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**Waugh**

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(54) **TWO POSITION RECLINABLE WOODEN CHAIR**

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(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

\* cited by examiner

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(51) **Int. Cl.<sup>7</sup>** ..... **A47C 3/00**

(52) **U.S. Cl.** ..... **297/325; 297/310**

(58) **Field of Search** ..... 297/310, 325, 297/452.63, DIG. 7, 328, 452.18

(56) **References Cited**

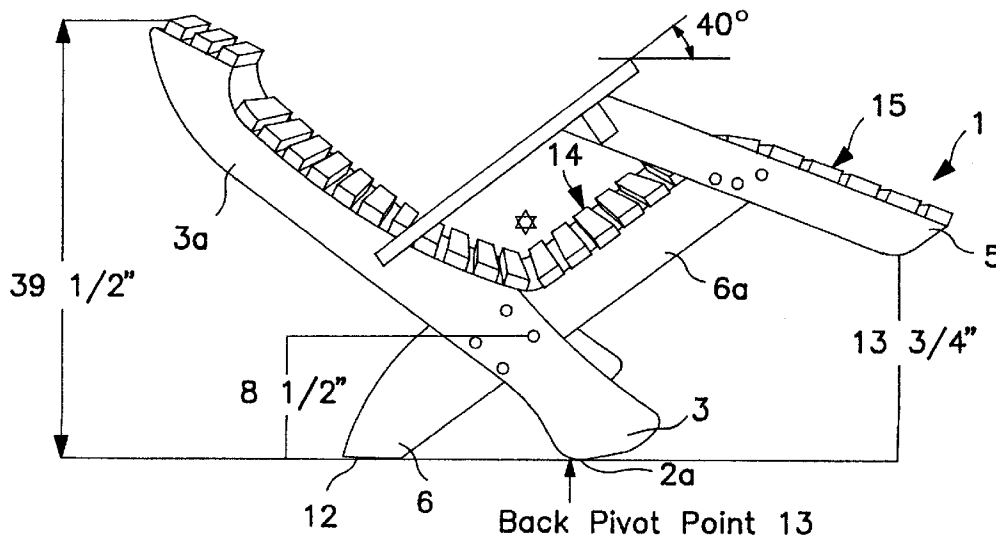
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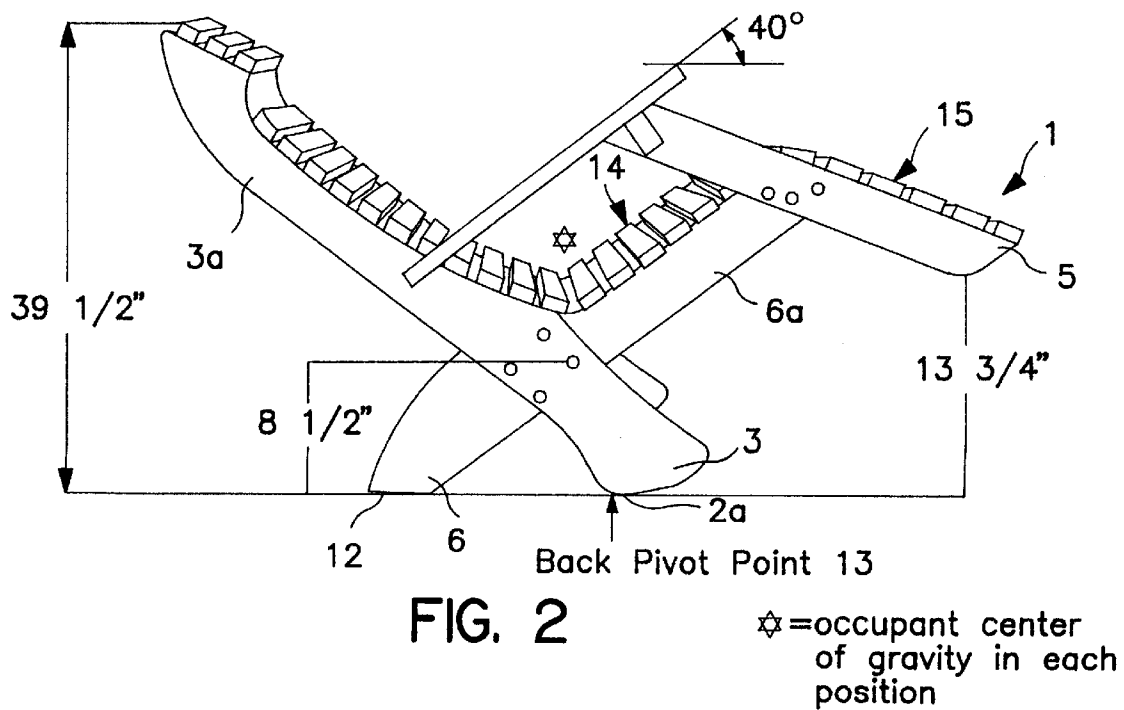
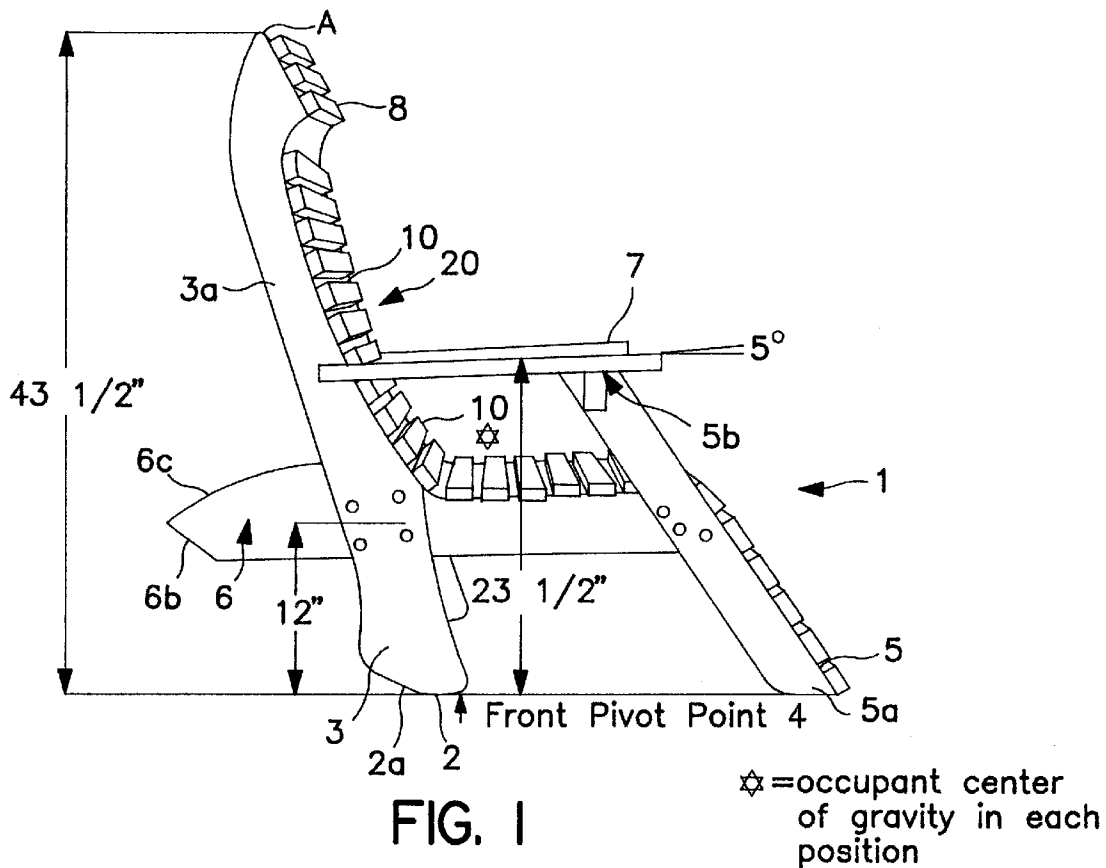
(57) **ABSTRACT**

A simplified reclining mechanism, as for chairs and seating, is herein described. The balanced design of such a reclinable chair for yard or patio usage is herein described. The reclining mechanism is an integral part of the chair or seat. The contoured design of the seat, back, legs and headrest gives firm, comfortable support to all parts of the body in both positions. What makes this chair stand above the rest is its unique 2 position balanced design. In the upright position it functions as a chair with head and legrest. Balance is the key to this design. By slightly throwing or shifting your weight backwards, this chair teters, giving a feeling of weightlessness and falling backwards until it lands solidly on its rear legs. In this position, every part of the occupant's body is cradled by the design. This chair also has the health advantage of having your legs lifted and held at heart level. A ¾" Indoor/Outdoor cloth covered foam pad or other appropriate covering can be added as an option for extra comfort.

**8 Claims, 2 Drawing Sheets**



☆ = occupant center of gravity in each position



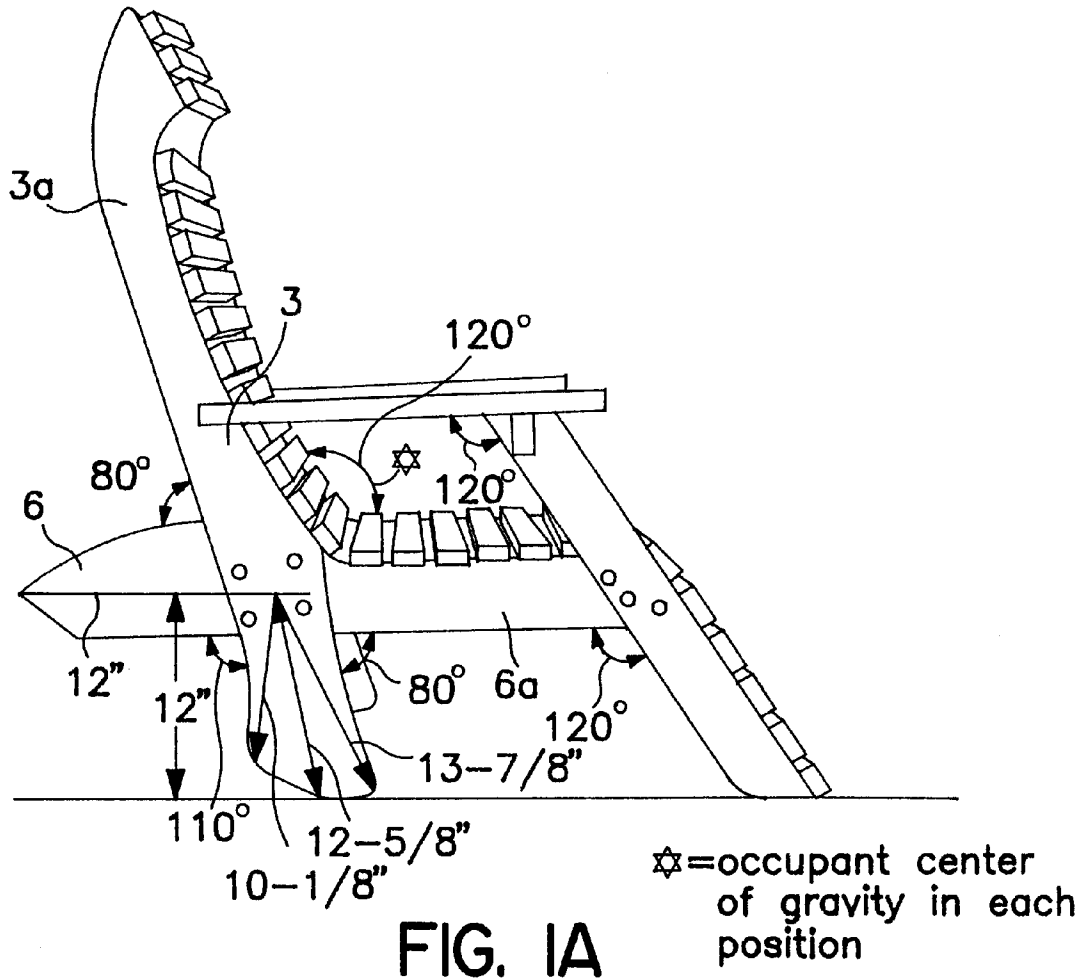


FIG. 1A

**TWO POSITION RECLINABLE WOODEN CHAIR**

This application claim benefit to provisional application 60/086,989 May 28, 1998.

**BACKGROUND OF THE INVENTION**

1. Field of the Invention

The present invention relates particularly to reclining mechanisms for chairs and seating for both indoor and outdoor use.

2. Background Information

Prior to the present invention, reclinable types of chairs were usually equipped with a movable joint located at the union of the seat with the back, thus permitting the back to be inclined rearwardly. They usually consisted of an interlocking system composed of notches that permit the back to be placed in a certain set number of positions, generally from four to eight. However, this kind of mechanism is generally complicated, costly and susceptible to wear, corrosion fatigue and failure causing injury to the user. These chairs also normally had to have a thick, awkward cushion on them to be comfortable. Prior reclinable armchairs, having a number of positions for inclination, were usually of heavy steel and equipped with a series of spring and counterweights which made them heavy, complicated and costly. U.S. Pat. No. 3,870,364 discloses a more complicated padded upholstered arm chair with an internal reclining apparatus having a metal base frame pivotably mounted to a seat frame, at or near the front of the seat frame. The very old wooden designs, for example, U.S. Pat. No. 1,525,726, were typically just straight legged wooden chairs that tilted back only about 20–25°. Because of their high center of gravity and straight line design, they were very unstable and unsafe in the tilt back position.

**OBJECT OF THE INVENTION**

An object of the present invention is to make a reclining chair that is balance designed. Another object of the present invention is to make such a chair inexpensive and simple. Another object of the present invention is to make a reclining chair that rests firmly and securely (safely) in both the upright and reclined positions. Any other object of this invention will be apparent from the following descriptions. Furthermore, this invention has the health advantage of lifting the occupant's legs to the level of the heart for increased circulation to the legs and feet. A major advantage of the present invention lies in the comfortable contour of the seat, back and location of the headrest for body support.

**SUMMARY OF THE INVENTION**

A simplified and inexpensive, 2 position reclining chair, for example, a wooden lawn and patio chair is herein described. The balanced contoured design with no moving parts is an integral part of the chair or seat. The low center of gravity and the placement of the balance pivotal point allows the chair to set firmly in both the upright and reclined positions.

In the upright position, the chair can sit on a flat spot at the bottom of each of the center pivotal legs. This flat spot can be approximately 2" in length. The weight and balance of the chair combined with occupant's weight, sitting just ahead of a front pivot point, can hold the chair firmly in the upright position, supported by the center pivotal legs and the front legs of the chair. That is to say, in the upright position,

the occupant's center of gravity can be located toward the center of the chair, at a point forward from a front pivot point on the chair. This can allow the inventive chair to move easily from the sitting to the reclining position under the influence of the occupant shifting or slightly throwing his or her weight backwards, thereby pivoting, or rocking, the chair along a pivot point or area into a reclined position. In at least one embodiment, the occupant can also push their feet against the ground to also exert a force in the backward direction to thus aid in the pivoting of the chair.

In at least one embodiment, a possible degree of angling of the seat arms is also possible, wherein the chair back and arms can have, for example, a comfortable 5° of lean backwards so the chair does not feel stiff or uncomfortable. However, this angle of lean may be different. Further, it is within the scope of the invention that various lengths, widths and heights of the chair can vary, depending upon a variety of variables, for example, the height or weight of the individual or child for which the chair is designed.

In at least one embodiment, in the reclined position the chair can sit on another flat or substantially flat spot at the bottom of each of the center pivotal legs, as well as two back legs. The chair can be extremely steady in this position, and almost impossible for the occupant to tip. The occupant's approximate position and center of gravity can shift backwards from the upright position, wherein the occupant's center of gravity can be lowered and occupant's weight can sit essentially just behind a back pivot point. To bring the chair back to the upright position, essentially all the occupant has to do is bend and lean forward, shifting his or her weight forward, and the chair will pivot back to the upright position because of the redistribution of weight.

In another possible embodiment of the present invention, the inventive chair can be designed to accommodate more than one person. This can be accomplished, for example, by varying the width of the chair. The chair would then be operated in essentially the same manner, however, some coordination between the occupants would facilitate the reclining and uprighting of the chair.

A possible degree angle of the seat arms is also possible in the reclined position. For example, the arm of the chair may be reclined to an approximate 40° angle if, in the upright position, the chair and arms has an approximate 5° lean backwards. However, this angle may vary if, for example, the angle of the chair and arms are different in the upright position.

In one possible embodiment of the chair, the chair can be constructed of wooden board slats in the seating area and have arm rests with triangular arm block supports. The length of board slats in the seating area can vary, depending upon the desired overall size of the chair, or the number of persons it is configured to seat. The widths of the slats can also vary, but should be of a dimension sufficient to provide both adequate support and comfort to the user. That is to say, the slats must be wide enough to support the weight of the user, but narrow enough to allow the shape of the chair to be contoured, to provide a more comfortable seating area for the chair's occupant or occupants.

In one embodiment of the center/back support leg, or legs (i.e., the center pivotal legs), of the reclined chair, the center/back support legs can be made of any resistant material for durability and strength, ¾" thick wolminized wood for example. The overall length, width, bottom flat spot and various cut degree angles for this center/back support leg can vary. This leg can also have a metal wear guard on the bottom to give added protection to the wood.

In at least one embodiment a rear leg, or legs, of the chair in the seated or upright position can be made of any resistant material for durability and strength,  $\frac{3}{4}$ " thick wolminized wood for example. Possible overall length, width and cut degree angles can vary.

The front leg, or legs, can also be made of  $\frac{3}{4}$ " wolminized wood for durability and strength, or any other resistant material, and their lengths and widths can also vary.

In one possible embodiment, the arms of the chair, may be made of  $\frac{3}{4}$ " white pine. White pine may be used because it comes into contact with the occupant of the chair. Wolminized wood can have arsenic and other harsh chemicals as a preservative that can be health hazards, thereby making it less desirable for an arm rest. However, any other non hazardous material may be used. Length, width and various other angles of this piece may also vary.

In at least one embodiments slats are used along the seat and back of the chair. These slats are securely attached in place, for example, by being nailed into the chair. These slats may be made of any non hazardous material, such as  $\frac{3}{4}$ " white pine for example, because they also can come into contact with the occupant's skin. In one possible embodiment, the seat and back may be composed of sixteen 20"x1.5" slats, a headrest may be composed of three 18.5"x1.5" slats and a legrest may be composed of seven 20"x2. $\frac{3}{8}$ " slats which can be attached to the front of the front legs of the chair. However, the quantity, length and sizes above-cited may vary. Armrest supports may have a triangular shape and be screwed into the legs, however, their dimensions and shapes may also vary, as well as the materials used. For example, a plastic material could also possibly be used with at least one embodiment.

The chair can be assembled using a variety of known construction techniques and hardware, including, nuts, bolts, washers, screws, nails, etc.. For example, the legs could be bolted into position.

The above discussed embodiments of the present invention will be described hereinbelow with reference to the accompanying figures. When the word "invention" is used in this specification, the word "invention" includes "inventions", that is the plural of "invention". By stating "invention", the Applicant does not in any way admit that the present application does not include more than one patentability and non-obviously distinct invention, and maintain that this application may include more than one patentability and non-obviously distinct invention. The Applicant hereby asserts that the disclosure of this application may include more than one invention, and, in the event that there is more than one invention, that these inventions may be patentable and non-obvious one with respect to the other.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Embodiments of the present invention will be described below with reference to the accompanying figures, wherein:

FIG. 1 is a side view of a reclinable chair made in accordance with this invention;

FIG. 1A is similar to FIG. 1 with additional possible dimensions;

FIG. 2 is also a side view of chair in the reclined position;

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIGS. 1 and 2 are both side views of one embodiment of the reclining chair 1 made in accordance with this invention.

FIG. 1 shows one embodiment of the reclining chair 1 in the upright position. FIGS. 13 and 21 also show at least one embodiment of the invention in the same position. In this state the chair can sit on a 2" flat spot 2 at the bottom of each of the center pivotal legs 3 (Front pivot point is indicated). The balance and weight of the chair, combined with occupant's weight, sitting just ahead of the front pivot point 4, holds the chair firmly in the upright position. A star indicates the occupant's approximate position and center of gravity. The chair 1 herein described moves easily from the sitting to the reclining position under the influence of the occupant shifting or slightly throwing his or her weight backwards.

A possible degree angle of seat arms 7 is also indicated in this state. The chair 1 and arms 7 have a comfortable approximately 5° of lean backwards, in comparison to the surface on which it sits, so the chair does not feel stiff or uncomfortable. However, the angle may be different.

Possible length and height of the chair 1, in accordance with one embodiment of the invention, are also indicated, but may vary. As shown in FIG. 1, in the upright position the chair can have a height of approximately 43 $\frac{1}{2}$ ", as measured from the bottom of the center leg 3 to the top 8a of the headrest portion 8. The center legs 3 extend upward to form the outer sides, or frame structure, 3a of the chair 1, to which slats 10 can be attached across the width of the chair, to form a back rest portion 20. The arms 7, at the approximate center, can be positioned approximately 23 $\frac{1}{2}$ " from the floor.

In at least one embodiment, the back legs 6 can also extend to form a bottom seat frame or structure 6a, to which slats can also be attached. The back legs 6 can be firmly bolted to the center legs 3, in a substantially transverse direction, as shown in the figures. At the front of the seat area 14 (see FIG. 2) the front legs 5 can be firmly attached to one end of the rear legs 6, and these front legs 5 can be positioned at an angle of about 120° relative to the seat area 14 (see FIG. 1A). Additional slats 10 can be attached across the front 5a of the front legs 5 to form a legrest 15. This angling of the legrest 15 can provide not only comfort, but also, combined with the weight of the materials, aids in the correct balancing of the chair 1, and thus the ease in which the chair securely sits and operates. Similarly, in one embodiment, the back portion 20 can form an angle of about 120° with the seat portion 14, thereby aiding in the proper positioning of the center of gravity of the occupant, and the balancing of the chair's own weight, to thereby aid in the operation of the chair, as well as adding comfort for the occupant.

FIG. 1A also lists additional angles that can be used with at least one embodiment of the invention, when constructing and assembling the different parts of the chair. These angles can also aid the proper balancing and functioning of at least one embodiment of the chair. For example, the center leg 3 and the back leg 6 can have an angle of approximately 110° between them, the center leg 3 can form an angle of approximately 80° with portion 6a of the back leg 6. An approximate 80° angle can be formed between the back leg 6 and the back frame portion 3a of leg 3.

FIG. 1A also indicates additional possible measurements for the bottom leg portion of the center leg 3, wherein the leg can have the indicated measurements. That is, in one possible embodiment, if the back leg 6 is measured from a substantially central connecting point, approximately 12" from the ground, and indicated by the letter "C", where the two leg portions 3, 6 are attached, the back can have an approximate 12" measurement, as indicated. If the center leg

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