

[54] **CHAIR WITH ADJUSTABLE SEATING PORTIONS**

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[51] Int. Cl. A47c 7/00

[58] Field of Search 297/283, 284, 440, 444, 446, 297/447

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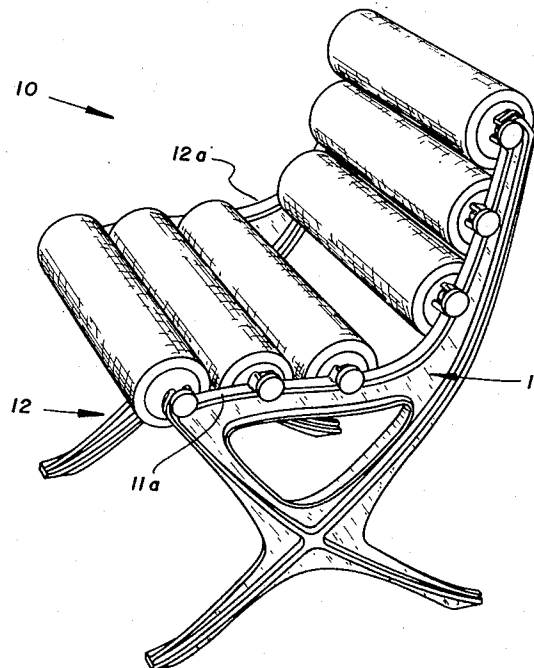
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[57] **ABSTRACT**

A chair or similar article of seating furniture having a pair of side members which provide the vertical support elements for the article and which are provided with slat receiving elements on the upper or seat defining portions thereof and a plurality of slat elements to extend transversely between the side members providing the transverse support for the article and the slats being positionable within the receiving elements to provide an adjustable occupant receiving area.

10 Claims, 6 Drawing Figures



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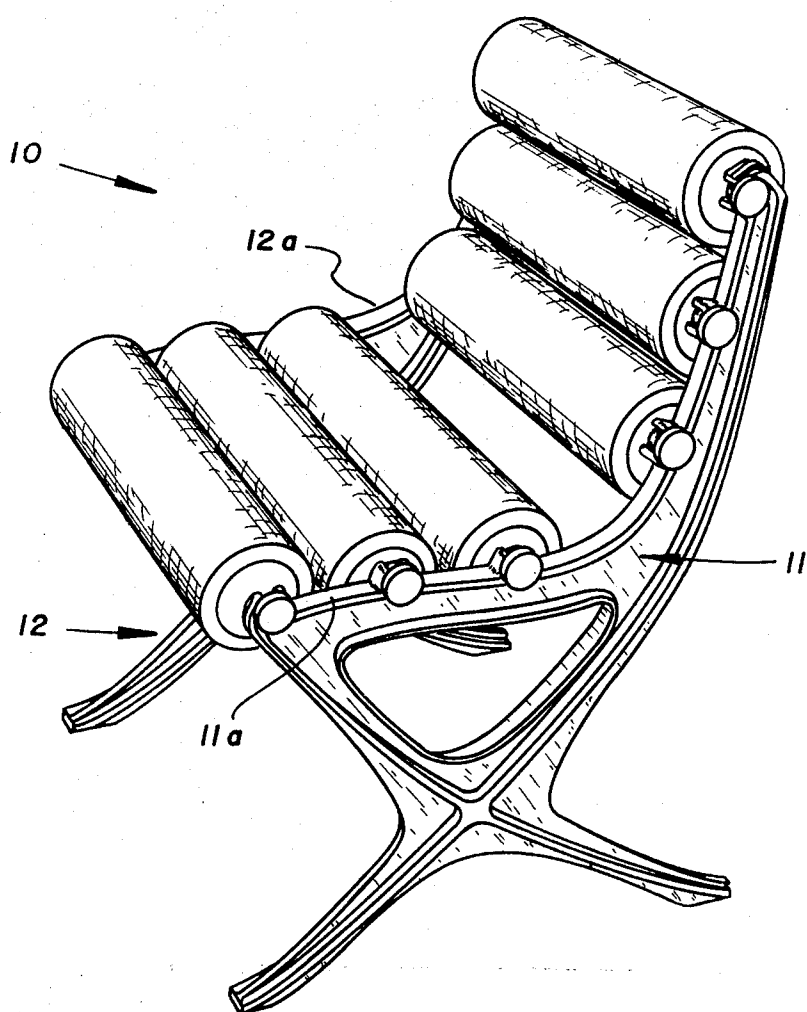


FIG. 1

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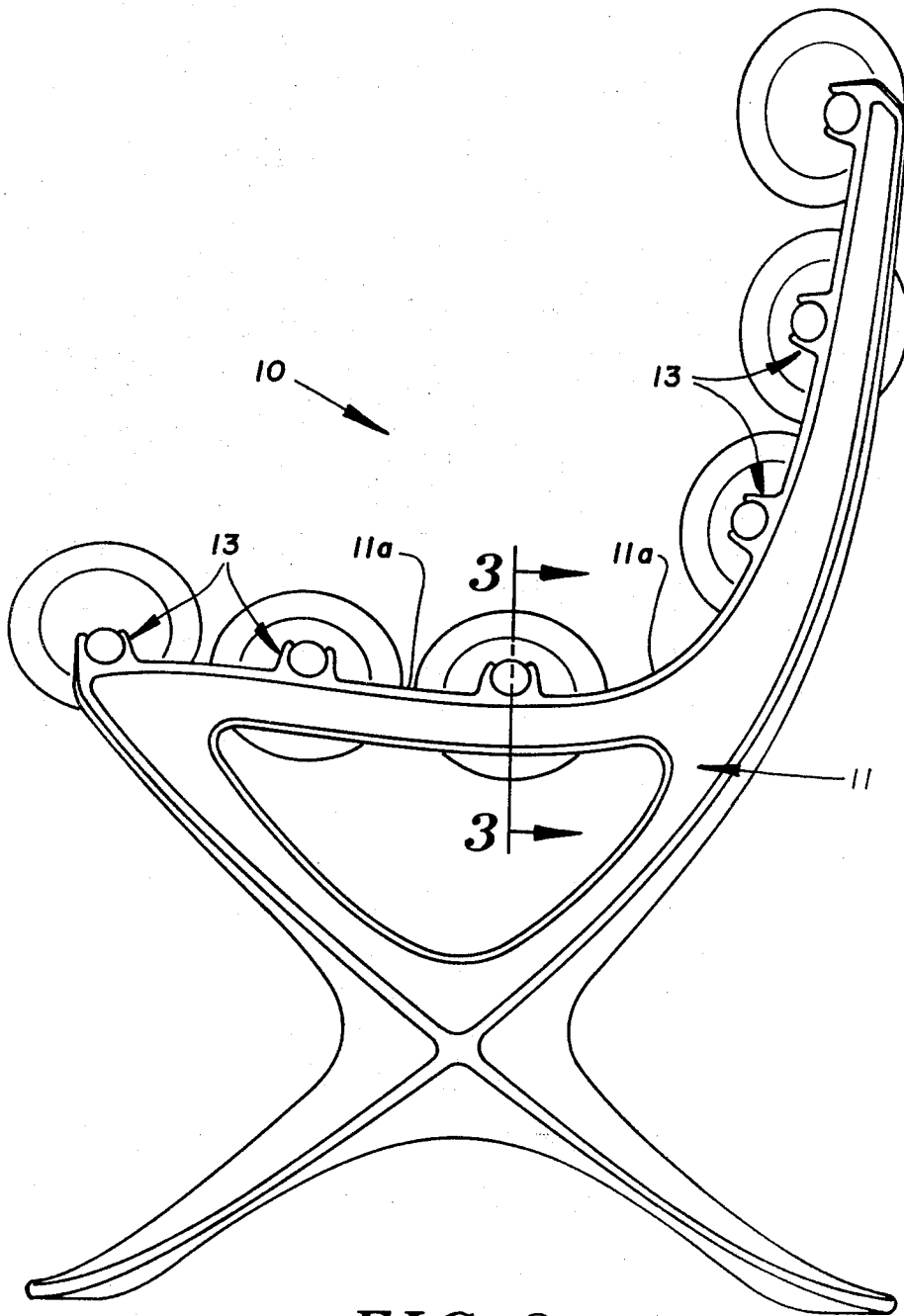
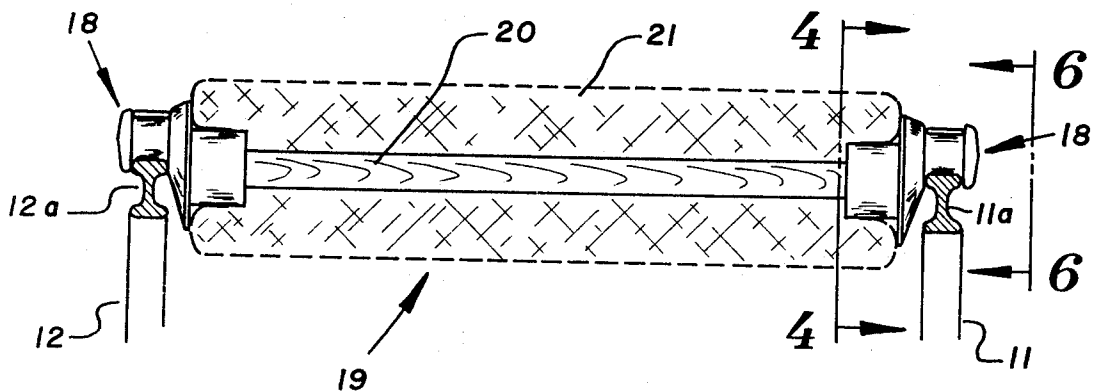
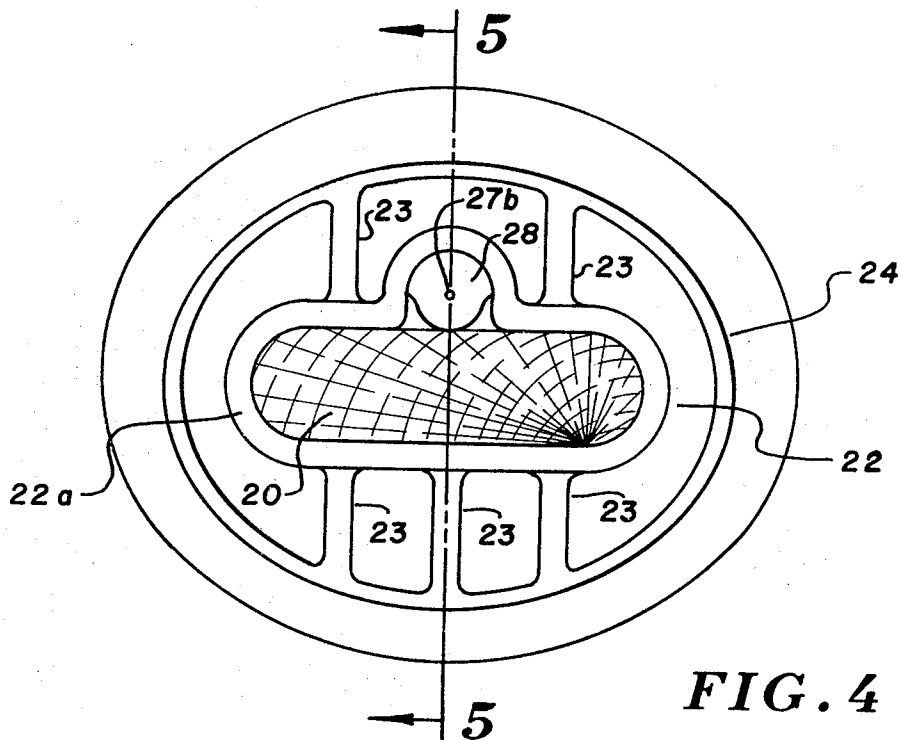


FIG. 2

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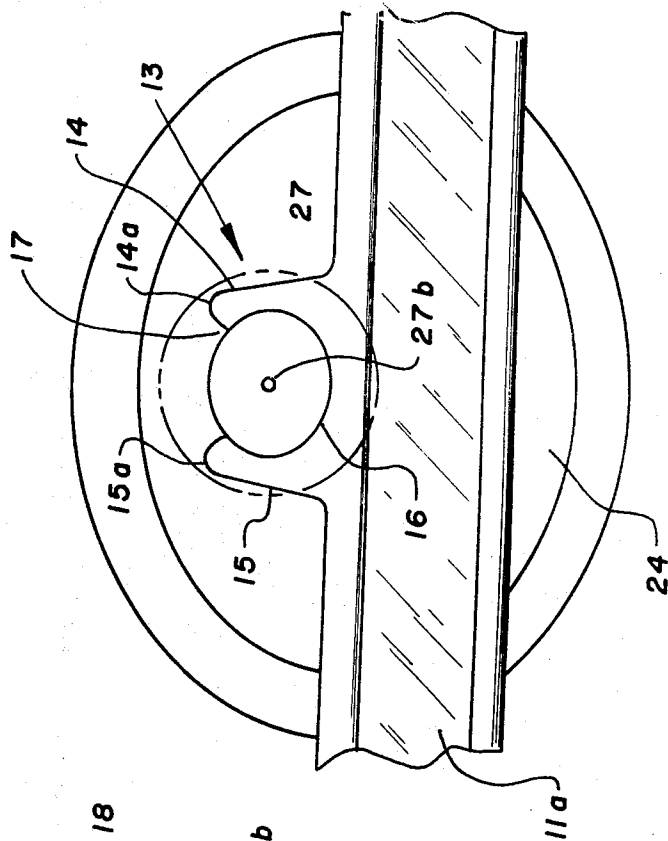


FIG. 6

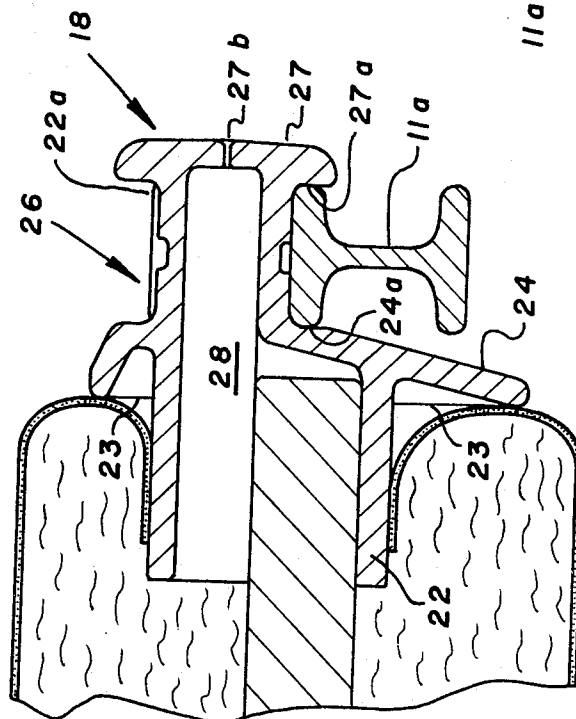


FIG. 5

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CHAIR WITH ADJUSTABLE SEATING PORTIONS

This invention provides a new concept in seating structures which departs from the past and present concepts of rigid frames with separate occupant padding units and rather provides a unit wherein the elements of the chair provide both structure and comfort. By providing elements capable of dual function applicant has created what could be termed a simplified construction but a construction which permits a great degree of latitude in the design and use of the unit.

Applicant provides a seating unit which utilizes identical side elements which afford the vertical support for the unit with slat members to extend between the side elements to removably connect therewith and tie the same structurally. This construction obviously eliminates the commonly provided frame of present construction and when the transverse slats are properly padded they afford the occupant padding area for comfortable seating. The slats then perform a supporting and a structural function. The slats are, as stated, removably connected to the side elements and the entire unit may be shipped in a knocked down condition. This type of connection, along with a particular connection design, permits the slats to be positioned in a manner to alter the profile of the occupant receiving area such that the unit may be adjusted to the occupants shape for additional comfort.

It is therefore an object of applicant's invention to provide a seating structure including a plurality of adjustable transverse support members to permit alteration of the profile of the occupant receiving portion of the structure.

It is a further object of applicant's invention to provide a seating structure which includes at least a pair of side elements and a plurality of transversely extending occupant supporting slat members connected to the side elements to provide the structural connection for the structure.

It is a further object of applicant's invention to provide a seating structure including a plurality of occupant supporting members having eccentrically arranged connecting portions for joining to side elements whereby the eccentricity permits a substantial alteration of the profile of occupant receiving portion of the structure.

It is still a further object of applicant's invention to provide a seating structure having side elements and transverse seating elements removably connectable to the side elements such that the structure may be easily assembled and which may be shipped in a knocked down condition.

These and other objects and advantages of the invention will more fully appear from the following description made in connection with the accompanying drawings, 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 typical chair embodying the concepts of applicant's invention;

FIG. 2 is a side elevation of the chair illustrated in FIG. 1;

FIG. 3 is a vertical section taken substantially along line 3—3 of FIG. 2 particularly illustrating the slat element connecting the side elements of the chair

FIG. 4 is a vertical section taken substantially along line 4—4 of FIG. 3 and being drawn to an enlarged scale;

FIG. 5 is a vertical section taken substantially along line 5—5 of FIG. 4; and,

FIG. 6 is a vertical section taken substantially along line 6—6 of FIG. 3 particularly illustrating the connection between the slat element and side element of the chair and being drawn to an enlarged scale.

It should be initially understood that in this disclosure although reference will be made to a specific style of chair, such as is illustrated in FIGS. 1 and 2, that the style of chair is immaterial to the concepts of the invention and the concepts may be employed whether the chair be an arm, rocker, casual or of any other type.

The chair 10 in all forms includes a pair of side support elements 11, 12 which are identical in shape and include in all forms a ground contacting portion, vertical supports extending upwardly therefrom to the proper occupant seating level and at this level an occupant profile beam 11a, 12a. This beam

11a, 12a is the shaping element for the structure and as illustrated in FIGS. 1 and 2 the beam will normally provide a seating section and a back supporting section.

The important aspect of this beam 11a, 12a is to provide a plurality of spaced slat receiving yoke members 13 all of which are identical and are, in the form shown, integrally formed with the beam 11a, 12a. These yoke members are best illustrated in FIG. 6 while their particular structural connecting importance to prevent racking of the chair is illustrated in FIG. 5.

Each of the yoke members 13 includes a pair of spaced, upwardly extending capturing elements 14, 15 which define an elliptical transversely extending passage therebetween which passage is designated 16 and which passage has the major axis of its elliptical shape in generally parallel relation to the aforementioned beam 11a, 12a. As illustrated in FIG. 6 the upwardly extending elements 14, 15 are spaced at their uppermost ends 14a, 15a to provide an access passage into the elliptical capturing area 16. This passage is defined as 17 and it is properly sized to be slightly smaller than the minor diameter of the elliptical passage 16 such that an element inserted therein would require a certain amount of force to obtain entry and would provide a "pop" type fit for the same. After insertion of a mating elliptical element it should be obvious that the article could be rotated to be in proper aligned relation with the passage 16. It should also be obvious that in order to obtain the proper locking "pop" fit that the material utilized must be somewhat flexible and resilient.

As illustrated in FIG. 5, the width of the yoke 13 is predetermined with respect to slat connection element 18 to be received therein. This particular relationship is very important for, as illustrated in FIG. 3, this connection is the only transverse connection utilized and in order to prevent racking of the sides and slats tolerance control at this point must be maintained.

The individual slats, each of which is designated 19, includes a transversely extending support member 20 having the slat connection elements 18—18 attached to the respective ends thereof with, if desired, a padding or decorative covering 21 extending over and around the support member 20 between the connection elements 18—18.

The connection elements 18 are identical and include a first internal slat housing portion 22, which as illustrated in FIG. 4, is substantially rectangular with rounded end portions 22a to surround the transversely extending support member 20 and this housing portion 22 is of a length to receive the member 20 well therewithin. Various rib members designated 23 are arranged about the housing 22 for additional strength factors and these ribs 23 extend from the housing to a radial flange 24, which flange 24 is generally elliptical in shape with its center coinciding with the center of the housing 22. This flange 24 is as illustrated in FIG. 5 directed inwardly toward the slat housing 22 and provides a cover retaining element as will be explained hereinafter.

Arranged eccentrically to the flange 24 is a longitudinally extending shaft member 26. This member forms the slat connection element 18 and in the form shown this member is elliptical in shape to agree with the shape of the passage 16. An elliptical flange element 27 is arranged on the outermost end 26a of the shaft 26.

It should be particularly noted that the flange 24 adjacent to the shaft 26 as at 24a and the interior surface of the elliptical flange 27 as at 27a each is formed to provide a close fitting relation to engage the sides of the yoke member therein. This fitting relation is necessary to prevent racking of the slats with respect to the sides of the assembled chair and as the slat form the only transverse elements for the chair they must prevent any racking thereof.

An air passage 27b is formed generally centrally of the flange 27 and passes therethrough to an internal passage 28 which passage is provided particularly for the manufacture of the unit.

The elliptical configurations for the connector element 18 and the yoke 13 should suggest the assembly process for joining the members. To properly join these elements, the slot should be shifted 90° to present the minor axis to the opening 17 between the yoke sides 14, 15 and thereafter forced into the elliptical passage and rerotated in either direction to bring the major axes into alignment. It should be obvious that the eccentric location of the shaft 26 on the connector element 18 now becomes important to the operation and location of the slats for added comfort. Reviewing FIGS. 5 and will illustrate the relation of the slot and the accompanying seating surface of foam or the like as being in a first relatively low position. Rotation of the slot unit in the other direction will position the slot and accompanying seating surface above the shaft 26 and thereby present a substantially different seating profile. Use of the elliptical connection design will permit a minimum of rotation between the elements but will lock or check against further rotation unless the rotation is gained through a positive shifting force. In other words the body weight on the slot while it is in either position will not be sufficient to cause full 180° rotation of the slot unit but rather it will be necessary to physically turn the unit to obtain the different seating profile. The selected dimensions of the elliptical sections may in fact require removal of the slot from the yoke and reinsertion thereof in its rotated position.

This profile adjustment will also be governed by the amount of eccentricity of the shaft 26 with regard to slot location and obviously a greater eccentricity will result in greater profile differentiation between adjacent slats. This profile adjustment permits the manufacture of an individually adjustable chair for each of its users while permitting use of common members and further the individual chair styles only require a set of different side elements while utilizing the common slot units. This will lessen inventory requirements and result in savings not only to the manufacturer but also to the ultimate purchaser.

Uniqueness of the chair design includes several obvious aspects thereof. The separability of the transverse support members from the sides permits shipment in a knocked down position while permitting assembly without the aid or necessity of tools and complicated assembly instructions. The transverse members through the unique connection system to the sides provides a chair having no additional transverse, rack preventing support members. The elliptical connection system permits a limited amount of profile adjustment gained only through the body weight of the occupant and the eccentric arrangement of the transverse member to the connection system provides a broad range of profile adjustment.

It should be obvious then that applicant has provided a variety of new concepts in the seating field while obtaining the advantages of these concepts with a relatively uncomplicated structural arrangement.

What I claim is:

1. A seating structure including:

- a. a pair of ground engaging side members extending generally upward to a seating area;
- b. at least one connector member defining an axle receiving passage arranged at said seating area on each of said ground engaging members;
- c. at least one occupant supporting member arranged to ex-

tend transversely between said side members and having end portions receivable into said connector members to maintain said members in generally vertical relation said end portions including:

1. a first axle extending outwardly therefrom receivable into said axle receiving passage and defining a first axis;
 2. means for retaining said occupant supporting member extending inwardly therefrom, said means defining a second axis;
 3. said first and second axis being offset with respect to one another; and,
 4. said end portions being rotatable within said passages whereby said occupant supporting member is eccentrically rotated.
2. The structure set forth in claim 1 and said occupant supporting member providing the sole transverse connection between said side elements.
3. The structure set forth in claim 1 said passage defining an entrance area along a portion of the side thereof to permit said end portions to be received radially therein.
4. The structure set forth in claim 1 and,
- a. said axle receiving passage having a predetermined longitudinal dimension; and,
 - b. said first axle of said end portions defining a shaft portion receivable into said passage and defining radially extending flange portions on the respective ends of said shaft spaced to engage the ends of said passage when said shaft is positioned therein.
5. The structure set forth in claim 4 and,
- a. said passage being of elliptical cross section; and,
 - b. said shaft portion of said end portion being of elliptical cross section.
6. The structure set forth in claim 1 and said occupant seating portion and said end portions being removably disconnected.
7. The structure set forth in claim 1 and,
- a. a plurality of connector members arranged on each of said ground engaging members; and
 - b. a plurality of occupant supporting members arranged to extend transversely between said side members and having end portions receivable into said connector members to maintain said members in generally vertical relation.
8. The structure set forth in claim 1 and
- a. said ground engaging side members extending upwardly to form a seating profile;
 - b. a plurality of connector members arranged on each of said side members and spaced along the profile each connector member defining a pair of spaced, upstanding arm members defining a generally arcuate passage therebetween; and
 - c. a plurality of occupant supporting members arranged to extend transversely between said side members having end portions thereof receivable into said yoke members for joinder of said side members.
9. The structure set forth in claim 8 and each of said yoke members including a pair of spaced upstanding arm members defining a generally arcuate passage therebetween.
10. The structure set forth in claim 9 and upstanding ends of said arms being spaced to permit said end portions of said occupant supporting member to be inserted into said passage.

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