

[54] CHAIR
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 Attorney, Agent, or Firm—Seidel, Gonda & Goldhammer

[52] U.S. Cl. 297/455, 297/218, 297/325, 297/421

[51] Int. Cl. A47c 7/02, A47c 23/00, A47c 7/00

[58] Field of Search 297/218, 453, 455, 456, 297/458, 459

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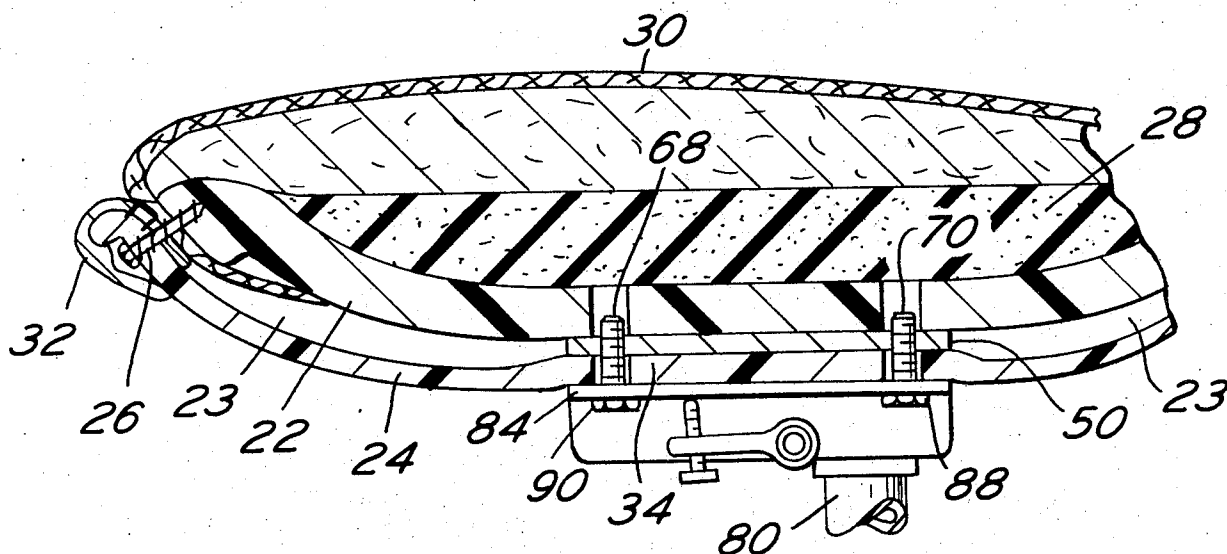
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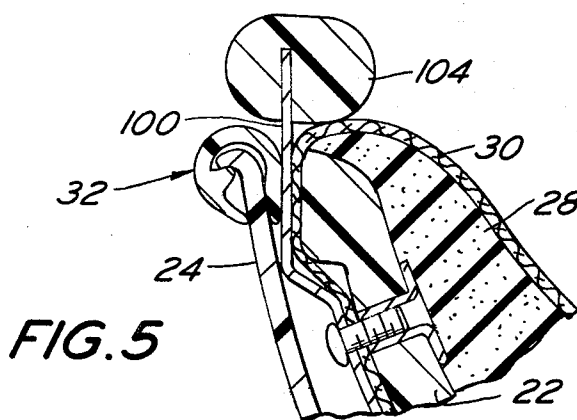
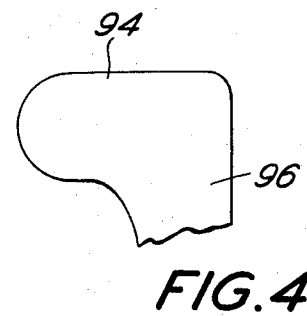
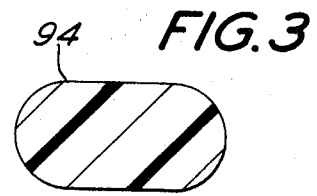
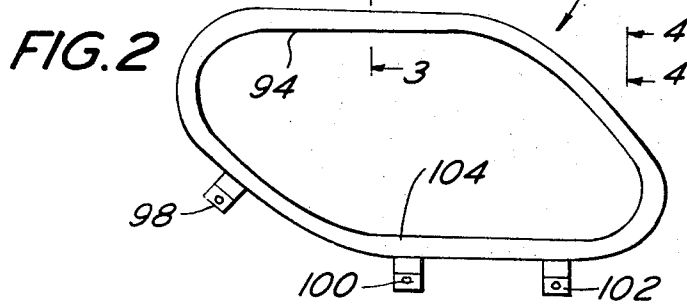
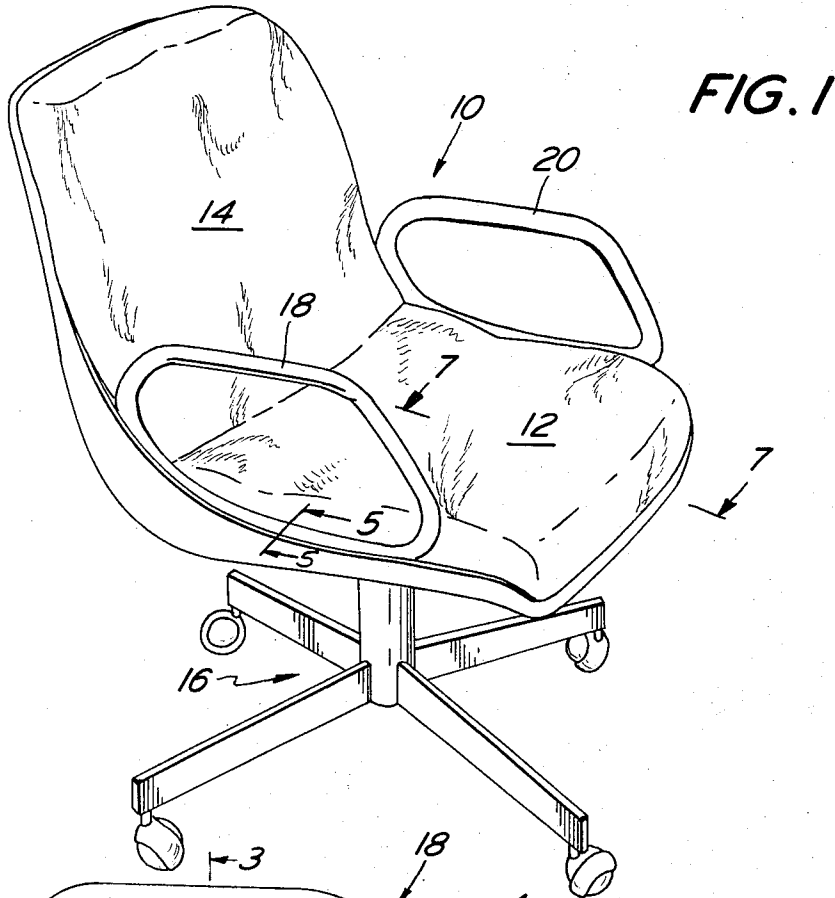
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[57] ABSTRACT

A chair is disclosed having inner and outer shells joined together at the outer periphery with intermediate portions of the shell spaced from one another. The inner shell has padding secured to its upper surface over which lies a removable seat cover. A base is connected to a mounting plate which is disposed between the shells.

11 Claims, 9 Drawing Figures





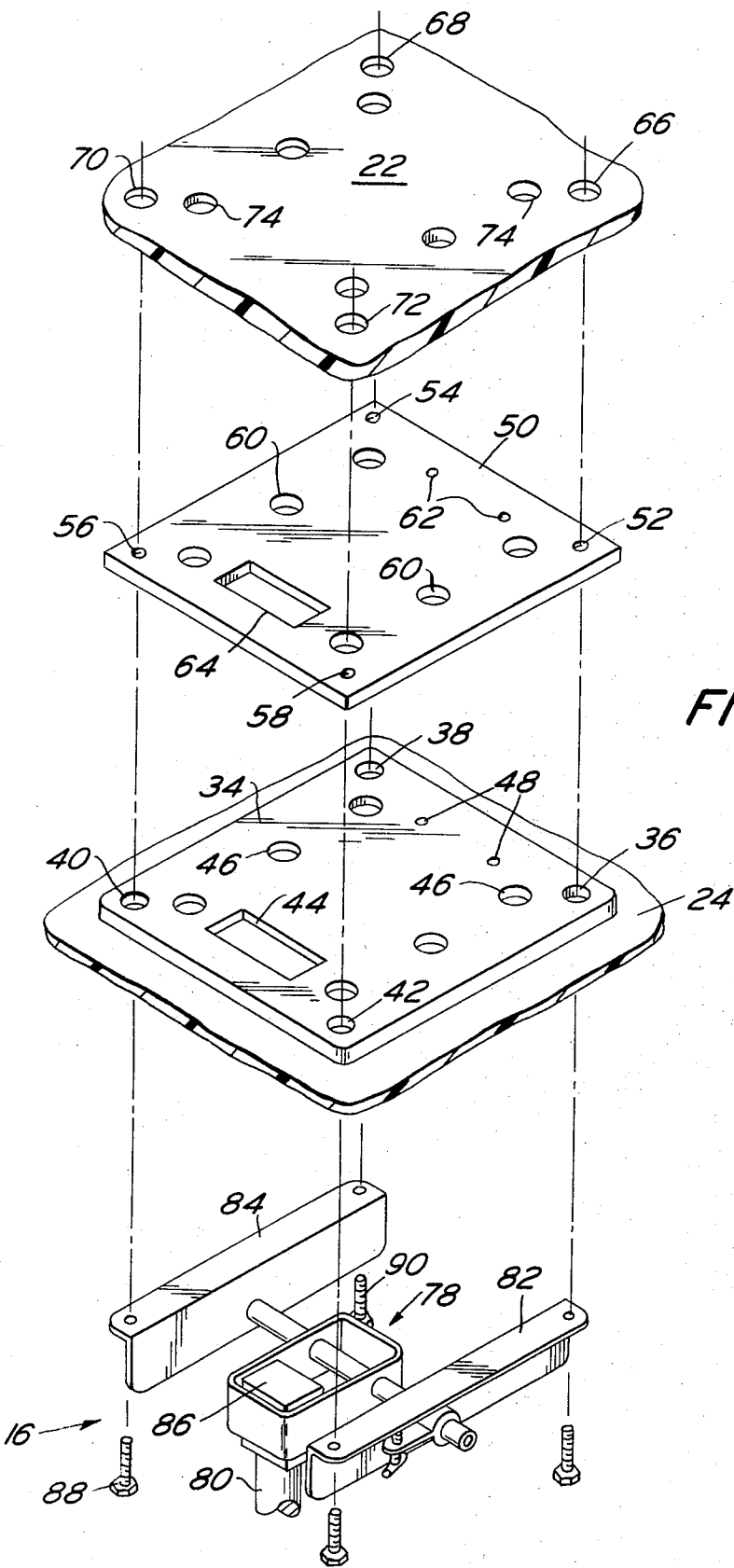
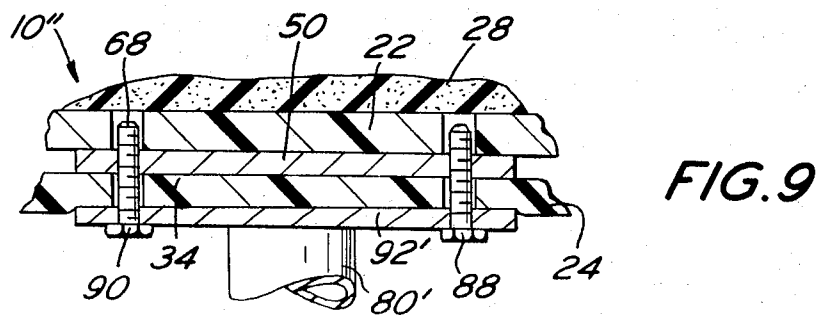
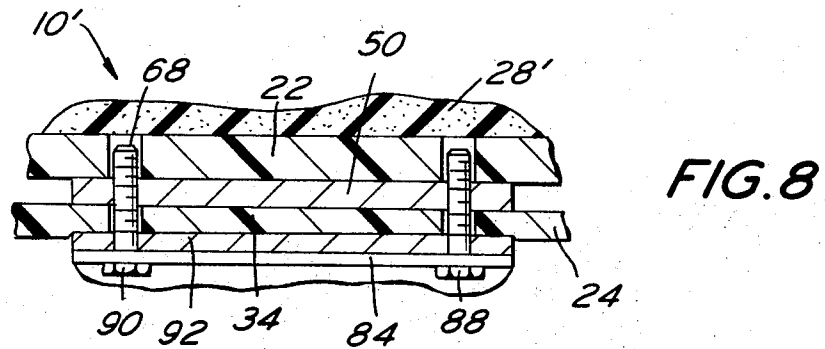
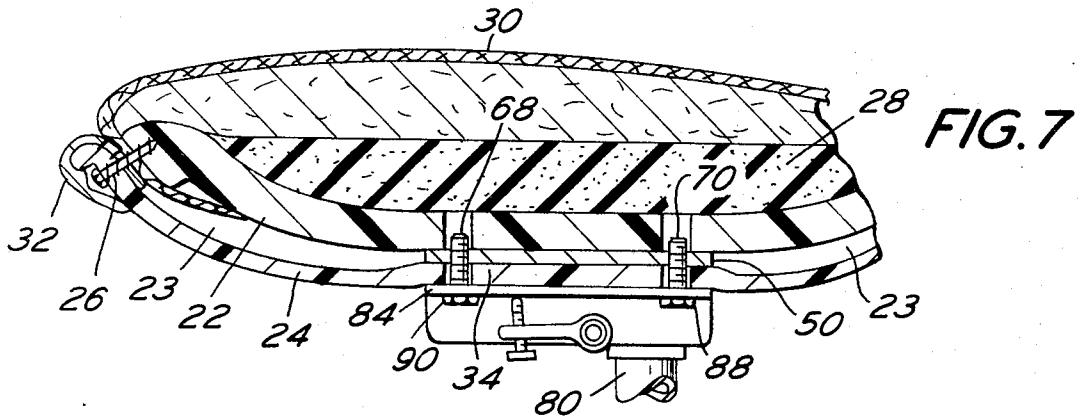


FIG. 6



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CHAIR

The present invention is directed to a chair structurally interrelated in a manner so as to have good aesthetic appearance, facilitate ease of manufacture and assembly, while having good durability. The chair is preferably constructed in a manner so that the upholstery cover is readily removable for purposes of repair or replacement.

The present invention includes an integral seat and back adapted for use as a single chair or for use in multiple seating. In multiple seating, a plurality of seat and back units are mounted on a common base. The chair is preferably comprised of an inner shell of rigid material having padding secured thereto. An upholstery cover overlies the padding material and is preferably removably secured to the inner shell as disclosed in U.S. Pat. No. 3,722,950. The disclosure in said patent is incorporated herein by reference. As shown in U.S. Pat. No. 3,669,499 and said U.S. Pat. No. 3,722,950, the inner shell is secured to the base by fastening means extending through holes in the seat portion of the outer shell. In order to separate the shells to facilitate removal and/or replacement of the upholstery cover, it is necessary to disassemble the relationship between the base and the shells. In the chair of the present invention, only the outer shell is secured to the base. Hence, when the inner and outer shells are disassembled with respect to one another, the outer shell remains coupled to the base. The inner and outer shells are removably secured to each other at their peripheries by fastening means at spaced locations which rigidly couple the shells together. The fastening means facilitates transmission of load from the inner shell to the outer shell.

A rigid mounting plate is removably secured to the inner surface of the seat portion of the outer shell so as to be disposed between the inner and outer shells. The bottom surface on the seat portion of the inner shell may be in intimate contact with and supported by the mounting plate. Fastening means removably secure the mounting plate to the base and the seat portion of the outer shell. The seat portion of the outer shell and the mounting plate are preferably provided with a slot or opening to accommodate a portion of the control mechanism whereby the chair may tilt with respect to its base. The base may be provided with casters, if desired. The chair may be made with or without arms. For purposes of disclosure, the chair of the present invention will be illustrated and described with arms.

It is an object of the present invention to provide a novel chair seat and back unit.

It is another object of the present invention to provide a chair seat and back unit comprised of inner and outer shells removably secured together at their peripheries with the outer shell being secured to a base in a manner whereby the inner shell may be removed without interfering with the base and outer shell.

It is another object of the present invention to provide a novel chair which is sturdy, durable, easy to assemble, while being attractive and adapted for use in single and multiple seating.

Other objects will appear hereinafter.

For the purpose of illustrating the invention, there is shown in the drawings a form which is presently preferred; it being understood, however, that this invention is not limited to the precise arrangements and instrumentalities shown.

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FIG. 1 is a perspective view of a chair in accordance with the present invention.

FIG. 2 is a side elevation view of an arm which may be used on the chair in FIG. 1.

FIG. 3 is a sectional view taken along the line 3—3 in FIG. 2.

FIG. 4 is a partial elevation view taken along the line 4—4 in FIG. 2.

FIG. 5 is a sectional view taken along the line 5—5 in FIG. 1.

FIG. 6 is an exploded partial perspective view of the base and seat portions of the shells.

FIG. 7 is a sectional view taken along the line 7—7 in FIG. 1.

FIGS. 8 and 9 are sectional views similar to FIG. 7 but showing different embodiments of the present invention.

Referring to the drawing in detail, wherein like numerals indicate like elements, there is shown in FIG. 1 a chair in accordance with the present invention designated generally as 10. The major components of the chair 10 include the seat 12, back 14, base 16, and the arms 18, 20.

The seat 12 and back 14 are an integral unit defined by an inner shell 22 and an outer shell 24. The shells 22 and 24 are of the same general configuration and are removably coupled together at spaced points along their periphery by fastening means such as screws 26. Intermediate portions of the shells 22 and 24 are spaced from one another by the air gap 23. See FIG. 7.

The thickness of the shell 22 is increased at its periphery. See FIG. 7. The shells are preferably secured together at their peripheries by screws 26, but other fastening means may be utilized which facilitate separation of the shells when desired. Padding 28, which may be conventional in construction, is secured to the upper surface of inner shell 22 so as to be carried thereby. Conventional means such as adhesives may be used to secure the padding 28 to the shell 22. An upholstery cover 30 overlies the padding and extends around the periphery of the inner shell 22 so as to be disposed between the shells 22 and 24. The upholstery cover 30 may be removably secured to the shell 22 in any commercially accepted manner or as disclosed in my above-mentioned U.S. Pat. No. 3,722,950 to facilitate removal and replacement of the upholstery cover 30.

A bumper strip 32 is secured to the periphery of the outer shell 24 in any convenient manner. As shown more clearly in FIG. 7, the bumper strip 32 is generally C-shaped in cross section with one edge portion removably secured to the inner surface of shell 24 by means of a staple. The other edge portion extends around the periphery of shell 24 for a sufficient distance so as to overlap and conceal the head on screw 26. Bumper strip 32 provides a finish for the periphery of the outer shell, adds an attractive appearance to the shell, and occupies any gap between the peripheries of the shells 22 and 24.

Referring to FIGS. 6 and 7, it will be noted that the seat portion of the outer shell 24 is provided with a recessed portion 34. The recessed portion 34 is generally rectangular and includes mounting holes 36, 38, 40 and 42. Each of said mounting holes is generally located adjacent a corner of the rectangular recessed portion 34. The recessed portion 34 also includes a plurality of air

holes 46. While six such air holes 46 are illustrated, a greater or lesser number may be provided as desired.

The recessed portion 34 of the outer shell 24 is provided with an enlarged opening or slot 44. The purpose of slot 44 will be made clear hereinafter. The recessed portion 34 also may include temporary mounting holes 48. The purpose of the temporary mounting holes 48 will be made clear hereinafter.

A rigid mounting plate 50 is disposed between the shells 22 and 24. Plate 50 has the same general configuration as the recessed portion 34 and overlies the same. The plate 50 is made from a rigid material which is preferably metal, such as steel, bronze, brass, aluminum alloys, etc. If desired, the rigid plate 50 could be made from non-metallic material such as plywood. The plate 50 is preferably of sufficient thickness so that fastening means such as screws or bolts may be connected thereto. In a preferred embodiment, the plate 50 is $\frac{1}{8}$ inch thick steel plate.

The plate 50 has an arrangement of holes therein which generally conforms to the arrangement of holes in the recessed portion 34. Thus, threaded mounting holes 52, 54, 56 and 58 are provided adjacent the corners of the mounting plate 50. Holes 52-58 are actually aligned with but smaller than the holes 36-42 respectively. Plate 50 is provided with mounting holes 62 which are threaded and smaller than but aligned with the temporary mounting holes 48. Plate 50 also includes an opening or slot 64 which is aligned with and preferably the same size as the opening or slot 44.

A flat portion of the seat portion of inner shell 22 overlies and is supported by the mounting plate 50. This portion of the inner shell 22, as shown more clearly in FIG. 6, has clearance holes 66, 68, 70 and 72. The clearance holes 66-72 are generally of the same size or larger than the clearance holes 36-42 and are aligned therewith. The seat portion of the inner shell 22 is also provided with air holes 74 which are aligned with the air holes 60 in the plate 50 and air holes 46 in the recessed portion 34 of the outer shell 24.

The base 16 may assume a wide variety of configurations. For purposes of illustration, the base 16 in FIG. 6 includes a tilt control mechanism designated generally as 78 and mounted at the upper end of post 80. Mechanism 78 includes horizontally disposed brackets 82 and 84. Mechanism 78 is, per se, conventional and includes a foot member 86 which moves upwardly when the chair 10 is tilted as the person sitting therein leans backwardly. The openings or slots 44 and 64 accommodate the upward movement of the foot member 86.

The mechanism 78 is removably secured to the plate 50 by means of a plurality of bolts including bolts 88 and 90. Bolt 88 extends through a hole in bracket 84, through the clearance hole 40 in the recessed portion 34, is threadedly secured to the hole 56 in mounting plate 50, and may project upwardly into the clearance hole 70 disposed in the inner shell 22. Similarly, bolt 90 extends through a hole in the bracket 84, through the clearance hole 38 in the recessed portion 34, and threadedly secured to the hole 54 in plate 50, and may continue into the clearance hole 68 of the inner shell 22. The opposite side of the mechanism 78 is similarly coupled to the plate 50 and the shells 22 and 24.

From the above description, it will be noted that the base 16 is removably connected to the seat portion of

the outer shell 22 and the mounting plate 50 without any connection between the base 16 and the inner shell 22. The inner and outer shells 22 and 24 are only directly connected to one another by the fastening means at their peripheries, such as the screws 26. Thus, removal of the screws 26 to facilitate changing or repair of the upholstery cover 30 does not in any way disturb the coupling between the outer shell 24 and the base 16. Further, such coupling between the outer shell 24 and the base 16 may facilitate assembly in the field and/or assembly in the factory whereby the assembly of the chair 10 may be accomplished more expeditiously.

In FIG. 8, there is shown a partial sectional view similar to FIG. 7 but illustrating another embodiment of a chair designated 10'. The chair 10' is identical with the chair 10 except as will be made clear hereinafter. Thus, an intermediate mounting plate 92 is provided between the brackets on the control mechanism 78 and the recessed portion 34 of the outer shell 24. The plate 92 may be identical with plate 50 but slightly thinner so as to correspond to the depth of the recessed portion 34. Plate 92 may be provided with threaded holes corresponding to and aligned with the threaded holes 52-58, whereby each of the rigid mounting plates on opposite sides of the recessed portion 34 are threadedly connected to the bolts such as bolt 88, 90, etc. Plate 92 is also provided with an opening or slot corresponding to openings or slots 44, 64, as well as the air holes and temporary mounting holes.

In FIG. 9, there is illustrated a sectional view similar to FIGS. 7 and 8 but of another embodiment of a chair designated 10''. The chair 10'' is identical with the chairs 10 and 10' except as will be made clear hereinafter. Thus, in chair 10'', the plate 92' is fixedly secured to the upper end of the mounting post 80'. Thus, the chair 10' does not have any tilt control mechanism.

When the chair and seat unit is utilized on multiple seating, it is desirable to properly locate the rigid mounting plate 50 between the shells 22 and 24 at the factory but at the same time ship the seat and back units to the ultimate destination in a manner whereby they are not bolted to the common base. In order to prevent the mounting plate 50 from shifting during shipping, a temporary bolt will extend through the holes 48 and be threadedly secured in the hole 62. This will maintain the mounting plate 50 in a proper location so that the mounting holes 52-58 will always remain aligned with the clearance holes 36-42.

As indicated heretofore, the chair 10 may be of the armless type. If arms 18 and 20 are to be provided, they are preferably constructed as shown in FIGS. 1-5. The arms 18 and 20 are identical except for being of the lefthand or righthand. Thus, only arm 18 will be described in detail.

The arm 18 is preferably in the form of an endless loop of varying cross-sectional configurations with the upper arm portion 94 wider than the remaining portions such as portions 96 and 104. The arm 18 may be made from a variety of materials, but is preferably made from a polymeric plastic material, with or without internal reinforcement, such as ABS, urethane, styrenes, nylon, etc. In a preferred embodiment, the arm 18 is injection molded from ABS sold commercially under the trademark Cycolac. The arm 18 is secured to the lowermost surface on the shell 22, by a plurality of brackets such as brackets 98, 100, 102. See FIGS. 2 and 5.

The brackets 98-102 may be of plastic integral with the polymeric plastic from which the arm 18 is made. Alternatively, the brackets 98-102 may be of sheet metal molded in place in the plastic arm when the arm is made or the brackets may be integral with any metallic internal reinforcement or core for the arm 18. The brackets 98-102, as shown, are inclined downwardly, extend horizontally, and then are inclined downwardly so as to extend between the periphery of the shells. The portion of the brackets 98-102 between the periphery of the shells 22 and 24 is provided with preformed mounting holes. Separate fastening means such as screws may be utilized to secure the brackets 98-102 to the inner shell 22 as shown in FIG. 5. Instead of having a plurality of separate brackets 98-102, it is within the scope of the present invention to have one single elongated mounting bracket arm 18.

The upholstery covering 30 may be of the tufted type as shown in my above-mentioned U.S. Pat. No. 3,722,950. The inner shell 22 is a rigid shell which may be made from a wide variety of conventional processes and materials. The inner shell is preferably formed from rigid expanded polystyrene, but may be made from ABS, fiberglass reinforced polymeric plastics, nylon, polypropylene, etc. The outer shell may be formed in a wide variety of processes from a variety of materials including polyethylene, polyvinyl chloride, polypropylene, ABS, nylon, fiberglass reinforced polymeric plastics, etc. The outer shell is preferably made from a high density polyethylene having a nominal thickness of one-fourth inch.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof and, accordingly, reference should be made to the appended claims, rather than to the foregoing specification as indicating the scope of the invention.

I claim:

1. A chair seat and back unit comprising an inner shell of rigid material, an outer shell of substantially the same shape as said inner shell, said shells having juxtaposed peripheries with inner portions of the shells being spaced from one another by an air gap, fastening means removably securing the peripheries of said shells at spaced locations, and a rigid mounting plate removably secured to the seat portion of the outer shell, said mounting plate being disposed between said shells, said mounting plate and the seat portion of the outer shell having aligned air holes.

2. A chair seat and back unit in accordance with claim 1 wherein said mounting plate and outer shell have an enlarged opening in alignment for receiving a foot member on a tilt control mechanism, and a tilt control mechanism secured to said mounting plate by fastening means extending through clearance holes in said outer shell whereby a foot member on said tilt control mechanism projects upwardly into said aligned enlarged openings during use.

3. A chair seat and back unit in accordance with claim 1 including a base, said base being secured to said

mounting plate by fastening means extending through clearance holes in said outer shell.

4. A chair seat and back unit in accordance with claim 1 including a second rigid plate, said second rigid plate being aligned with said first-mentioned rigid mounting plate, the seat portion of said outer shell being disposed between said rigid plates, and fastening means extending through clearance holes in said outer shell and connecting said plates together with said outer shell having its seat portion clamped between said plates.

5. A chair in accordance with claim 1 wherein said inner shell has a flat portion on its lower surface which rests on said plate, and said inner shell portion having clearance holes larger than and aligned with threaded mounting holes in said plate.

6. A chair in accordance with claim 1 including means temporarily maintaining said air holes in alignment during shipment whereby the mounting plate is prevented from shifting with respect to the outer shell.

7. A chair comprising an inner shell of rigid polymeric plastic material, said shell including an integral seat and back, an outer shell of polymeric plastic material having substantially the same shape as said inner shell, said shell having juxtaposed peripheries with inner portions of the seat and back of the shells being spaced from one another by an air gap, fastening means removably securing only the peripheries of said shells at spaced locations, a rigid mounting plate removably secured to the seat portion of the outer shell and between said shells, said mounting plate and seat portion of the outer shell having aligned holes, a base, fastening means extending from said base to said plate through clearance holes in said outer shell for clamping the seat portion of said outer shell between said base and mounting plate.

8. A chair in accordance with claim 7 wherein said inner shell has clearance holes aligned with the last-mentioned fastening means for receiving a portion of the last-mentioned fastening means.

9. A chair in accordance with claim 7 wherein said mounting plate and seat portion of the outer shell have an enlarged opening through which a portion of a tilt control mechanism extends said base including a tilt control mechanism to facilitate tilting of the shells with respect to a stationary portion of the base.

10. A chair in accordance with claim 7 including a second rigid plate aligned with said first mentioned mounting plate, said last mentioned fastening means clamping the seat portion of the outer shell between said plates.

11. A chair in accordance with claim 7 including arm members in the form of an endless loop, at least one bracket on each arm member, each bracket having a portion extending into the space between the shells, and fastening means securing each bracket to the inner shell.

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