Jan. 27, 1942. C. W. NELEMS 2,271,440

GLIDER CHAIR

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Fig. 1

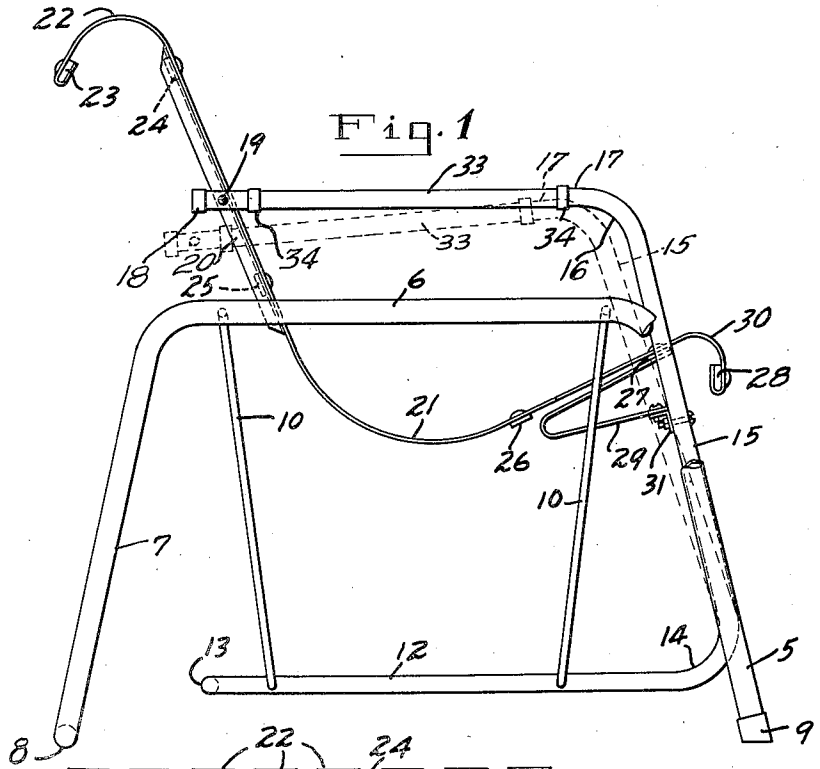
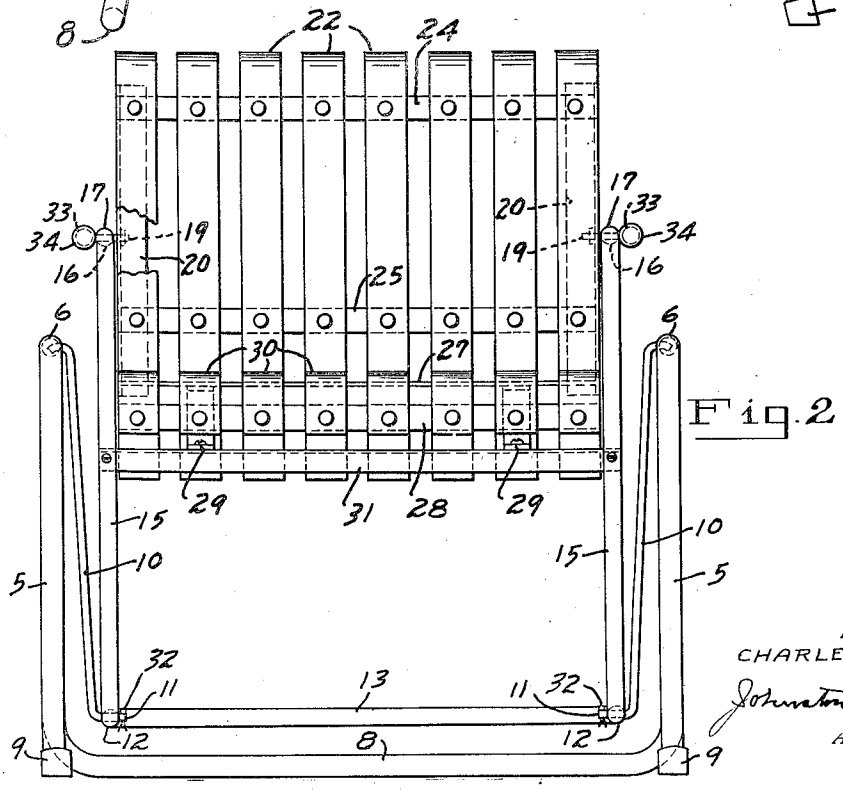


Fig. 2



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GLIDER CHAIR

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5 Claims. (Cl. 155—61)

My invention relates to glider chairs or seats, comprising a stationary supporting frame from which the chair or seat is swung.

More particularly, my invention constitutes certain important improvements on the glider shown in Letters Patent No. 2,203,598 issued to me June 4, 1940, in which the supporting frame has swung therefrom a rigid frame carrying a seat assembly comprising a set of spring slats, shaped to conform to the body when seated therein, and U-shaped front and back spring mountings between which the slat assembly is suspended.

One improvement of my present invention consists in the utilization of spring metal bent to provide the swing frame with upright U-shaped sides left open to the rear and free of bracing so that the upright front leg and horizontal upper arm on each U-shaped side frame is free to flex and bend in a vertical plane.

A further distinguishing feature of my invention is to provide the back portion of slat seat assembly with upright side reinforcing members by means of which the seat back is pivotally connected to the floating ends of the upper arms of its swing frame, whereby I am enabled to dispense with any spring connections between the back of the seat assembly and its rigid swing frame.

It is a feature of importance for the comfort of the user and the readiness of the seat assembly to adjust itself to varying positions of the body as the seat swings, that in response to each shift in the center of gravity, not only are the swing frame sides free to respond by the flexing of their upper and front members in themselves and in their connecting bends, but the back of the seat assembly at an intermediate level is pivoted to its flexing supports and is thus left free to flex itself above and below its pivotal axis.

A further distinctive feature of my invention is the formation of the chair frame and arm rest of tubing sections whereby the entire frame construction is made up of tubular members excepting the seat assembly and its mounting elements.

My invention further comprises the novel details of construction and arrangement of parts which are illustrated in their preferred embodiment only in the form of a chair, it being understood that the width of the seat can be extended according to the seating capacity desired for the glider.

As illustrated:

Fig. 1 is a side view of my improved glider chair with a portion of the front upright leg of the support frame broken away to illustrate the manner of attachment to the swing frame of its front cross brace for supporting the spring mounting of the seat.

Fig. 2 is a front elevation of Fig. 1.

Similar reference numerals refer to similar parts throughout the drawing.

In the embodiment of my invention illustrated, I show a supporting frame work for the glider formed preferably as a unitary structure of metal tubing bent to provide at each side a front rearwardly inclined leg 5 merging overhead into a horizontal, rearwardly disposed, cross support 6 which, in turn, merges into a downwardly and rearwardly inclined back leg 7. These legs 7 are joined at their lower ends by the back cross brace member 8 which rests on the floor as do the front legs 5 that have shoes 9 bevelled to seat flat thereon. This frame has holes drilled in the inner side of each of its members 6 to receive the upper hooked ends of a pair of hanger rods 10 which have their lower ends 11 bent horizontally to form transversely disposed pivots which are inserted through the adjacent lower members 12 of the swing frame that supports the seat.

The swing frame is likewise preferably formed as a unitary structure from tubular spring stock and its lower members 12 are joined at their rear ends to a cross connecting member 13. At their forward ends the lower members 12 are bent up on an easy curve indicated at 14 and then upwardly and rearwardly to form the front legs 15 of the swing frame, which legs at their upper ends by a similar easy bend at 16, are caused to form the horizontal arm and seat back supporting members 17. The side frames may be described, therefore, as comprising a pair of U-shaped members with their legs 12 and 17 disposed substantially horizontal and their bases 15 disposed substantially vertical. These members 17 are closed at their free rear ends by caps 18 and are drilled in alignment to receive the pivot bolts 19, by means of which each arm member 17 at its free rear end is pivotally connected to an upright angle brace or reinforcing member 20 attached at each side to the seat assembly which will now be described.

The seat assembly comprises a plurality of parallel flexible metal straps 21, bent over rearwardly on a curve at their upper ends to form the spring head rest 22 and at their free ends bent to receive a cross bar 23 to which they are

riveted or welded. The straps 21 are cross braced at the commencement of the head rest curve by being made fast to a bar 24, which at its ends is also made fast to the upper ends of the vertical brace angles 20. A corresponding cross bar 25 is secured to the straps and to the lower ends of the side angles 20 at a point preferably just above the level of the support members 6 of the stationary frame. The seat straps are cross braced at the forward portions of the seats by the bars 26, 27 and 28, to which the straps are made fast, the bar 26 being disposed just to the rear of the U-shaped spring supports 29 for the seat assembly, and the bar 27 being placed near the commencement of the curve forming the knee support 30 and having the upper forwardly extending legs of said U-springs 29 attached thereto. The forward bar 28 connects the front ends of the seat straps together and the whole thus forms what I term the seat assembly. The lower legs of the U-shaped spring supports 29 are attached to a front cross brace formed by an angle 31 bolted to the legs 15 on each side of the swing frame.

The inner ends of the pivots 11 are held connected to the swing frame by cotter keys 32 with the hangers converging together downwardly. Supplemental tubular members 33, closed at their ends by caps 34, are bolted or otherwise rigidly connected level with the similar tubular swing frame arms 17, so as jointly to provide an arm rest of the necessary width for comfort and to reinforce said arms.

It will be noted that the seat assembly has its spring straps 21 bent or shaped to conform substantially to the seated human body and that the back of the seat assembly is free to swivel about its pivotal supports 19 as the swing frame flexes while the chair is in use, and thus to change the conformation of the back both above and below the pivotal axis. The U-springs 29 function in accordance with the description of my patent aforesaid in which they are particularly claimed and serve not only as free flexing spring supports which permit the front of the seat to yield vertically, but as they yield their upper legs come into contact with superposed seat straps 25 and thus they serve as a reinforcing means to stiffen said straps and resist undue flexing of the knee supporting portion of the seat assembly when subjected to heavy loads. Further, the arrangement of the U-springs 29, of which two are shown but any desired number can be used, is such that they present their upper forwardly directed legs in position strongly to resist the retraction of the seat assembly responsive to weight imposed on its bight.

Having assembled the swing chair and seat assembly in the manner described, as one seats himself in the chair, the seat assembly will readily conform itself to the body shape, while its back yields due to the pivoting of its angle braces 20 on its connections to the swing frame arms 17. The swing frame itself also yields, as shown in dotted lines, Fig. 1, due to the flexing of its reinforced arms 17 about the bend points 16, and its legs 15 about the bends 14. As the chair swings and its load shifts more or less from front to rear on the hanger arms 10, the whole swing frame, seat and back will flex and conform themselves to the changing stresses due to the change in the center of gravity on the swinging chair. As a result of these arrangements, the maximum comfort is obtainable from an all metal chair.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications, without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are imposed by the prior art or as are specifically set forth in the appended claims.

What I claim is:

1. In a glider chair, a supporting framework carrying hangers, a swing chair frame comprising side frames having upper and lower members, upwardly extending members connecting said upper and lower members near the front of the swing chair, said upper members being free to flex in a vertical plane at the point where they join the upwardly extending members, a cross member connecting the lower members of each of the side frames, a support member joining the upwardly extending members of the side frames, a flexible seat structure having its seat portion resiliently mounted on the support member and free to conform itself to the shape of a seated human body, means to pivotally hang the back portion of the seat structure from the freely flexible upper members, and means for connecting the hangers to the lower members of said side frames to swingably support the chair from the supporting framework.

2. A chair according to claim 1, in which the seat structure comprises spaced spring slats, and in which the back portion has side stiffening members in which are mounted the pivotal connections for hanging the back portion from the freely flexible upper members of the side frames.

3. A glider chair according to claim 1, in which the seat structure comprises spaced spring slats secured together by cross members, and in which the back portion of the seat structure has side stiffening members for mounting the pivotal connections, said stiffening members being adapted to restrain the back portion against bending rearwardly about the pivots.

4. A glider chair according to claim 1, in which the support member rigidly cross connects the side frames, and in which the resilient mounting for the seat portion comprises a plurality of U-shaped springs with their under legs fastened rigidly to said cross member and their upper legs inclined forwardly towards and connected to the seat portion to yieldably support and brace the seat portion against rearward retraction.

5. In a glider chair, a supporting frame carrying hangers, a swing chair comprising a pair of U-shaped side frames having their legs disposed substantially horizontally and their bases disposed substantially vertically, the ends of the uppermost legs being free to flex in a vertical plane, a cross member connecting the ends of the lowermost legs of said side frames, a second cross member connecting the bases of the side frames, a flexible seat structure having the front of its seat portion resiliently mounted on said second cross member and its back portion pivotally secured to the uppermost legs of said frames, and means for connecting said hangers to the lowermost legs of the side frames to swingably support the chair within the supporting frame.

CHARLES W. NELEMS.