Feb. 27, 1968 J. A. GALE 3,370,885

CONTOUR LOUNGE CHAIR

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FIG. 1

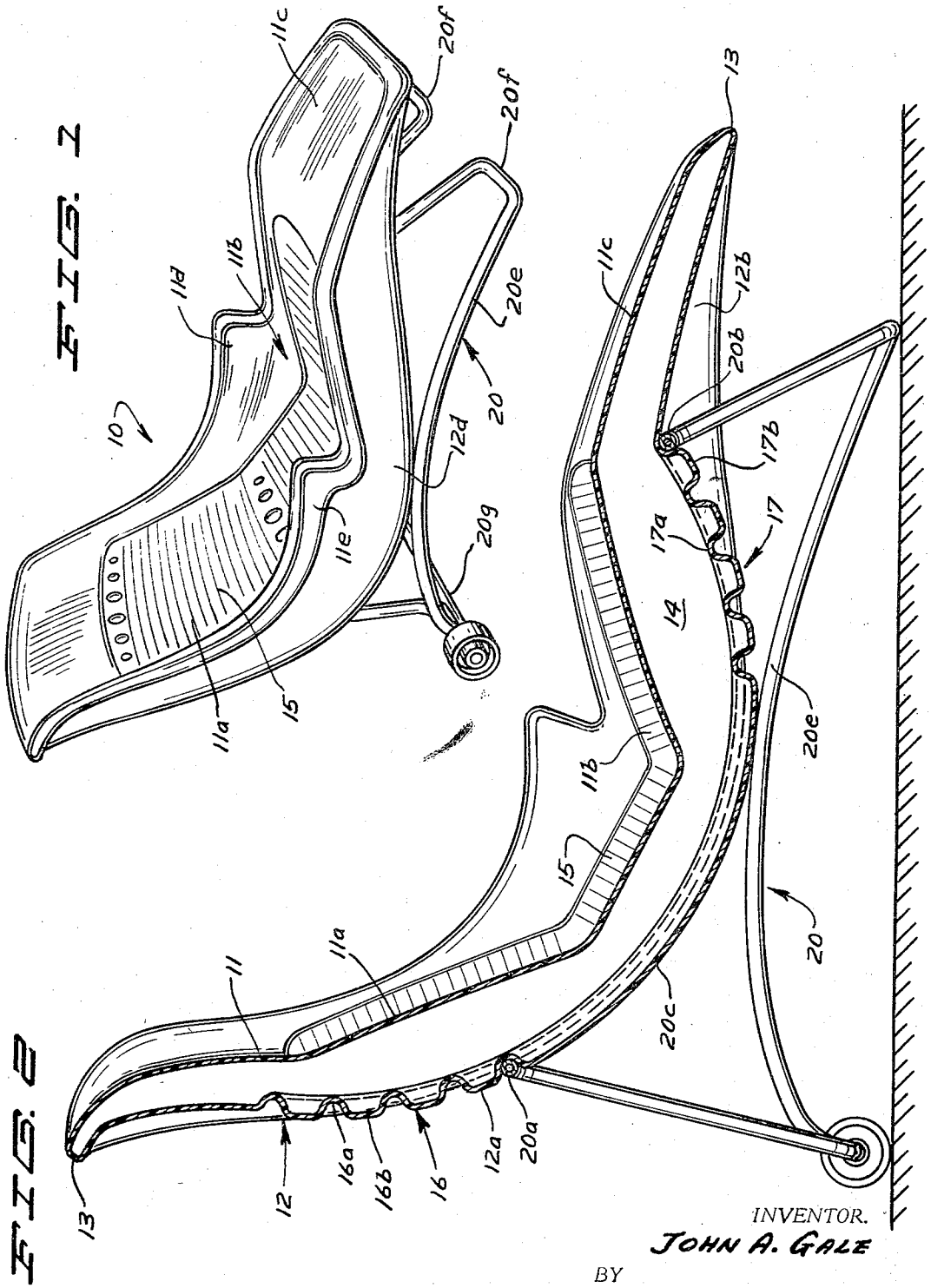


FIG. 2

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FIG. 3

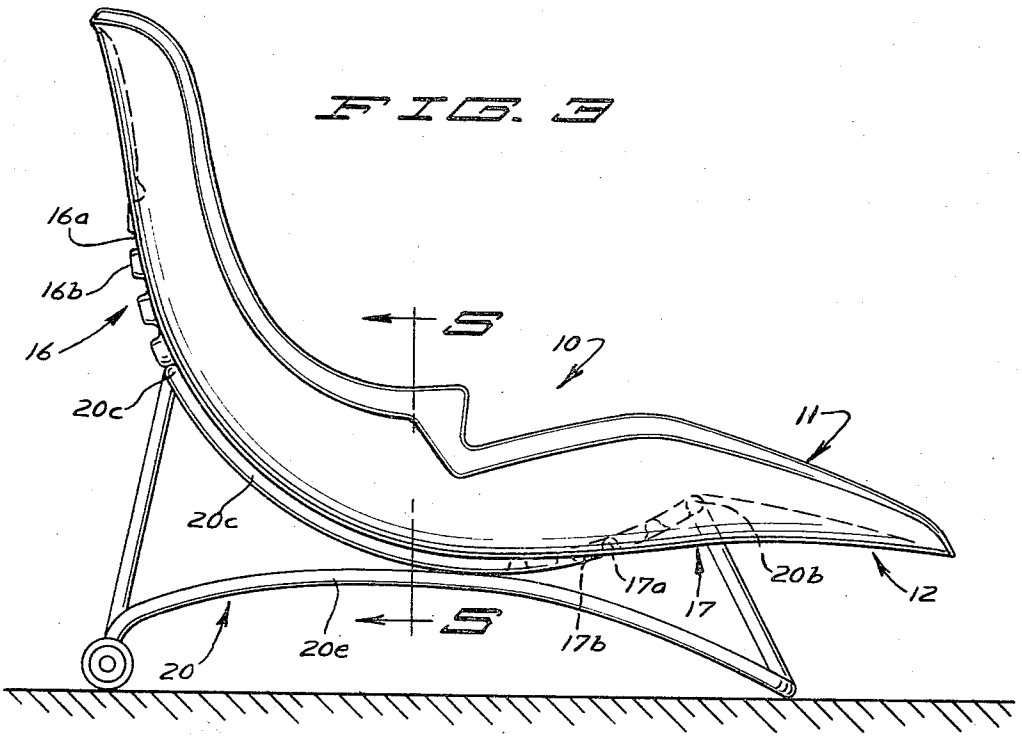


FIG. 4

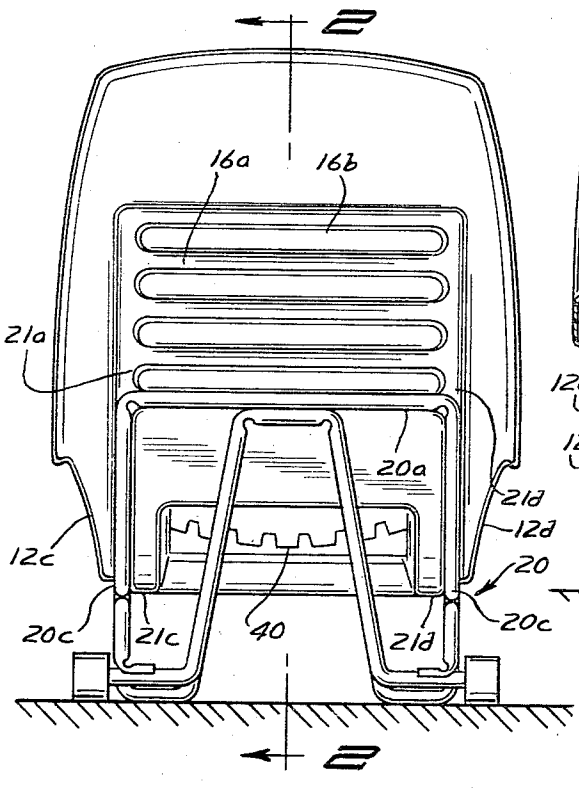
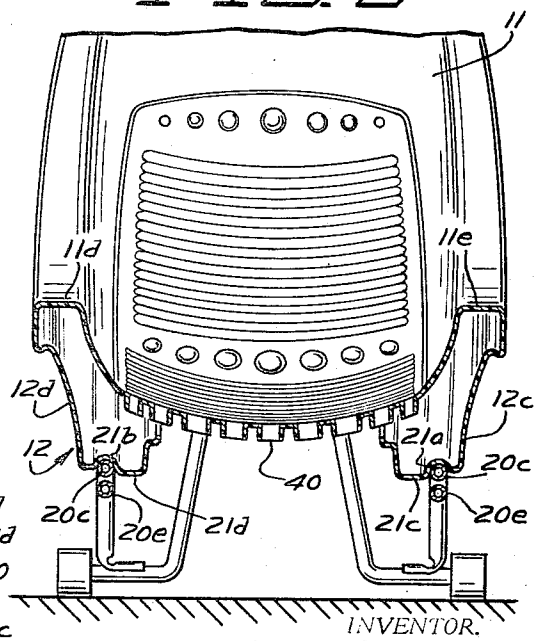


FIG. 5



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FIG. 6

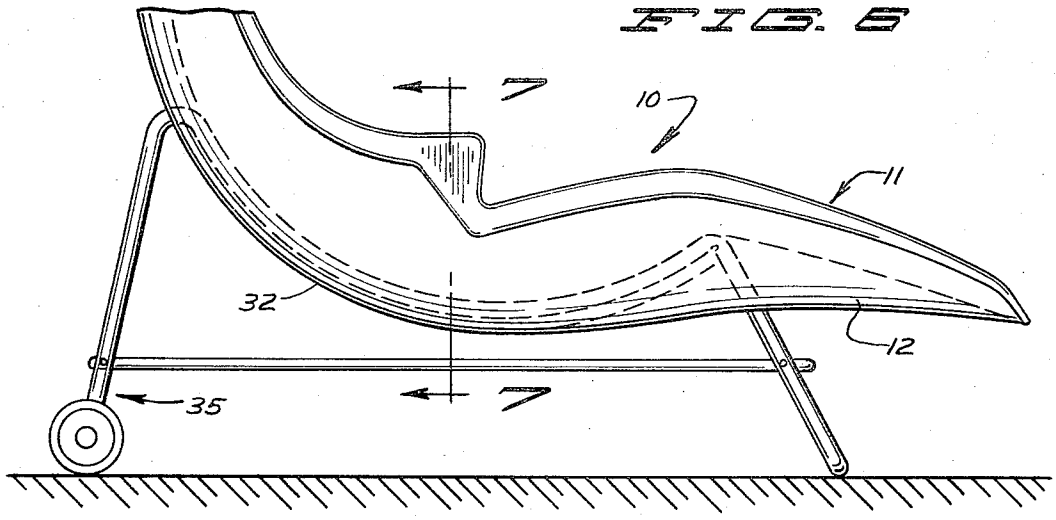
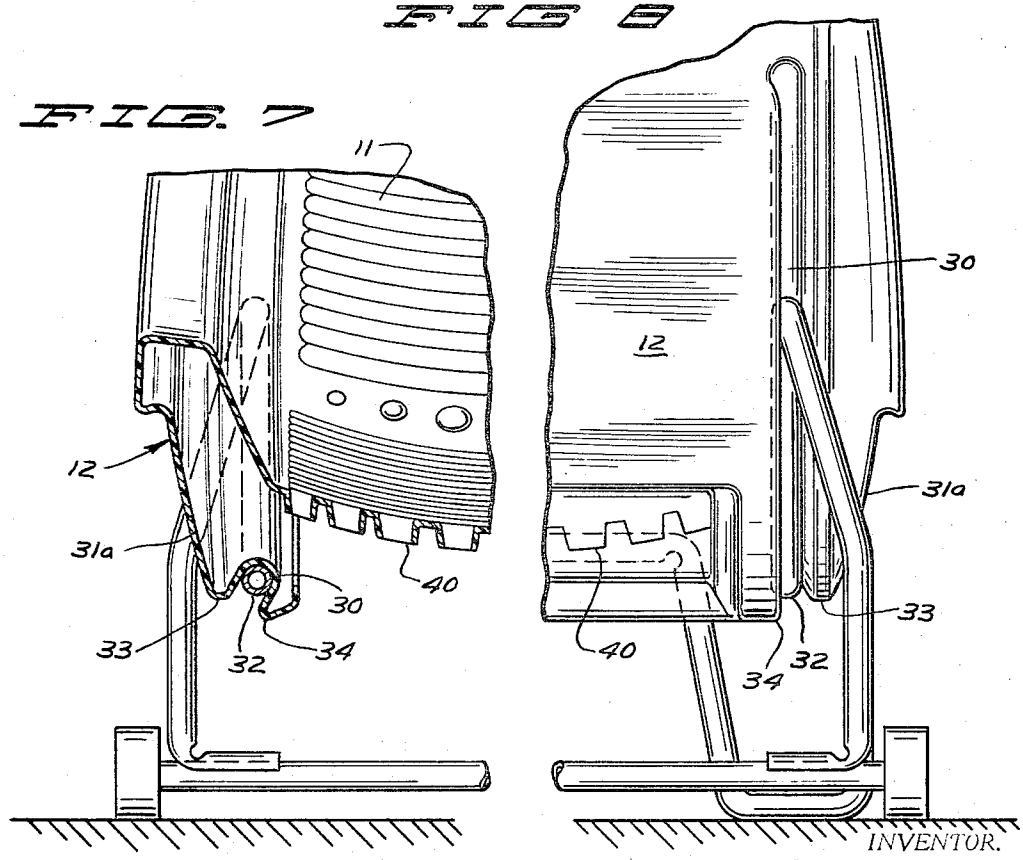


FIG 8

FIG. 7



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United States Patent Office 3,370,885 Patented Feb. 27, 1968

3,370,885

CONTOUR LOUNGE CHAIR

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Filed Mar. 14, 1966, Ser. No. 534,235
3 Claims. (Cl. 297—328)

ABSTRACT OF THE DISCLOSURE

A seating structure particularly defining a contoured lounge chair and embodying an occupant receiving lamina providing a back rest portion, a seating portion and a depending leg supporting portion, all formed in a continuous panel and a supporting back lamina joined at its peripheral edge to the occupant receiving lamina and spaced therefrom to provide a clear span cavity therebetween which back lamina further includes defined areas therein to afford frame receiving and locating means whereby the seating structure may be supported in desired positions and again having all such areas formed in a continuous panel. The structure is formed of a normal non-loading bearing, resilient material which when molded as a spaced lamina construction affords load bearing and occupant supporting characteristics.

In general the purpose of this chair is to define a seating area shaped and formed to the general configuration of an occupant's body in a seated position. The body support area due to the particular material used, the type of molding employed and the particular design concepts incorporated into the chair lends a certain cushioning effect and more positive conformance to the occupant's body than chairs heretofore available of similar materials.

The particular concepts embodied in this chair include certain supporting and positioning devices to permit its use as an adjustable type contour chair whereby the various positions available lend a further higher degree of comfort to the occupant. Positive positioning devices as incorporated into the chair do not require any additional foreign material or fastening connectors but rather due to a snap action type design incorporating portions of the chair's material, the chair is positively locked into position upon a support frame and is only removable therefrom upon the application of a removal force. This positive locking and positioning feature of course is most desirable should the chair be produced in a small child size unit.

Another aspect of the particular locking and positioning device on the chair includes a set of parallelly spaced groove members which will permit the chair to be used as a rocking chair upon a standard tubular frame unit thus adding to the useability of the chair.

Generally the chair consists of a pair of spaced lamina having a cavity therebetween which cavity is provided with air, which air emphasizes the cushioning effect obtained for the chair. The chair having a particular basis of design affords structural stability to carry occupants of any size and weight while the material from which the chair is formed, if the material were to be taken as a single sheet would not afford the strength and rigidity for the support of such weight. Therefore, the unit while employing resilient, comfort obtaining material will still afford the necessary structural rigidity to support persons of various weights.

It is therefore an object of applicant's invention to provide a new and unique lounge chair incorporating a new and unique design process for molding a continuous supporting and backing portion for a chair unit and defining a cavity therebetween which continuous supporting and backing surface provide the structural rigidity necessary for proper occupant retaining.

A further object of the invention is to provide a chair wherein no structural supports are required internally of the chair and this particular structural elimination allows the production of a complete chair in a singular operation.

It is a further object of applicant's invention to provide a contour chair including a front and back lamina formed into a single cavity closing unit which continuity of surface design encapsulating the cavity provides the necessary rigidity to the chair to support an occupant.

It is a further object of applicant's invention to provide a contour lounge chair or the like having a plurality of integrally molded positioning elements on a lower lamina thereof such that the occupant retaining portion of the chair may be positioned at a plurality of different locations to add to the comfort of the chair.

It is a further object of applicant's invention to provide a contour lounge chair or the like which closely conforms to the general configuration of an occupant's body in either a seated or upright position and wherein the body support portion provides a certain amount of resiliency and therefore comfort due to the particular material and particular air cavity encapsulating principle incorporated therein.

These and other objects and advantages of my invention will more fully appear from the following description made in connection with the accompanying drawing, wherein like reference characters refer to the same or similar parts throughout the several views, and in which:

FIG. 1 is a perspective view of a preferred form of a chair embodying the concepts of applicant's invention;

FIG. 2 is a vertical section taken substantially along line 2—2 of FIG. 4;

FIG. 3 is a side elevation of the chair illustrated in FIG. 1;

FIG. 4 is a rear elevation of the chair illustrated in FIG. 1;

FIG. 5 is a section taken substantially along line 5—5 of FIG. 3;

FIG. 6 is a side elevation of a modified form of the chair;

FIG. 7 is a partial vertical section taken substantially along line 7—7 of FIG. 6; and

FIG. 8 is a rear elevation of the portion of the chair illustrated in FIG. 7.

In accordance with the accompanying drawings the lounge contour chair embodying the concepts of the invention is generally designated **10** and consists primarily of an upper **11** and lower **12** lamina joined integrally at the peripheral edge **13** therearound such that an internal air cavity **14** is defined between the panels **11–12**.

The method of producing this chair as presently contemplated includes such well known means as roto molding or blow molding of polyethylene and similar other plastic materials but basically the principle involved in applicant's concept is to provide an integrally molded pair of spaced lamina which spacing therebetween provides an air enclosing cavity which adds to the resiliency of the chair and wherein the integrally formed continuous surface of lamina **11–12** joined integrally at the peripheral edges provides the necessary strength and rigidity such that the chair may easily support an occupant.

In the basic structure of applicant's lounge chair the upper panel includes a back rest portion **11***a*, a seating portion **11***b* and a depending leg supporting portion **11***c*, all formed integrally into one continuous panel. Likewise for comfort of the occupant a pair of arms **11***d–11e* are provided and extend generally upward from the bottom

seating portion **11***b* and forward from back rest portion **11***a*. As illustrated in the figures, due to the specific type of molding processes used the back rest **11***a*, seating portion **11***b* may be provided with ribbing **15** thereon which would permit a certain higher degree of flexibility over certain portions of the chair and thereby provide what could be termed as a high comfort area in the chair. This ribbing would be integrally formed into the mold and as the material flows therearound certain areas of high flexibility would be provided.

The back panel **12** in the form shown consists of a generally arcuate portion **12***a* underlying the back and seat rest portions **11***a*–**11***b* with a depending underlying leg support portion **12***b* extending outwardly and forwardly therefrom to coincide with and cooperate with the depending leg support portion **11***c* spaced thereabove.

As best illustrated in FIG. 2 and FIG. 3 and FIG. 4 two sets **16**–**17** of cross indexing members are provided. These indexing devices, in the form shown, consist of a plurality of spaced grooves **16***a* and flats **16***b* extending transversely across the width of the back lamina **12** approximately behind the back support portion **11***a* of the front lamina **11** and a second group **19** of corresponding locating grooves **17***a* and flats **17***b* extending transversely across the chair at the approximate point of intersection between the curvilinear back panel **12***a* and the depending leg supporting panel **12***b*. In the form shown these grooves **16***a*–**17***a* and flats **16***b*–**17***b* are provided to positively capture selected portions of a support frame generally designated **20** therein. The curvilinear spacing between corresponding grooves **16***a*–**17***a* is designed to receive the transverse portions **20***a*–**20***b* of frame **20** therein and the shape of the particular groove **16***a*–**17***a* will tend to form substantially about the transverse frame portions **20***a*–**20***b* and provide a snap connector action therebetween. As illustrated in FIG. 2 five sets of grooves are provided and this number will provide a wide selection of positions for the chair. The particular shape of the individual grooves **16***a*–**17***b* is such that as the transverse members **20***a*–**20***b* are received therein a capturing fit is provided; this fit is accomplished due not only to the particular design of the flats and grooves but also to the material itself as a certain amount of resiliency is obtained therein.

As illustrated in FIGS. 4 and 5 a pair of parallel, longitudinally extending curvilinearly arranged grooves **21***a*–**21***b* are provided to extend about the curvilinear back lamina **12** and as illustrated are arranged to be in meeting association with the groove portions **16***a*–**17***a* of the cross indexing members. These grooves **21***a*–**21***d* as illustrated in their cross section in FIG. 5 include a substantially arcuate frame engaging portion **21***a*–**21***b* which portion is displaced inwardly from a downwardly depending portion **12***c*–**12***d* of the back lamina **12**. Inward spacing of the arcuate grooves **21***a*–**21***b* permits the frame member **20** to more closely underlie the occupant retaining portion of the chair. The back lamina portion **12** of the chair is so shaped about the longitudinally extending grooves **21***a*–**21***b* so as to provide an inner abutting shoulder **21***c*–**21***d* inwardly of the respective grooves to prevent the chair from slipping outwardly over the respective frame portions contained in the grooves. Likewise as illustrated in FIGS. 4 and 5, this inwardly arranged shoulder **21***c*–**21***d* is the lowermost portion of the back lamina **12** and may suitably operate as the general supporting surface for the chair **10** should the chair be placed directly on the ground. It is possible that the chair could be used on a flat surface and when so used inner abutting shoulders **21***c*–**21***d* will rest on the surface and support the entire chair thereon.

The frame **20** designed for this specific form of chair includes a curvilinear frame member designated **20***c* which is receivable into the respective grooves **21***a*–**21***b* on either side of the chair and which is agreeably fitted to the grooves such that the radius of the chair and the radius of the frame is mutualy acecptable to permit shifting thereof entirely therealong while maintaining supporting contact on this portion **20***c* of the frame **20**. From this specific frame construction it should be obvious that the chair may be shifted from any of the cross indexing grooves **16***a*–**17***a* while being supported on the curved frame section **20***c* such that the desired position of the grooves with the main transverse frame members **20***a*–**20***b* may be easily attainable.

As illustrated in FIGS. 2 and 3 the frame structure contemplated for use with this preferred form of the invention includes a second supporting member **20***e* which has a radius of curvature substantially different than the first mentioned curved frame member **20***c* ordinarily contacting the chair **10**. This second frame portion **20***e* is designed to normally serve a stability and support function but also provides another use when the frame **20** is inverted. In the inverted position the difference in radius of curvature between the frame members **20***e* and the radial grooves **21***a*–**21***b* of the chair permit rocking movement of the chair on the frame members **20***e* while the frame is still sufficiently supported within the arcuate groove portions **21***a*–**21***b* formed on the chair. When used in this particular manner a second function is given to this chair and instead of being simply a comfortable lounge contour chair the chair may be used as a rocking contour chair.

When used as such a rocking contour chair the frame is inverted upon the cross members **20***a*–**20***b* for support thereby and the chair is limited in its rocking rotation due to the front portions **20***f* and rear portions **20***g* of the frame. These portions **20***f* and **20***g* will come into contact with the underside lamina **12** of the chair and prevent complete rotation of the chair.

It should be noted in this preferred form that the individual elements forming the occupant supporting portion of the chair which include the back rest portion **11***a*, the seating portion **11***b* and the leg rest portion **11***c* are angularly contoured with respect to one another such that upon the application of a weight thereto the chair will conform more closely to an individual's body. This particular conformance is due to the straight line relationship between the various elements in that the straight lines are free to flex into the various necessary shapes of conformance and rather than a curved structure, which is difficult to bend from a normal shape these portions can bend to form a degree of resiliency unobtainable in normally roundly contoured chairs. It should be obvious however that in chairs varying in sizes such as the production of this type of chair for use by a child that the angularity will not be as important and the internal surface of the chair could substantially approximate a curve.

It should be noted on this particular form of the chair that the frame retaining grooves **16***a*–**17***a* of the position indexing units are designed in accordance with the physical properties of the material employed to positively confined frame portions **20***a*–**20***b* therein while permitting easy removal thereof for changing position. The particular design of the grooves **16***a*–**17***a* provides the confinement for the frame by constructing the grooves **16***a*–**17***a* of slightly smaller dimension than the cross members **20***a*–**20***b* and wherein the resiliency and flexibility of the material permits a positive snap type action.

A second form of the chair is illustrated in FIGS. 6, 7 and 8 and in this case again the chair **10** consists of a front panel **11** and a rear panel **12** which substantially includes the elements heretofore recited with the elimination of the index positioning grooves **16***a*–**17***a* and flats **16***b*–**17***b*. Rather in this specific form of the chair the longitudinal groove **30** underlying the chair is provided as a capturing element to positively capture the arcuate frame portion therein. Again the arcuate groove **30** is offset inwardly from a downwardly depending portion **31***a* of the back lamina **12** of the chair. This inward offset is designed to particularly position the frame member **32** more closely below the occupant confining space of the

chair. In this particular shape it should be noted that a first depending portion of the arcuate groove 30 designated 33 is provided in close association to the downwardly depending portion 31 of back panel 12 and extends upwardly therefrom to form the arcuate connecting frame retaining member 30 and thence downwardly and again outwardly to a point 34 which is designed to be in position to slightly wrap around the internal frame member 32 thus forming a positive capturing element therein and provide a friction surface upon the frame member 32. As best illustrated in FIGS. 7 and 8 this arcuate frame retaining portion 30 tends to, when weight is applied thereto, grasp and more closely encircle about the frame portion 32 such that the chair is possibly positioned with respect to the frame. By using this particular capturing device applicant has eliminated the necessity of providing the transverse indexing flats and grooves on the back lamina 12 of the chair and relies solely upon the capturing groove 30 engaging an agreeably curved portion 32 of the general frame 35. In this particular form it is not necessary that the cross traversing pieces are provided for the frame but rather the curved portion of the frame 32 must closely match the radius of the contoured groove 30 on the rear of the chair. With the particular groove design employed herein which is reactionary to the weight applied to the chair and which design increases the positioning friction as weight is applied thereto, the chair is easily shiftable upon the frame 32 when weight is removed therefrom and thus the chair may be shifted into a plurality of positions.

As illustrated in FIGS. 4, 5, 7 and 8, a plurality of longitudinally extending rib members 40 may be provided in underlying relationship to the occupant retaining seat portion of the chair. These ribs 40 may be integrally molded into the chair and then ribs add a certain amount of strength and rigidity to the chair. It should be noted that these ribs 40 serve a functional purpose only on the back lamina of the chair and no comparable ribs nor indication of ribs is provided on the front lamina 11. The primary difference between the two forms of chair illustrated are the positive indexing features of the preferred form which include the transversely molded grooves and flats along selected spaced portions of the chair and the longitudinal capturing grooves formed curvilinearly along the sides of the chair in the modified form of the chair.

It should be obvious that applicant has provided a new and unique contour lounge chair or the like which incorporates a pair of spaced lamina providing a continuous supporting surface therearound which surface being continuous provides the necessary rigidity and support to the chair and that applicant's concept further includes the molding of integral and functional elements into the chair for permitting either selective or infinite placement of a chair into various positions. The chair as designed incorporates a concept of molding such a continuous seating device from a plastic material such that a certain degree of resiliency and flexibility is obtained for the material and the chair is substantially homogeneous throughout which again eliminates certain manufacturing and technical problems in the production of the chair.

Although applicant has often mentioned the production of this chair through roto-casting processes it should be obvious to anyone skilled in the art that this is not the only method that could be utilized. Likewise the limitation of a plastic material is only important when discussing certain production processes and it should be obvious that the materials from which they could be provided would include both metals and non-metals.

The chair in itself though being unique is further unique when assumed with and used with the types of frames supplied, which frames are designed to permit infinite adjustment in one form and permit selective adjustment along with a certain functional rocking aspect in a separate form.

It will of course be understood that various changes may be made in the form, details, arrangements and proportion of parts without departing from the scope of my invention, which generally stated consists in the matter set forth in the appended claims.

I claim:

1. A seating device including:
   (a) an upper occupant supporting lamina providing a continuous back and seat portion;
   (b) a lower lamina spaced from said upper lamina defining a cavity therebetween;
   (c) said upper and lower lamina integrally formed at their peripheral edges to provide a continuous surface substantially enclosing the cavity;
   (d) frame receiving element formed integrally in said lower lamina extending longitudinally therealong extending from and underlying at least a portion of said seat portion of said upper lamina to a portion of said back portion of said upper lamina, said frame receiving element being of constant radius along at least selected portions thereof; and
   (e) frame section adapted for mounting on a support surface with a portion thereof receivable into said frame receiving element, said frame portion being of constant radius whereby said seating device is rotatably rockable on said frame.

2. The structure set forth in claim 1 wherein said frame receiving element includes at least a pair of groove elements arranged parallelly and longitudinally of said lower lamina and formed integrally thereof, arranged to receive a frame element therein to positively capture the same, permitting longitudinal shifting and positioning therealong.

3. The structure set forth in claim 2 wherein said grooves are designed and arranged to frictionally capture a frame portion therein normally preventing removal thereof and providing a snap type connection therebetween.

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