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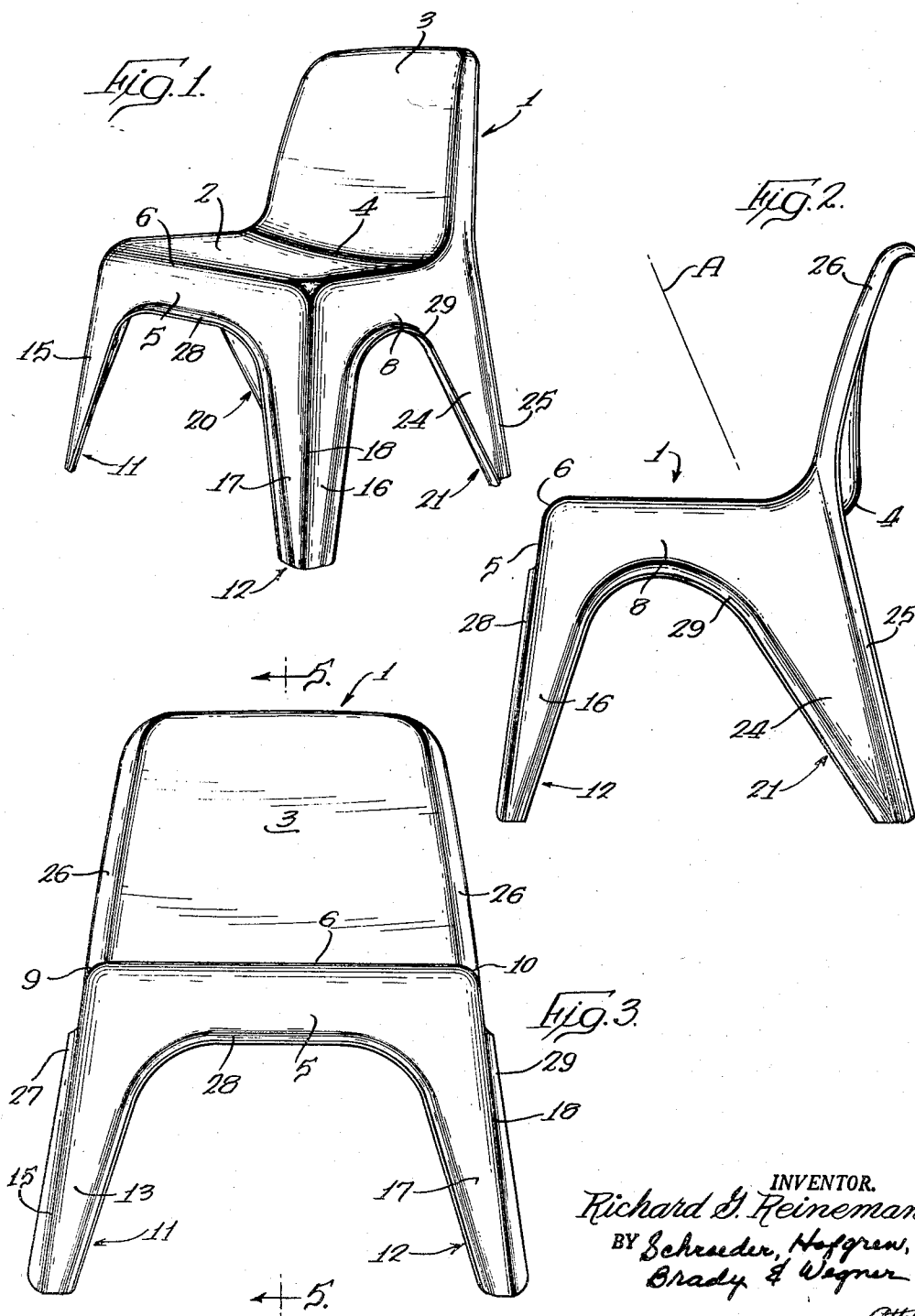
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ONE-PIECE CHAIR

Filed Sept. 27, 1956

2 Sheets-Sheet 1



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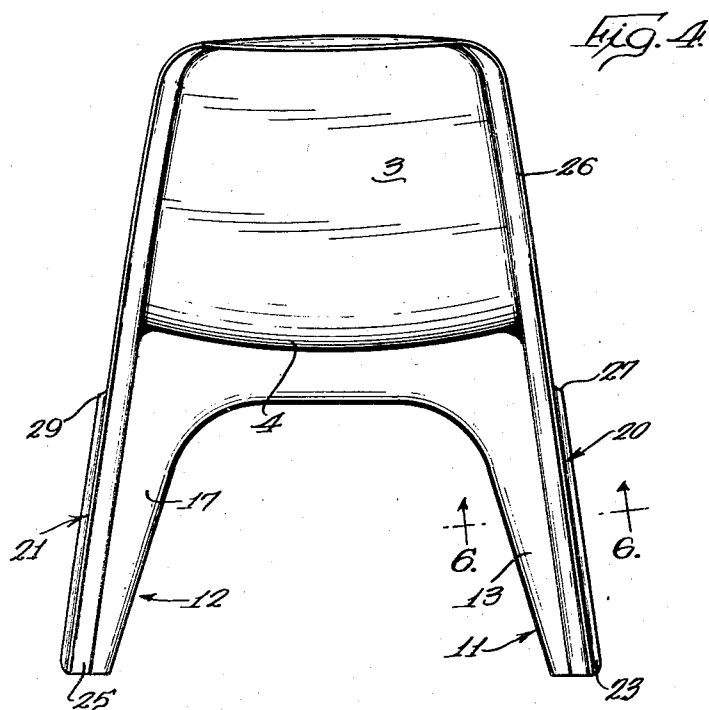
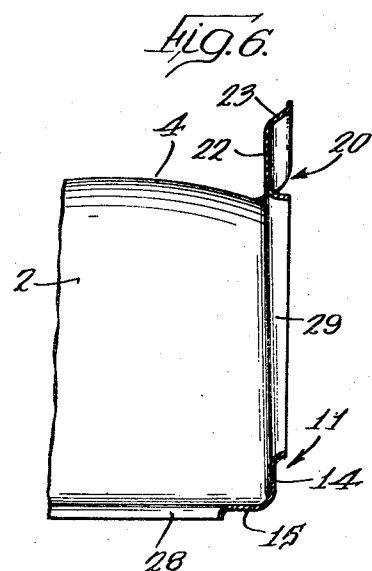
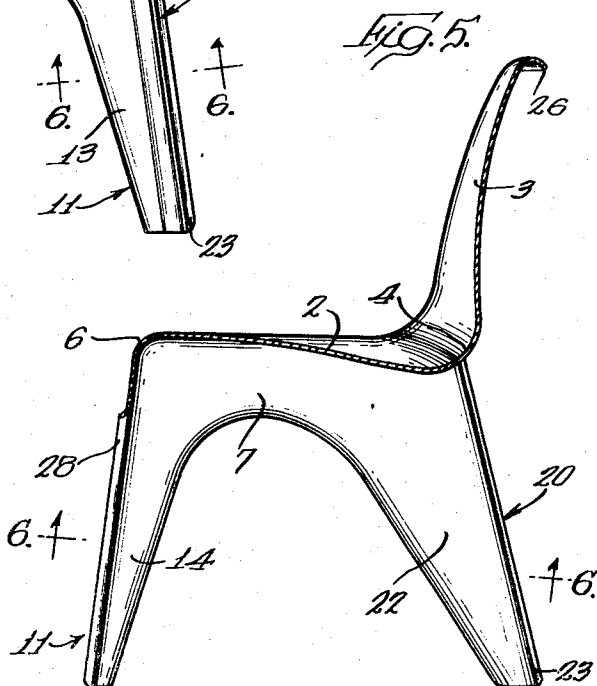
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ONE-PIECE CHAIR

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2 Sheets-Sheet 2



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2,936,826

ONE-PIECE CHAIR

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2 Claims. (Cl. 155—191)

This invention relates to a one-piece chair and more particularly to a nestable, one-piece chair which may be made of plastic or like material in a single molding operation.

An object of this invention is to provide a new and improved one-piece chair.

A further object of this invention is to provide a one-piece, plastic chair constructed so as to be produced in a single molding operation and which is of adequate strength and which may be nested with other similar chairs.

Another object of the invention is to provide a one-piece chair of plastic construction in which the front and rear legs incline downwardly and outwardly from a seat of the chair and in which the front legs are shaped to form a turned-in structural angle and the rear legs a turned-out structural angle, whereby the chair may be formed in a single molding operation, and a plurality of such chairs may be nested with each other.

A further object of the invention is to provide a one-piece chair which may be formed in a molding operation utilizing relatively movable dies having a seat and backrest both formed with compound curves with a spherically shaped, forwardly concave section formed at the junction of the seat and the backrest, a front panel and a pair of side panels curvingly connected to the seat and extending downwardly and outwardly from the seat, a pair of outwardly inclined, tapered front legs formed by downwardly narrowing, co-planar extensions of said panels with each leg including an inwardly concave, curved interconnection of one of the front panel extensions with one of said side panel extensions, a pair of outwardly concave, tapering back legs each formed by a downwardly narrowing, rearwardly inclined, co-planar extension of a side panel and an outwardly extending flange curvingly connected to said extension, the inclination of the front and rear legs being directed to a common molding axis, and the backrest being formed so as to permit nesting of a plurality of said chairs, a continuously arching flange turned out one from each of said panels and coextensive with each of the legs associated with said panel, and a continuous backrest flange turned out from the backrest and continuing to the rear leg flanges, all of the foregoing parts of said chair being arranged so that a die moving along an axis generally bisecting the side panel extension of the rear leg will move away from all of said parts at the completion of a molding operation.

The objects of the invention generally set forth together with other ancillary advantages are attained by the construction and arrangement shown by way of illustration in the accompanying drawing, in which:

Fig. 1 is a perspective view of the chair;

Fig. 2 is a side view in elevation of the chair;

Fig. 3 is a front elevation of the chair;

Fig. 4 is a rear elevation of the chair;

Fig. 5 is a vertical section of the chair taken generally along the line 5—5 in Fig. 3; and

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Fig. 6 is a fragmentary generally horizontal section looking upwardly and taken generally along the line 6—6 in Fig. 4 and in Fig. 5.

While this invention is susceptible of embodiment in many different forms, there is shown in the drawings and will herein be described in detail an illustrative embodiment of the invention with the understanding that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the invention to the embodiment illustrated. The scope of the invention will be pointed out in the appended claims.

The chair, indicated generally at 1, includes a compound curved seat 2 which, as shown in Figs. 1 and 5, is curved both transversely and from front to rear. A compound curved backrest 3 is curved transversely and also from top to bottom. The backrest 3 extends upwardly and rearwardly from the seat 2, and a forwardly concave section 4 is formed at the junction of the seat 2 and backrest 3 and has generally the shape of a skin of a sphere. The section 4 is curved in the horizontal plane and also in the vertical plane.

A front panel 5 is curvingly connected to the front of the seat 2, as indicated at 6, and extends downwardly and outwardly from the seat, as shown in Figs. 1, 2 and 5. A side panel 7 and a side panel 8 are curvingly connected to the sides of the seat 2, as indicated generally at 9 and 10, respectively. Each of the side panels 7 and 8 extends downwardly and outwardly from the seat.

A pair of outwardly inclined front legs, indicated generally at 11 and 12, are formed by downwardly narrowing, co-planar extensions of the front panel 5 and the side panels 7 and 8. More specifically, the front leg 11 is formed of an extension 13 of the front panel 5 and an extension 14 of the side panel 7. The extension 13 of the front panel 5 constitutes a turned-in front leg section with regard to the leg extension 14, and the two leg extensions are curvingly connected along their length, as indicated at 15, to form an inwardly facing structural angle.

The front leg 12 is formed from an extension 16 of the side panel 8 and an extension 17 of the front panel 5. The leg extension 17 constitutes a turned-in section of the leg which is curvingly connected to the leg extension 16 along their length, as indicated at 18, to form an inwardly facing structural angle.

A pair of outwardly and rearwardly inclined back legs, indicated generally at 20 and 21, are formed in part by coplanar extensions of the side panels 7 and 8. The rear leg 20 has an extension 22 of the side panel 7 which is downwardly narrowing and rearwardly and outwardly inclined and a turned-out flange 23 curvingly connected to the leg extension 22 to form together a forwardly and outwardly facing structural angle. The rear leg 21 is formed of a downwardly narrowing, rearwardly and outwardly inclined extension 24 of the side panel 8, and a turned-out flange 25 is curvingly connected to the leg extension 24 to form therewith a forwardly and outwardly facing structural angle.

A continuous backrest flange 26 turned out from the backrest 3 extends coextensive with the backrest and constitutes a continuation of the rear leg flanges 23 and 25. A plurality of arching flanges 27, 28 and 29 are turned out from the side panel 7, front panel 5 and side panel 8, respectively, and these flanges are coextensive with the legs associated with said panels.

The disclosed chair may be made of a fibrous glass reinforced hard type thermosetting plastic. With a thicker wall, the chair may be made of less expensive plastics having a relatively inexpensive filler, such as clay, pulp, or sawdust and a binder, such as urea, glue, or starch.

The chair is constructed so as to be made by either

an injection or compression molding operation. As one example of producing the chair, the following description of a compression molding operation may be described: In a molding cycle, heated male and female die parts are drawn apart and a "preform" of fibrous glass and a suitable binder so as to hold the fibers together for handling is dropped in place. The "preform" may be made by air vacuum aggregation of fibrous glass over a chair form. A suitable binder in a proportion of 2% by weight of binder to glass is then applied to the form to make it strong enough to stand careful handling. As an example, this binder may be an emulsifiable polyester resin which when mixed with water may be applied to the form in a spray and then treated in an oven at approximately 250° to 350° F. until cured. A suitable resin is Selectron 5930 of Pittsburgh Plate Glass Company. The right amount of liquid plastic is then distributed over the "preform." The dies then slowly close relative to each other, excess material is squeezed out from between the dies, and the edges of the part are precisely trimmed by a shearing action between the edges of the dies. At the completion of the molding cycle, the dies are moved relatively away from each other, and the chair is extracted from between the dies.

In order to more clearly illustrate the invention, a die axis, identified as A, is shown in broken line in Fig. 2 with respect to the chair, as shown therein in side elevation. This die axis 25 generally bisects the rear leg panel extension 24, and it is believed readily apparent that a die moved along this axis at the completion of a molding operation will move away from all parts of the chair. Additionally, the arching flanges 27, 28 and 29, the backrest flange 26 and leg sections 23 and 25 place the edge material of the chair at approximately right angles to the die axis so that the material may be precisely trimmed by a shearing action between the dies. It will further be noted that all of the parts of the chair taper to a common molding axis so that a plurality of chairs may be nested with each other.

A suitable composition for molding may be by weight; 100 parts of a polyester-styrene resin such as Bakelite PLLA 5008, a product of Bakelite Company; 3 parts of an inorganic paste pigment containing a polyester resin such as Selectron 5694, a product of Pittsburgh Plate Glass Co.; 60 parts of a salacious or silica-type filler such as Cerfex MM, a product of Diamond Alkali Co.; 10 parts of a liquid styrene monomer to reduce viscosity; and the whole mixture may be catalyzed using 1%, based on the weight of polyester resin, of benzoyl peroxide catalyst containing equal parts by weight of tricresyl phosphate as a plasticizer. The molds may be heated to 250° F. and a pressure of 90 to 100 p.s.i. used during a mold time of approximately 1 minute and 40 seconds.

I claim:

1. A one-piece fibrous glass reinforced plastic chair which may be formed in a single molding operation utilizing relatively movable dies comprising, in combination, a compound curved seat, a compound curved backrest being transversely concave and longitudinally convex extending upwardly and rearwardly from the rear of said seat with a somewhat spherically shaped forwardly

concave section formed at the junction of the seat and the backrest, a front panel and a pair of side panels curvingly connected to the seat and extending downwardly and outwardly from the seat, a pair of outwardly inclined tapered front legs formed by downwardly narrowing co-planar extensions of said panels with each leg including an inwardly concave curved interconnection of one of the front panel extensions with one of said side panel extensions, a pair of outwardly concave tapering back legs each formed by a downwardly narrowing rearwardly inclined co-planar extension of a side panel and an outwardly extending flange curvingly connected along the rear of said extension, and the tapering of the panels, panel extensions and flange being directed to a common molding axis and the backrest being formed so as to permit nesting of a plurality of said chairs, a continuously arching flange turned out one from each of said panels and coextensive with each of the legs associated with said panels, and a continuous backrest flange turned out from the backrest and continuing to the rear leg flanges, all of the foregoing parts of said chair being arranged so that a die moving along an axis generally bisecting the side panel extension of the rear leg will move away from all of said parts at the completion of a molding operation.

2. A one-piece chair which may be formed in a molding operation utilizing relatively movable dies comprising, in combination, a compound curved seat, a compound curved backrest extending upwardly from the rear of said seat with a somewhat spherically shaped forwardly concave section formed at the junction of the seat and the backrest, a front planar panel and a pair of side planar panels curvingly connected to the seat and extending downwardly and outwardly from the seat, a pair of downwardly and outwardly inclined tapered front legs formed by downwardly narrowing co-planar extensions of said panels with each leg including an inwardly concave curved interconnection of one of the front panel extensions to place said co-planar extensions at an angle to each other with one of said side panel extensions, and a pair of outwardly concave tapering back legs each formed by a downwardly narrowing rearwardly inclined co-planar extension of a side panel and an outwardly extending flange curvingly connected to said extension, all of the parts inclined to a common molding axis and being arranged so that a die moving along an axis generally bisecting the side panel extension of the rear leg will move away from all of said parts at the completion of a molding operation.

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