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(11)

EP 1 290 962 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
12.03.2003 Bulletin 2003/11

(51) Int Cl.7: **A47C 4/12**

(21) Application number: **02256169.0**

(22) Date of filing: **05.09.2002**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
IE IT LI LU MC NL PT SE SK TR**
Designated Extension States:
AL LT LV MK RO SI

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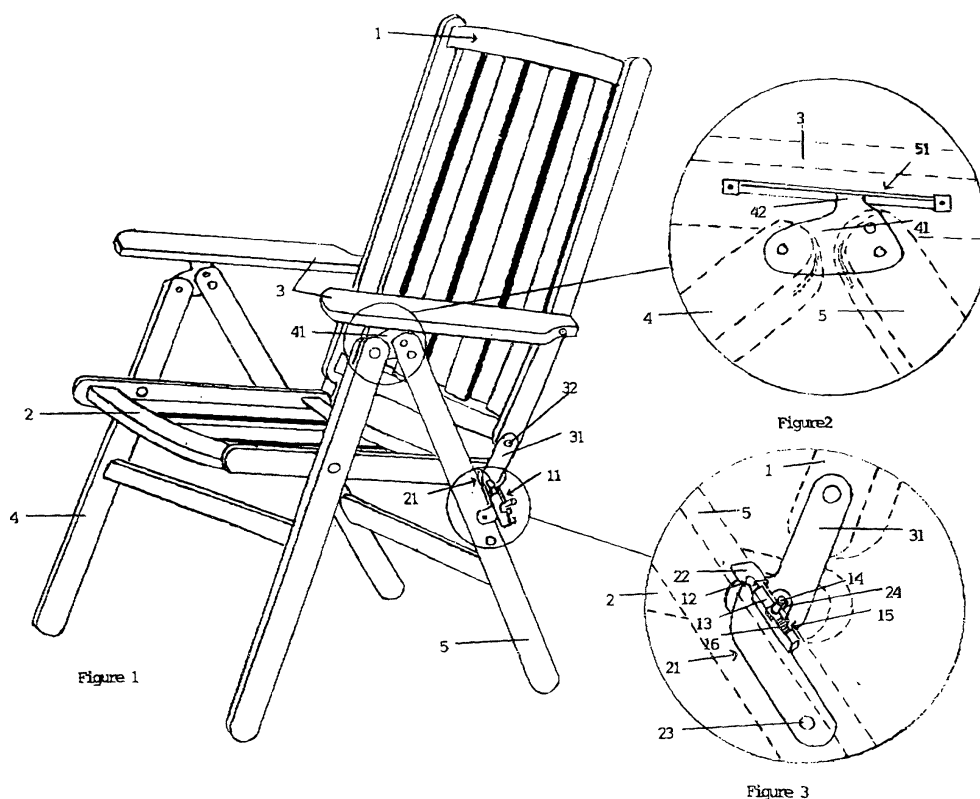
(30) Priority: **06.09.2001 MY 0104192**

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(54) Automatic locking multi position chair

(57) A lockable reclining folding chair comprises a seat pivotally connected to a backrest capable of angular inclinations having a pair of armrests, which is supported by two sets of inclined legs and are lockable by means of locking element. A pair of bracket means acting between the seat and legs is so arranged to be free

to move so that the chair could be folded into a substantially flat position for easy storage purpose and cooperates with the locking element to form an automatic locking to the chair in an opened out position. This invention solves amongst other chairs, the problem of being able to lock a chair automatically during the action of unfolding the chair.



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Description

Field of Invention

[0001] The present invention relates generally to a folding chair having various inclination and is lockable by means of an automatic locking element in an opened out position to prevent the said chair from collapsing accidentally.

Background of the Invention

[0002] Chairs are used in large numbers in various occasions and activities such as meeting, discussion, gathering, sleeping, resting, watching television, playing games and so on. A typical chair without multi inclinable backrest will not provide comfort for user to use in different activities. Chairs used on such activities as indicated above are more often not stored after used.

[0003] It is therefore desirable that such chairs can be folded for storage purpose. Although many foldable chairs have been made in the prior art, a foldable chair without any locking means is lack of stability and prone to collapse or accidentally fold during use with only a minor movement of the chair or user. This can cause a serious body injuries to the user.

[0004] It is the general object of the present invention to overcome the foregoing and other deficiencies with the prior art reclinable folding chair and to provide a relatively inexpensive and safety chair having an improved locking element which operates automatically to lock the chair once the chair is in the opened out position. This can reduce the probability of being accidentally fold or collapse when the chair is in use or unfolded into seating position. Moreover it is not dependable to the user in remembering to lock the chair.

[0005] Still another object of the present invention to provide an improved collapsible multi position chair having an adjustable inclined backrest, which could be folded and retained in a compact size when it is not in use. The backrest having a different inclination, which is manually adjustable, enables user to adjust the positions in relation to the horizontal plane or the seat of the chair according to their comfortability.

[0006] The further object of the present invention is to provide a lockable folding chair of the above described type which maybe easily unlocked in order to fold it up.

Summary of the Invention

[0007] In accordance to the present invention, an automatic locking multi position folding chair comprises a base being pivotally connected to the backrest by a plurality of connecting means and supported by a plurality of legs, said legs consisting of two side sets, a rear set and a front set, whereby the rear legs are connected to the said base through the said connecting means attached between the base and the backrest by a pair of

bracket means, each of said bracket means having a stopper to rest on the rear leg once the optimum extended position is reached; a pair of angular connectors to connect the both sets of legs for permitting the folding of each set into an elongated structure, each of said angular connectors having a protrusion extending, said protrusion being slidably engage to a guide track on the bottom surface of a pivotable sidearm member to permit the backrest of the chair to be slidable in the desired inclined position; and a locking element comprises a movable rod hingedly connected at least one of the rear legs so as to be able to be brought into a position in which it cooperates with said stopper of the bracket mean for locking the chair in an unfolded position or when the stopper is in use.

[0008] By providing a plurality of pivoting positions, the two sets of legs and the backrest with the base can be brought together, thereby producing an extremely compact folded position to the chair. Moreover, by providing a guide track at the bottom surface of the sidearm in which the angular connector of the leg is slidably moveable, closure of the chair is swiftly achieved by simply pushing the front frame leg with respect to the backrest of the chair and the chair will collapse to the folded condition.

[0009] Preferably, the locking elements comprise a rod with one end having an inclined surface and the other flat end adapted to a spring fitting fixed inside one end of a bar for pushing said inclined surface end out of the bar through a hole opening at the other end of said bar.

[0010] Preferably, the said rod having a hole near the flat end of the rod to enable a bolt mean to fix into the said hole to form a L shape fitting.

[0011] Preferably, the said bar having a semi rectangular opening in the middle of the said bar to enable the said bolt mean perpendicularly out from the said bar whereby the said semi rectangular opening having a recess slot at the end of the said opening to block the L shape fitting to retract to its original position once the said fitting is pull against the spring to form an unlock position.

Brief Description of the Drawings

[0012] Figure 1 is a perspective view of an automatic locking multi position folding chair according to the present invention in its open stable condition.

[0013] Figure 2 illustrates a detail of the connection between the leg and the armrest of the chair of Figure 1.

[0014] Figure 3 illustrates a detail of locking mechanism between the locking element and bracket mean of the chair of Figure 1.

[0015] Figure 4 is a perspective view of the chair in its folded condition.

Detailed Description of the Preferred Embodiment

[0016] An automatic multi position folding chair of the preferred embodiment as shown in Figure 1 is provided a sitting base (2) being pivotally connected to the backrest (1) with a pair of L shape pins (31) whereby the shorter portion of each pins is attached to the both rear end side of the said base (2) and the other longer portion of each pins is attached to the both side of the lower end of the said backrest (1) by attachment means (32) which could be nuts and bolt assemblies, fasteners, screws, snaps, clamps, clips or other such equivalents that could be used to secure one surface to another.

[0017] In order to support the chair, a set of inclined front legs (4) is pivotally attached at about midway of each said front legs to a position near to the front end side of the said base by conventional attachment means and a set of inclined rear legs (5) is pivotally attached to the rearmost of said base (2) by using bracket means (21) whereby said bracket means having at least two holes and at least a stopper (22) at one end of the said bracket means (21). The first hole (23) which is located at the other end of said bracket means (21) is pivotally connected to the middle of said rear leg (5) and the second hole (24) which is located near to the stopper (22) and horizontally lower than the first hole is fixed to the base (2) through a position intermediate between the shorter portion and the longer portion of said L shape pin (31).

[0018] The said stopper (22) is put into use, resting on the rear legs (5) when the chair is unfolded into extended seating position and the stopper (22) will be moved away from the said legs when the chair is not in use to enable the chair to be folded substantially flat for easy storage purposes.

[0019] In order to brought the two sets of legs together during the folding position, a pair of angular connectors (41) is connected to each of the upper end of the front leg and rear leg. Each of said angular connectors (41) having a lateral protrusion (42) extending upwardly therefrom as shown in Figure 2. A pair of sidearm members (3) is pivotally mounted to the backrest (1) whereby each sidearm member is formed to provide a longitudinal guide track (51) at the bottom surface thereof. The track (51) is constructed as to accommodate the said protrusion (42) from the said angular connector (41). The said protrusion (42) is served as a guide element to slide within the track (51) so as to enables each sidearm (3) to pull forwardly and push backwardly when the chair is in its open stable position. The underside of the said track (51) having a plurality of stopper (which is not illustrated in the drawing) which cooperates with the protrusion (42) to enable user to have various of backrest desired inclined positions by simply lifting the both sidearm and adjust accordingly.

[0020] As illustrated in Figure 3, in order to lock the chair in its unfolded position, at least one locking element (11) is hinged fixed to a position nearby the place

where the stopper (22) rest at the rear leg (5). The said locking element (11) comprises a rod (12) with one end having an inclined surface and the other flat end adapted to a spring (16) fitting fixed inside one end of a bar (13) for pushing said inclined surface end out of the bar through a hole opening at the other end of said bar.

[0021] The said rod (12) having a hole near the flat end of the rod to enable a bolt mean (14) to fix into the said hole to form a L shape fitting. The said bar (13) having a semi rectangular opening in the middle of the said bar to enable the said bolt mean (14) perpendicularly out from the said bar (13) whereby the said semi rectangular opening having a recess slot (15) at the end of the said opening to block the L shape fitting to retract to its original position once the said fitting is pull against the spring to form an unlock position.

[0022] In the process to unfold the chair into seating position, the bracket means (21) will be turned to rest onto the rear leg(5). The stopper (22) of the said bracket means (21) will hit onto the inclined surface of the L shape fitting just before the stopper (22) reaches the rear leg and forces the L shape fitting to move away against the force of the spring(16). The said L shape fitting will return back to its original position or locking position by the force of the spring (16) and this will block the stopper (22) to move away from its resting surface. This arrangement is such that the locking element (11) automatically locks the chair during the action of unfolding the chair into seating position.

[0023] In order to unlock and fold the chair as shown in Figure 4, the said L shape fitting of the locking element (11) has to be manually pull against the spring (16) into the recess slot (15) so as to prevent the fitting to retract by the force of the spring (16). In the action of folding the chair, the bracket mean (21) will hit the bolt mean (14) of the L shape fitting out of the recess slot (15) to enable the fitting release to its original position and ready for the mechanism of locking the chair during the next action of unfolding the chair.

Claims

1. A lockable folding reclining chair comprising:

- a sitting base;
- a backrest wherein said sitting base is pivotally connected to said backrest;
- a pair of armrests pivotably mounted to the said backrest, wherein said each armrest having a track at the bottom surface of the said armrest;
- a first set of inclined legs which is pivotally attached to a position near to the front end side of the said sitting base by using attachment means;
- a second set of inclined legs which is pivotally attached to the rearmost of the said sitting base with at least two bracket means and secured by

attachment means whereby said bracket mean having at least two holes and at least one stopper;

said first and second set of legs are attached together by means of connector and secured by attachment means whereby said connector means having a protrusion extending therefrom, whereby said protrusion is slidably moveable within the said track at the underside of said armrest; and

at least one locking element comprises a retractable rod fitting fixed inside a bar, whereby the said rod having an inclined surface end, hingedly connected on the said second set of legs which cooperates with said stopper of the bracket mean for locking the chair automatically in an opened stable position so as to prevent the chair for any further extension and to prevent the chair from accidentally collapse or retract to its folded position.

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2. The chair according to claim 1, wherein said chair having a plurality of pivoting positions in which the said two sets of legs, backrest, sitting base and armrests are arranged so as to be pivotally moveable with respect to each other to form a substantially flat folded position.

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3. The chair according to claim 2, wherein said the first set of inclined legs is the chair front legs.

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4. The chair according to any of the preceding claims, wherein said the second set of inclined legs is the chair rear legs.

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5. The chair according to claim 1 to 4, in which the said pair of armrests, each having a track at the bottom surface of the said armrest include at underside of the track thereof a plurality of stopper means in such a way to enable the said protrusion to stop at various positions so as to permit the said backrest which is pivotally connected to the said armrests to have desired inclined positions.

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6. The chair according to any preceding claims, wherein said bracket means comprising at least two holes whereby the first hole of said bracket mean is being pivotally connected to the said rear leg and the second hole is being pivotally connected to the said sitting base; and at least one stopper to stop the further extension once the maximum extended position is reached and to cooperates with the locking element to lock the chair in an opened out position.

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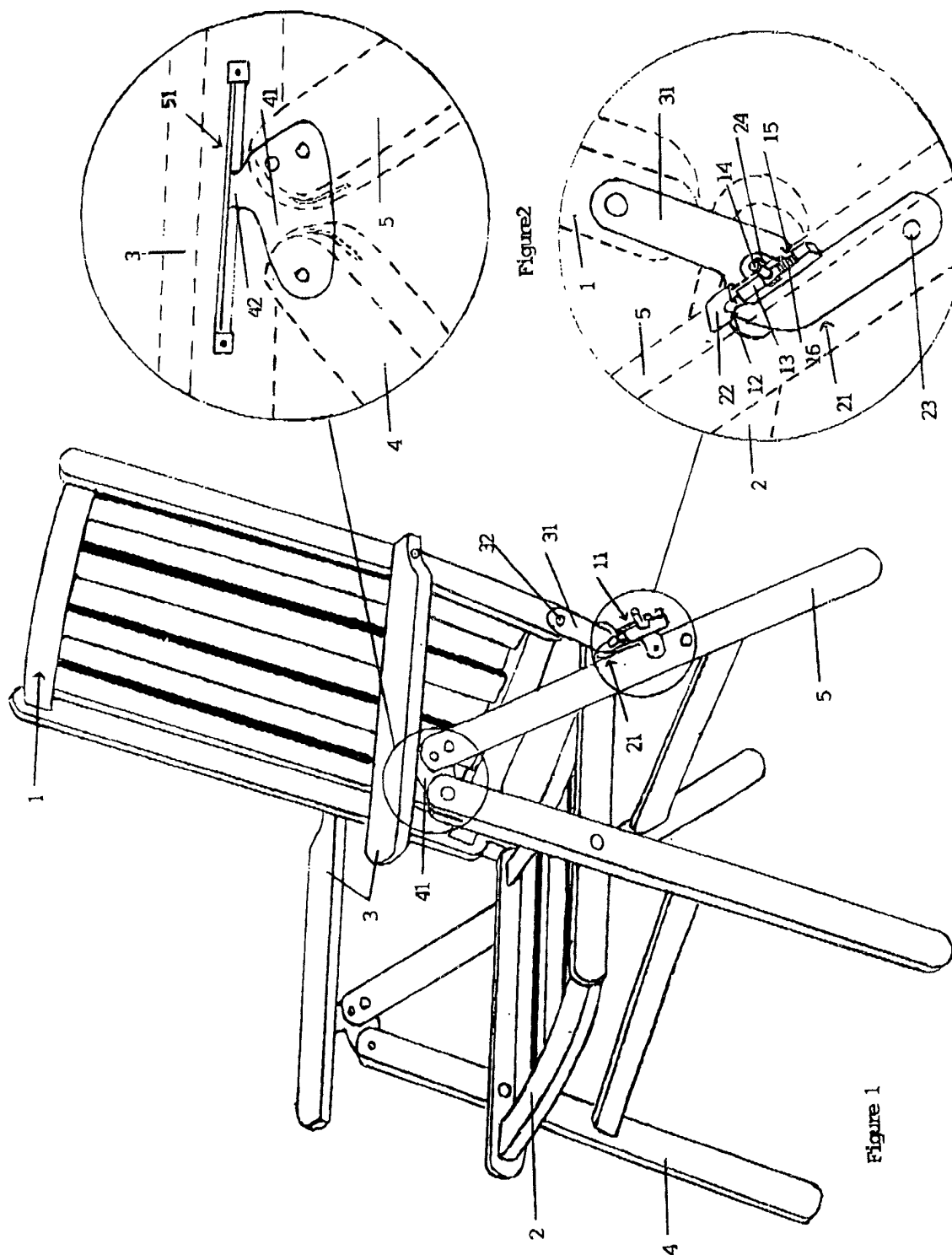
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7. The chair according to any preceding claims, wherein said stopper will hit onto the said inclined surface of the said retractable rod just before the

stopper reaches to rest onto the said rear leg and forces the said rod to move downwardly so as to allow the stopper to pass the said rod whereby the said rod will retract to its original position to block the said stopper to move back.

8. The chair according to claim 8, wherein said locking element includes at least one spring connected at the other end of said rod.

9. The chair according to any preceding claims, wherein said attachment means could be nuts and bolt assemblies, fasteners, screws, snaps, clamps, clips or other such equivalents that could be used to secure one surface to another.



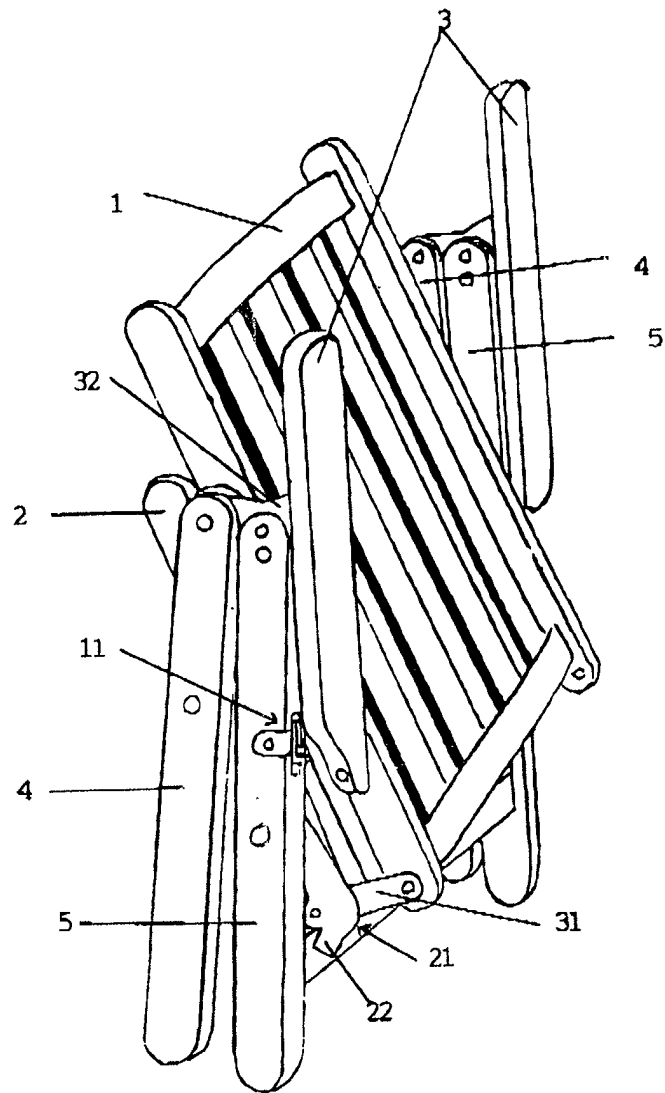


Figure 4