired to an orderly row.

To separate the chairs, the process is reversed and the end chair is raised and the hooking lip of the chair lifted from the eye member of the adjacent chair. Although this decoupling process is very simple, since a lifting of the chairs is required for separation purposes, the chairs are not subject to inadvertent displacement.

As will be evident from the foregoing description, the hook and eye interlocking method provides a quick and easy method for coupling and decoupling the utility chairs of this invention.

As with prior, non-folding seating units, the furniture units of the present invention are stored by stacking one atop another. Rather than being limited to relatively small stacks, however, units of the present invention may be stacked in stable columns of twenty or more. This is accomplished by the design of the leg assemblies and their positioning beyond the side edges of the seats of the units. In this regard, the front leg of each assembly is disposed at an angle relative to the rear leg of the assembly, whereby the legs of the unit may be vertically telescoped over the legs of an identical unit. In particular, the front and rear legs are angled from the bridge portions 90 relative to each other such that the lower surfaces 118 of the bridge portions fit over, and rest firmly on, the upper surfaces 120 of the bridge portions of an identical unit, when the two units are stacked one atop another (see FIGURE 2). Also, the center of gravity of the unit is very close to the center of the supporting upper surfaces of the bridge portion, making for inherent stability. Furthermore, the legs are inwardly tapered from the bridge portions 90 and terminate in plastic guides 122 for contacting the floor. The actual taper of the legs and the overlap of the guides beyond the sides of the legs is such that when identical units are stacked atop each other, the inner edges of the guides engage the outer surfaces of corresponding legs of the lower chair adjacent the lower ends of the legs. This makes for an extremely stable stacking arrangement and prevents the legs of the stacked units from scratching each other.

With regard to the foregoing, it should be appreciated that the location of the legs with their bearing surfaces beyond the side edges of the seating surface, table surface, etc., prevents the surface of the stacked units from being rubbed or worn during stacking. In particular, a lateral clearance of approximately 1/8 inch is provided between the bridge portions of the leg assemblies and the side edges of the usable surface of the unit. This clearance

facilitates the stacking of the units and allows for slight side-to-side movement of the units as stacked.

As previously mentioned, permanent multiple seating units or other permanent multiple furniture units are readily assembled by utilizing the basic leg components 82, 84 and cross piece 72. In assembling these multiple units, each individual unit thereof has a leg that is common with the immediately adjacent individual unit, thereby eliminating one leg for every series of two units. In the case of three multiple units, the series of three has two legs in common, and so on. The rigidity and strength of the multiple units are, however, not significantly diminished, even though there is a substantial saving in material because of the leg recess-cross piece and end flange cooperation characteristic to all embodiments of this invention.

As will be seen, the assembly of permanent multiple units is not limited to two seating units, and neither is there a limitation with respect to whether the units be seating units, table units or bench units. In all cases, however, the leg and cross piece assemblies utilized will be substantially identical.

Referring now to FIGURES 8-11, the units 10a comprise outer leg assemblies 82a and a common leg assembly 84a, the pair of leg assemblies 82a, 84a so formed being interlocked by a pair of cross pieces, as will be described.

The leg assembly 82, 84 of the individual seating units of FIGURES 1-6 and the leg assemblies 82a, 84a are identical and are thus each provided with oppositely facing identical recesses 92a and 92b in the bridging portion 90a of the leg. These recesses 92a, 92b are identical with inner and outer recesses 92 and 94 of each of the legs 82 and 84 of the individual units shown in FIGURES 1-6.

The cross pieces 72a of the multiple units are identical with cross piece 72 of each individual chair in FIGURES 1-6. The left and right end flanges 76a and 78a, respectively, of each cross piece 72a closely interfit within each pair of opposed recesses 92a, 92b, provided by leg assemblies 82a, 84a, and the cross pieces 72a are firmly fastened within the recesses 92a, 92b by fastening means passing through aligned openings 80a, 96a, and 80a, 98a, the fastening means being such as screws 104a and nuts 104b. The close interfitting of end flanges 76a and 78a within the recesses 92a, 92b positively prevents wobble of the cross pieces relative to the leg assemblies, even under heavy loading on the cross pieces, and even though there is but a single leg 84a between the cross pieces 72a.

As previously noted, each leg assembly has identical left and right recesses 92a and 92b and all the cross pieces 72a have identical end flanges 76a and 78a with vertical or near vertical faces which index with such left and right recesses. Thus, there is complete interchangeability between leg assemblies and cross pieces.

The screws 104a receive the nuts 104b which press against the inside of the end flanges 76a or 78a of the cross pieces 72 to firmly clamp the leg assemblies to the adjacent cross pieces, as shown in FIGURE 9.

While a pair of units sharing a single common leg is shown in FIGURES 8-11, it will be seen that any convenient number of units can be permanently joined in the manner described. Multiples of three, four or five are thus contemplated and within the scope of this invention. Further, these multiple units need not all be seating units, for it will be readily seen that a bench top, table top, or the like can be fastened to a pair of leg structures 82a, 84a and cross piece 72a, rather than a seating unit.

Multiple units of two and three have special utility because of their relatively light weight per unit. The units are, therefore, easily transportable by one person, and the time required to set up or remove a room full of chairs can be cut to one-half or one-third of the time required to set up or remove the same room full of single chairs, without any increase in manpower.

Connection of units in the manner described eliminates the space normally occupied by one leg assembly per each pair of furniture units. Thus, an appreciable amount

of space can be saved in each row of units. In the case of seating units, such saved space can be used to widen aisles or to add more chairs, thus making more efficient use of available space. Because the units are firmly interlocked, multiple units can be easily carried in the multiple arrangement.

Furthermore, the stacking features of my individual units which provide improved stacking characteristics and which have been previously described herein and shown in FIGURE 2, are carried over into the permanent multiple units. Thus, the stable stacking provided by this invention is applicable equally to both individual and multiple interlocked units.

It has been previously noted that the cross piece end flanges 76, 78 of individual units may be provided with a slight outwardly sloping surface from top to bottom, rather than a perfectly vertical surface in order that the legs 84, 82 be spread slightly. The end flange 76b of cross piece 72b in FIGURE 7 is shown having this modified surface.

If the modified cross piece 72b is employed to build up the multiple units, such as shown in FIGURE 8, flat, thin (e.g. .030") filler strips, plates or pieces 150 are provided, dimensioned so as to be readily insertable in the uppermost portions of each recess 92a, 92b of each common leg of a multiple unit. This feature is shown in FIGURE 12. Upon fastening the cross pieces 72b by fastening means 104a, 104b, the filler pieces 150 are held in their initially placed, uppermost position within the recesses 92a, 92b. The effect of the filler pieces 150 is to render the common leg 84a substantially vertical. The filler pieces 150 need not be employed to render the outermost legs of a multiple unit vertical, although, if desired, a single filler piece could be provided and placed, just as described, but in the inner recess of the outermost legs of a unit.

Thus, where the modified cross piece structure 72b of FIGURES 7 and 12 is employed in building up multiple units, the filler pieces 150 are normally added to render the common leg portions substantially vertical, while the outermost legs of each multiple unit are spread slightly outward due to the canting of the end flanges of the cross piece 72b, as described and shown with reference to FIGURE 7.

In view of the foregoing, it will be apparent that the present invention provides a comfortable single utility unit and permanent multiple seating units of sturdy yet simple and inexpensive design which are capable of stacking with identical units in relatively high stable columns without marring or unnecessarily wearing the exterior of the units and which may be easily releasably joined together on a permanent or temporary basis in orderly rows.

Although several embodiments for seating and furniture units have been shown and described in detail, it is to be understood that these are merely illustrative of the present invention, which is to be limited in scope only by the claims which follow.

I claim:

1. In a furniture unit having a base support construction adapted to be stacked one upon another, the combination of:

a cross piece extending under said unit and including opposing generally vertically extending sections, each having at least one opening therein;

a pair of leg assemblies each including an upper cross connecting portion between front and rear legs, said cross connecting portions each having an inner recess generally corresponding dimensionally to the dimensions of said end sections of said cross piece, to thereby stably receive said end sections, with said openings in said end sections being aligned with corresponding openings in said cross connecting portions, said front and rear legs of each leg assembly being angled relative to each other such that the

lower surface of said cross connecting portion fits over and rests firmly on the upper surface of the cross connecting portion of an identical leg assembly when stacked atop the said identical leg assembly; and fastening means securing said leg assemblies to said cross piece.

2. The furniture unit of claim 1 wherein at least one of said leg assemblies has fastened thereon means for releasably interlocking with the leg assembly of another furniture unit.

3. The furniture unit of claim 1 wherein each of said end sections of said cross piece has an outwardly sloping surface from top to bottom.

4. The furniture unit of claim 1 wherein each of said end sections of said cross piece has an outwardly sloping surface from top to bottom of between about $\frac{1}{2}^\circ$ to $1\frac{1}{2}^\circ$.

5. The furniture unit of claim 1 wherein each of said leg assemblies has an outer recess in said upper connecting portions thereof corresponding dimensionally to the dimensions of said end sections of said cross piece.

6. The furniture unit of claim 1 wherein each of said leg assemblies has an outer recess in said upper connecting portion of each leg assembly substantially identical with and aligned with said inner recess.

7. The furniture unit of claim 3 wherein thin filler strips are mounted within the upper section of an inner recess of said leg assembly.

8. In a furniture unit having a base construction adapted to be stacked one upon another or releasably interlocked in a row, the combination of:

a cross piece extending under said furniture unit and including opposing generally vertically extending end sections having at least one opening therein;

a pair of leg assemblies each including an upper bridging portion between front and rear legs, said bridging portions each having inner and outer side recesses, said inner recesses receiving said end sections of said cross piece with said openings in said end sections aligned with corresponding openings in said bridging portions, said front and rear legs of each leg assembly being angled relative to each other such that the lower surface of said bridging portion fits over and rests firmly on the upper surface of an identical leg assembly when stacked atop said identical leg assembly;

a pair of end pieces, one in each of said outer recesses; fastening means extending from said end pieces through said aligned openings securing said leg assemblies to said cross pieces;

a hook extending from one of said end pieces; and an eye member extending from the other of said end pieces for receiving a hook extending from an identical chair when the chairs are stationed next to each other.

9. The furniture unit of claim 8 wherein each of said leg assemblies of said base construction is substantially identical in configuration to the other so as to be interchangeable.

10. In a furniture unit having a base construction adapted to be stacked one upon another or releasably interlocked in a row, the combination of:

a cross piece extending under said furniture unit and including opposing generally vertically extending end sections having at least one opening therein;

a pair of leg assemblies each including an upper bridging portion between front and rear legs, said bridging portions each having inner and outer recesses, said inner recesses receiving said end sections of said cross piece with said openings in said end sections aligned with corresponding openings in said bridging portions, said front and rear legs of each leg assembly being angled relative to each other such that the lower surface of said bridging portion fits over and rests firmly on the upper surface of an identical leg assembly when stacked atop said identical leg assembly;

a pair of end pieces, one in each of said outer recesses; fastening means extending from said end pieces through said aligned openings securing said leg assemblies to said cross piece; and releasable interlocking means extending from at least one of said end pieces.

11. A multiple furniture unit adapted to be stacked one upon another, which comprises:

at least two cross pieces extending under said furniture unit, each cross piece including opposing generally vertically extending sections;

at least three leg assemblies, each including an upper cross connecting portion between front and rear legs, each of said cross connecting portions having a left and a right recess in alignment with each other and each recess corresponding dimensionally to the dimensions of said end sections of said cross pieces, said leg assemblies including a left leg assembly, a central leg assembly and a right leg assembly with the right recess of said left leg assembly and the left recess of said central leg assembly stably receiving the opposing end sections, respectively, of a first cross piece, and the right recess of said central leg assembly and the left recess of said right leg assembly stably receiving the opposing end sections of said other cross piece, said front and rear legs of each leg assembly being angled relative to each other such that the lower surface of each of said cross connecting portions fits over and rests firmly on the upper surface of the cross connecting portion of an identical leg assembly when stacked atop said identical leg assembly; and fastening means securing said leg assemblies to their respective cross pieces.

12. The multiple furniture unit of claim 11 wherein the left recess of said left leg assembly and the right recess of said right leg assembly have means fastened therein for releasably interlocking with another furniture unit.

13. The multiple furniture unit of claim 11 wherein the number of cross pieces is three and the number of leg assemblies is four.

14. The multiple furniture unit of claim 11 wherein each of said end sections of said cross pieces has an outwardly sloping surface from top to bottom.

15. The multiple furniture unit of claim 11 wherein each of said end sections of said cross pieces has an outwardly sloping surface from top to bottom of between about $\frac{1}{2}^\circ$ and $1\frac{1}{2}^\circ$.

16. The furniture unit of claim 14 wherein thin filler strips are mounted within the upper section of both said recesses of said central leg assembly.

17. In a chair assembly, the combination of:

a seat including forwardly extending cavities along opposing sides of said seat with open ends of said cavities spaced at predetermined distance from a rear edge of said seat;

tabs extending from said opposing sides of said seat near said rear edge over said open ends of said cavities in said seat;

a back including upwardly extending cavities along opposing edges of said back corresponding to said opposing edges of said seat;

a pair of angle connectors each having a first vertically extending arm in an upwardly extending cavity and a second forwardly extending arm in a forwardly extending cavity; and

cleats extending from the lower surfaces of said second arms locked between said tabs and said open ends of said cavities in said seat.

18. The combination of claim 17 including vertically extending openings through said cleats and said second arms of said angle connectors with enlarged ends at the upper surfaces of said second arms, and nuts in said enlarged ends for receiving screws extending upward through said openings in said cleats to clamp said angle connectors to support means for said seat.

19. The combination of claim 17 wherein said arms of said angle connectors within said cavities include serrations gripping inner side walls of said cavities to secure said arms within said cavities.

20. The combination of claim 17 wherein said arms taper inwardly as they extend longitudinally within said cavities.

21. In a chair base construction adapted to be stacked one upon another or releasably interlocked in a row, the combination of:

- a cross piece for extending under a seat and including opposing vertically extending flanged end sections having openings therethrough;
- a pair of leg assemblies each including an upper cross connecting portion between front and rear legs, said cross connecting portions each having inner and outer side recesses, said inner recesses receiving and supporting said flanged end sections of said cross piece with said openings in said end sections aligned with corresponding openings in said cross connecting portions, said front and rear legs of each leg assembly being angled relative to each other such that the lower surface of said cross connecting portion fits over and rests firmly on the upper surface of an identical leg assembly when stacked atop said identical leg assembly;
- a pair of end pieces, one in each of said outer recesses; screw members extending from said end pieces through said aligned openings for securing said leg assemblies to said cross piece;
- a hook extending from one of said end pieces; and an eye member extending from the other of said end pieces for receiving a hook extending from an identical chair when the chairs are stationed next to each other.

22. A chair construction adapted to be stacked one upon another or releasably interlocked in a row comprising:

- a seat having cavities along opposing sides;
- a back having cavities along opposing sides corresponding to said opposing sides of said seat;
- a pair of angle connectors each having an upwardly extending arm in a cavity in said back and a forwardly extending arm in a cavity in said seat;
- a cross piece extending under said seat and beyond said sides of said seat and affixed to each of said pair of angle connectors and including opposing vertically extending flanged end sections having openings therethrough;
- a pair of identical leg assemblies each including an upper cross connecting portion between front and rear legs, said cross connecting portions each having identical inner and outer side recesses, said inner recesses receiving and supporting said flanged end sections of said cross piece with said openings in said end sections aligned with corresponding openings in said cross connecting portions, said front and rear legs of each leg assembly being angled relative to each other such that the lower surface of said cross connecting portion fits over and rests firmly on the upper surface of the cross connecting portion of an identical leg assembly when stacked atop said identical leg assembly;
- a pair of end pieces, one in each of said outer recesses; screw members extending from said end pieces through said aligned openings for securing said leg assemblies to said cross piece;
- a hook extending from one of said end pieces; and an eye member extending from the other of said

end pieces for receiving a hook extending from an identical chair when the chairs are stationed next to each other.

23. A chair construction, comprising:

- a seat including forwardly extending cavities along opposing sides of said seat with open ends of said cavities spaced at predetermined distances from a rear edge of said seat;
- tabs extending from said opposing sides of said seat near said rear edge over said open ends of said cavities in said seat;
- a back including upwardly extending cavities along opposing edges of said back corresponding to said opposing edges of said seat, said upwardly extending cavities being upwardly inclined toward each other;
- a pair of angle connectors each having a first vertically extending arm in an upwardly extending cavity and a second forwardly extending arm in a forwardly extending cavity;
- cleats extending from the lower surfaces of said second arms locked between said tabs and said open ends of said cavities in said seat;
- a cross piece extending under said seat and beyond said sides of said seat;
- means coupling said cleats to said cross piece to fixably secure said seat to said cross piece;
- and a pair of leg assemblies each including an upper cross connecting portion between front and rear legs, said cross connecting portions being coupled to opposite end portions of said cross piece and said front and rear legs of each leg assembly being angled relative to each other such that the lower surfaces of said cross connecting portions fit over and rest firmly upon upper surfaces of the cross connecting portions of identical leg assemblies when two of the chairs are stacked.

24. The chair construction of claim 23 including a hook extending from said cross connecting portion of one of said leg assemblies and an eye member extending from said cross connecting portion of the other of said leg assemblies for receiving a hook extending from an identical chair when said chairs are next to each other.

25. The chair construction of claim 24 including glides on the lower end of said legs for engaging outer surfaces of corresponding legs of an identical chair near the bottom of said corresponding legs when said chair is stacked atop said identical chair.

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