

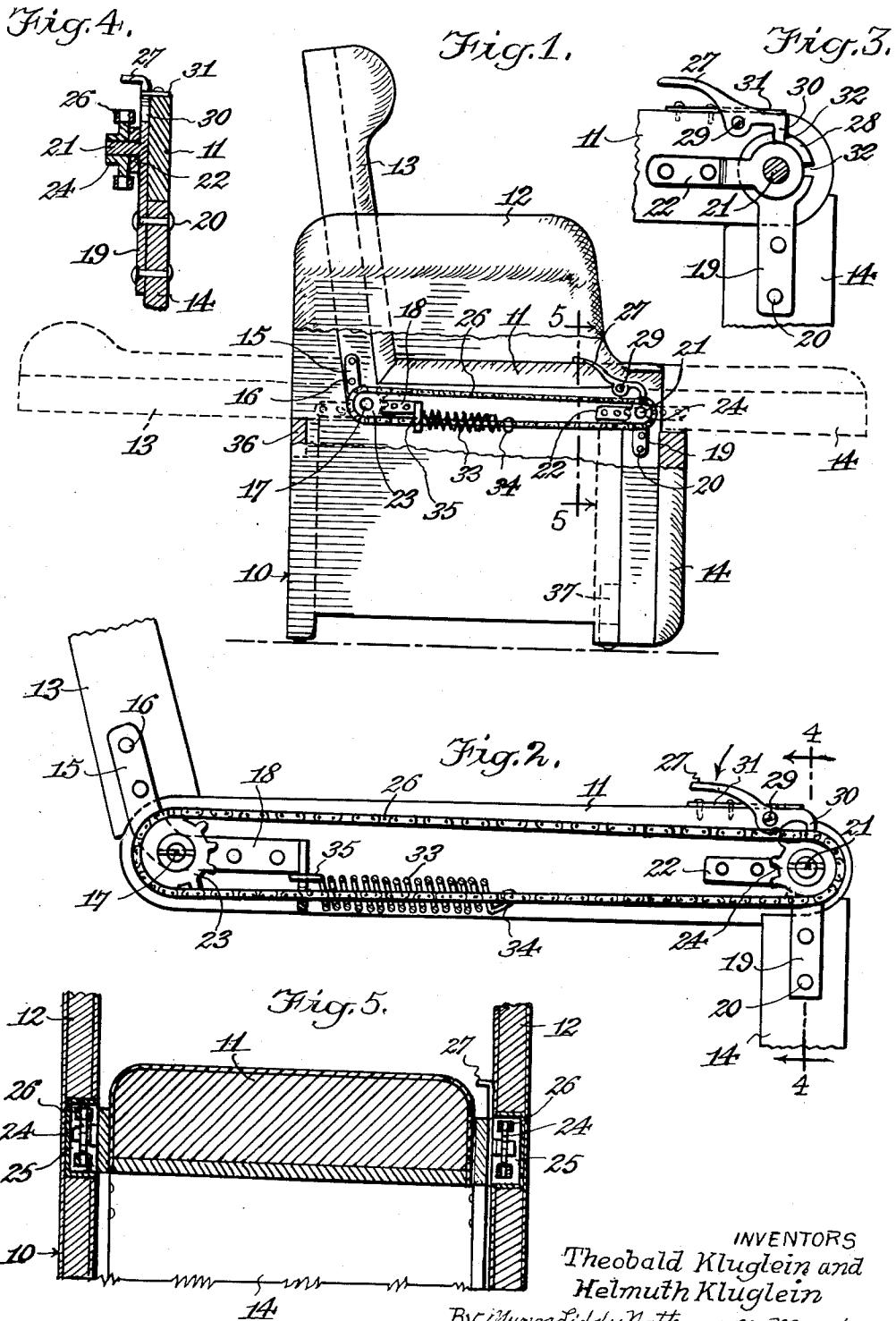
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CHAIR BED

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This invention relates to an article of furniture which is convertible for use as a chair or a bed.

An object of the present invention is the provision of an article of the indicated character which may be converted from a chair into a bed quickly, easily and conveniently, and which by a simple manipulation the bed is automatically transformed into a chair.

A further object is the provision of an article of furniture having a seat, a seat-back and a leg-rest so arranged and connected that the seat-back and the leg-rest may be moved into different positions of adjustment with respect to the seat to form a chair or a bed, and the seat-back and leg-rest are rigidly held adjusted in a chair-forming relation or bed-forming relation to the seat.

The foregoing objects are attained by the employment of simple, improved and practical means hereinafter described, and illustrated in the accompanying drawings in which

Fig. 1 is a side view of an article of furniture embodying the present invention, portions being broken away and some being shown in section, the seat-back and the leg-rest of the article being shown in full lines in a chair-forming relation to the seat, and the seat-back and the leg-rest being shown in dotted lines in a bed-forming relation to the seat.

Fig. 2 is an enlarged fragmentary side view and part section showing parts of the mechanism which support the seat-back and the leg-rest for angular adjustment and for rigidly holding them in the adjusted relation.

Fig. 3 is an enlarged side view of the manually operable device for holding the seat-back and the leg-rest in the adjusted relation.

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 2 and looking in the direction indicated by the arrows.

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 1 and looking in the direction indicated by the arrows.

The article of the present invention includes a base section 10 having a seat 11 and sides 12, a seat-back 13 and a leg-rest 14. These parts may be constructed of any suitable materials or combination of materials including upholstering material. The upper surface of the seat 11 is horizontal.

In order to connect the seat-back 13 with the seat 11 for pivotal movement on a transverse axis into different angular positions of adjustment with respect to the seat, use is made of two elongated plates 15 which are secured to the seat-back on its opposite sides respectively at the lower end thereof by suitable fastening elements 16. Each plate 15 has a trunnion 17 integral therewith, the trunnion of one plate 15 being in axial alinement with the trunnion of the other plate 15 thereby providing a transverse axis for the seat-back 13. Plates 18 providing bearings are secured to the seat 11 on opposite sides respectively, there being one such plate 18 for turnably supporting each one of said trunnions 17.

In order to connect the leg-rest 14 with the seat 11 for pivotal movement on a transverse axis into different angu-

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lar positions of adjustment with respect to the seat, use is made of two elongated plates 19 which are secured to the leg-rest on its opposite sides respectively by suitable fastening elements 20. Each plate 19 has a trunnion

21 integral therewith, the trunnion of one plate 19 being in axial alinement with the trunnion of the other plate 19 thereby providing a transverse axis for the leg-rest 14. Plates 22 providing bearings are secured to the seat 11 on its opposite sides respectively, there being one such plate 22 for turnably supporting each of said trunnions 21.

The trunnions 17 and 21 not only serve to connect the related seat-back and leg-rest to the seat 11 for pivotal movement, but also constitute parts of a motion transmission provision and arrangement to cause the pivotal movement of the seat-back and leg-rest. For this purpose use is made of a sprocket 23 made fast or rigidly secured to each of the trunnions 17, and a sprocket 24 made fast or rigidly secured to each of the trunnions 21. The sides 12 have inner recesses 25 respectively extending horizontally adjacent the seat 11 from the front to the rear of the seat. The sprockets are arranged in pairs in said recesses, each pair comprising a sprocket 23 and a sprocket 24. An endless sprocket chain 26 meshes with the sprockets 23 and 24 of each pair within the respective recess 25.

The seat-back 13 in its chair-forming relation to the seat 11 slopes upwardly and rearwardly at any preferred angle which may be ten degrees, more or less, from a vertical plane. The sides 12 are so designed as to provide arm-rests with respect to the seat 11 and the seat-back 13 when the latter is in its up position. The leg-rest 14 in its normal fully down chair-forming relation to the seat is disposed approximately vertical; and it moves ninety degrees to reach its horizontal up position while the seat-back moves eighty degrees, more or less, to reach its horizontal down position. For these reasons the sprockets 23 are larger in diameter than the diameter of the sprockets 24 and the former also have more teeth than the latter in order to cause the leg-rest to move faster than the seat-back in converting the chair to a bed and vice versa.

In order to lock or rigidly hold the seat-back 13 and the leg-rest 14 in the adjusted positions with respect to the seat, there is provided a manually operable device at one side of the seat and comprising a pawl 27 and a notched sector 28 embodied by one of the plates 19. The pawl is pivotally connected with the seat, as at 29. One end of the pawl has a projection 30 and the other end is within convenient reach of the user. A leaf spring 31 secured at one end to the seat presses on the pawl to automatically cause the engagement of the projection 30 in any one of the notches 32 of the sector 28 and thus rigidly hold the seat-back and the leg-rest in the desired position of adjustment. By pressing down on the pawl the projection 30 becomes disengaged from the sector 28 thereby enabling the angular movement of the seat-back and the leg-rest simultaneously.

It will now be understood that when the pawl 27 is manually operated to disengage it from the sector 28, the seat-back and the leg-rest are free for angular adjustment; and that when the seat-back is given a rearward and downward angular movement from its up position, the leg-rest is caused to move forwardly and upwardly from its down position, through the intervention of the parts 15—24 and chains 26. When the pawl 27 is re-engaged with the sector 28 the seat-back and the leg-rest are stopped or rigidly held in the adjusted positions into which they have been moved.

In order to cause the return movement of the seat-back and the leg-rest through the intervention of the parts 15—24 and the chains 26, there are provided helical

contractile springs 33. These springs surround the lower leads respectively of the chains 26. Each spring has one end connected with the related lead, as at 34, and the opposite end of the spring is connected to the seat 11, as at 35.

When it is desired to convert the chair into a bed, it may be accomplished by actuating the pawl 27 to disengage it from the sector 28, and then by swinging the seat-back rearwardly and downwardly into a horizontal position which simultaneously causes the leg-rest to swing forwardly and upwardly into a horizontal position in relation to the seat 11. By reengaging the pawl 27 with the sector 28 the seat-back and the leg-rest are held in the bed-forming relation to the seat 11, the seat-back also being supported in its horizontal position by a cross member 36 of the base section 10. The springs 33 are then under tension.

When it is desired to convert the bed into a chair, it may be accomplished by merely disengaging the pawl 27 from the sector 28, whereupon the tensioned springs 33 automatically cause the return movement of the seat-back and the leg-rest to their chair-forming relation to the seat 11 after which the pawl 27 is allowed to reengage the sector 28. The seat-back is returned to its upwardly and rearwardly sloping position and the leg-rest is returned to its vertical down position against a cross member 37 of the base section 10, said member 37 aiding the pawl 27 in limiting the return movement of the parts.

The article of furniture embodying the present invention is sturdy and may be converted from a chair to a bed and vice versa by anyone with little physical effort.

It is to be understood that the sector 28 may have any number of notches so that the seat-back and the leg-rest may be held in any preferred intermediate positions of adjustment with respect to the seat; and that other details of construction may be modified and rearranged in accordance with the scope of the invention as defined in the appended claims.

We claim:

1. In a chair, the combination of a base section having spaced side members and a seat arranged between the side members and secured thereto, a seat-back, a leg-rest, means on the seat connected with the seat-back and the leg-rest mounting the seat-back and leg-rest for pivotal movement on transverse axes respectively and enabling the movement of the leg-rest into different angular positions of adjustment in response to the movement of the seat-back into different angular positions of adjustment with respect to the seat, said first means comprising plates respectively fixed on opposite sides of said seat-back, plates respectively fixed on opposite sides of said leg-rest, sprockets fixedly secured to all of said plates respectively by trunnions integral with the plates and sprockets, bearings on the seat which turnably support said trunnions respectively, said sprockets being arranged in pairs respectively at opposite sides of the seat, and a chain meshing with the sprockets of each pair thereof; means which cooperates with the first mentioned means for causing the return movement of the seat-back and the leg-rest with respect to the seat, and a manually operable device which cooperates with the first mentioned means to releasably prevent the movement of the seat-back and the leg-rest and to hold them in the desired positions of adjustment.
2. In a chair as set forth in claim 1, wherein said manually operable device includes a spring pressed pivoted pawl on said seat movable into and out of engagement with one of said plates by reason of spaced notches in said plate.

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