May 7, 1935. H. G. TRAVER 2,000,624

CHAIR

Filed Oct. 25, 1932

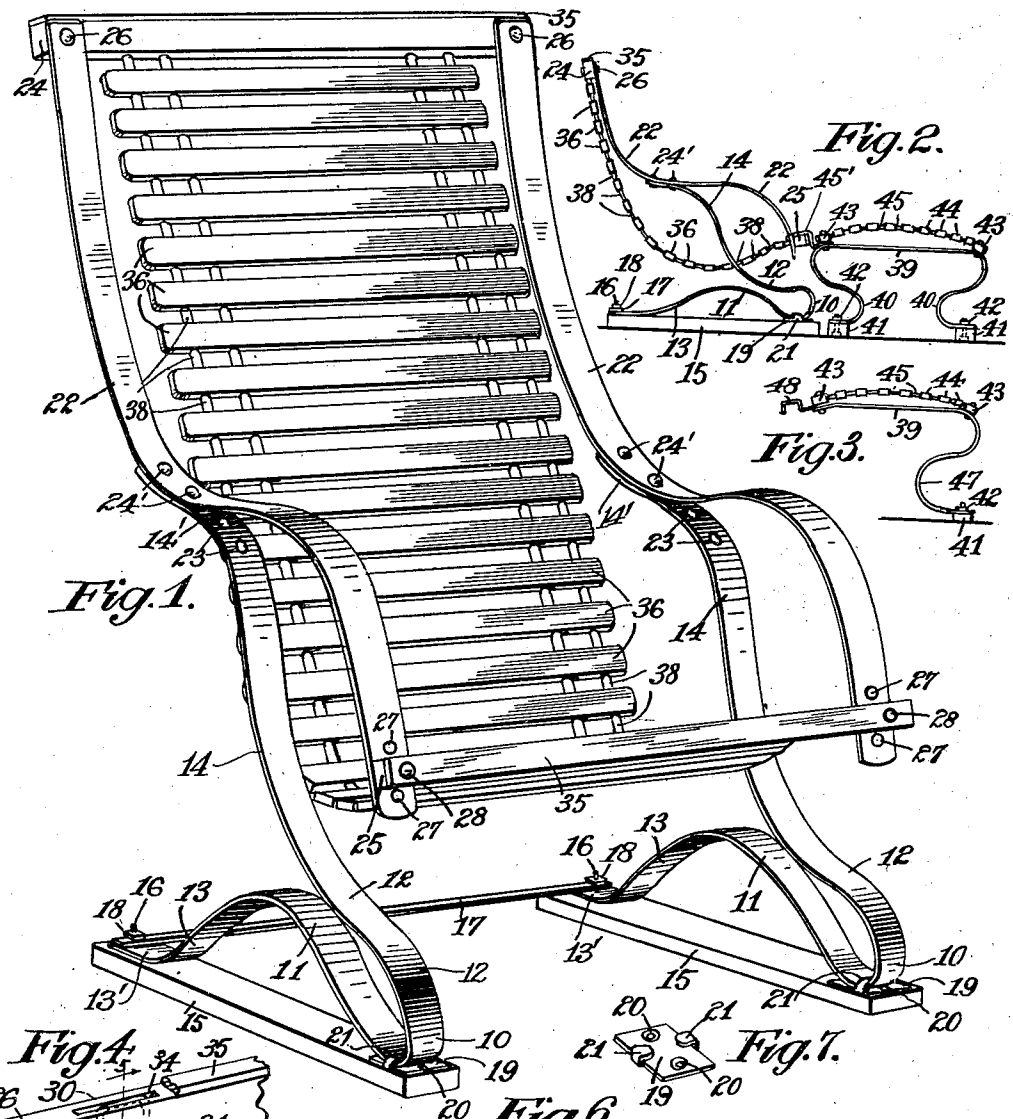

Fig. 1.

Fig. 2.

Fig. 3.

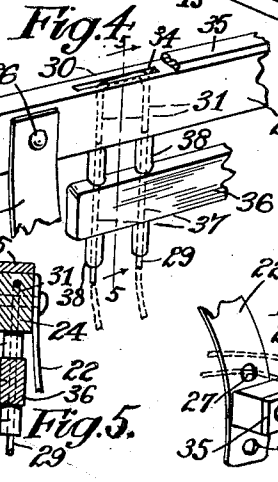

Fig. 4.

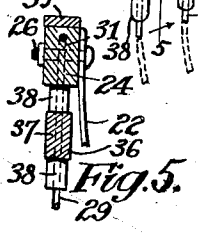

Fig. 5.

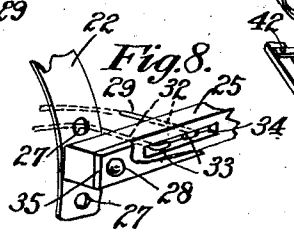

Fig. 6.

Fig. 7.

Fig. 8.

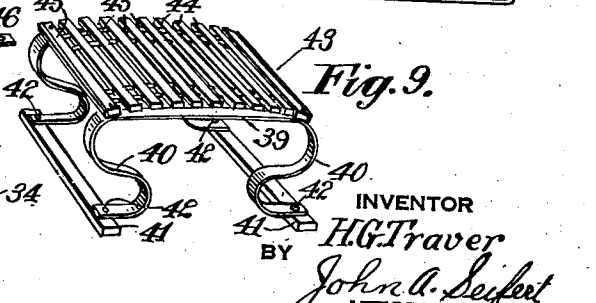

Fig. 9.

INVENTOR
H. G. Traver
BY
John A. Seifert
ATTORNEY

Patented May 7, 1935 2,000,624

UNITED STATES PATENT OFFICE

2,000,624

CHAIR

Harry G. Traver, Beaver Falls, Pa.

Application October 25, 1932, Serial No. 639,415

9 Claims. (Cl. 155—53)

This invention relates to chairs particularly adapted for porch or other outdoor use whereby the usefulness of the chair will not become affected by climatic conditions, and it is the principal object of the invention to provide such a chair of flexible structure which will readily assume the postures of different users.

Another object of the invention is to provide a foot or leg rest adapted to be releasably connected to the chair to extend as a continuation of the seat portion of the chair and when detached from the chair may be used as an independent seat or stool.

A still further object of the invention is to provide a chair of resilient frame members adjustably connected, and a seat and integral back rest suspended by the frame members, said seat back and rest and the frame being adapted to adjust themselves to different supporting positions.

Further objects of the invention will hereinafter be set forth in detail.

The embodiment of the invention illustrated comprises a pair of resilient frame members each member having a leg portion looped to form opposed sections, one section forming the supporting base for the chair and the other section adapted for adjustable connection to an arm portion of said frame member, said latter portions being arranged as arm rests, and means being provided to connect said latter portions together in spaced relation and adapted to suspend a flexible seat and integral back supporting member between said portions, the seat and back rest comprising slats engaged on the stringers in spaced relation to each other. The chair is provided with a foot rest comprising a resilient frame arranged to support a flexible and arched mat or supporting surface and having means to releasably engage the front or free end of the seat portion of the chair to connect the foot rest and chair together.

In the drawing accompanying and forming a part of this application Figure 1 is a perspective view of the chair.

Figure 2 is a side elevation, on a reduced scale, of the chair and showing a foot rest connected thereto.

Figure 3 is a side elevation of a modified form of foot rest shown in Figure 2.

Figure 4 is a fragmentary view in perspective of the upper connection of the arm portions of the frame showing the mounting of a pair of stringers in said connection and the engagement of a slat member on the stringers.

Figure 5 is a cross sectional view taken on the line 5—5 of Figure 4 looking in the direction of the arrows.

Figure 6 is a view of a pair of stringers broken away intermediate the ends to show the method of forming and securing the stringers in the connections of the arm portions of the frame members.

Figure 7 is a perspective view of a member for slidably mounting the leg portions on base plates or boards.

Figure 8 is a perspective view showing the method of securing the stringers to the lower connection of the arm portions of the frame members opposite to the connection shown in Figure 4; and

Figure 9 is a perspective view of the foot rest shown in Figure 2 and the connecting means in dissembled relation thereto.

In carrying out the invention there is provided a pair of resilient frame members of flat spring steel having leg portions folded intermediate the ends to form an intermediate looped section 10 with the ends projecting from the loop in arcuate directions toward each other, as at 11 and 12, and then in arcuate outward directions away from each other, as at 13 and 14, with the ends 13', 14' curved in reverse direction to the portions 13, 14 thereby forming a pair of members substantially of wish-bone or integral Y shaped form the end portion 11, 13' of said members constituting the supports for the chair adapted for mounting on base boards or plates 15, as by bolts 16 extended through the boards adjacent one end thereof and perforations in the curved ends 13'. The boards 15 are maintained in spaced relation to each other by a spacer 17 engaged at the opposite ends on the bolts 16 superposed to the frame ends 13', the spacer and frame sections being secured to the boards 15 by nuts 18 engaged onto the bolts 16. The part of the supporting sections 11, 13 adjacent the loops 10 engage and are supported by the opposite end portions of the boards 15 to permit of flexing movement of the frame sections 12, 14 toward and away from the opposite sections 11, 13 when weight is applied to the sections 12, 14, the frame sections 11, 13 being slidably connected to the base boards by cleats in the form of plates 19 secured to the boards by screws passed through perforations in the plates, as at 20, and the plates having ears 21 to engage about the edges and over said frame sections to loosely retain the frame members to the boards and permit of sliding movement of the frame members

longitudinally of the boards, as clearly shown in Figure 1.

The arm supporting portions 22 of the frame members by and between which an integral seat and back rest is suspended and supported are of ogee form arranged intermediate their ends with a pair of holes to be superposed to a pair of a series of holes 23 in the curved portion 14' of the leg portions whereby supporting portions 22 are adjustably connected to the leg portions in predetermined positions longitudinally of said leg portions by bolts 24' passed through the holes in the arm supporting portions in register with the desired pair of holes 23 in the leg curved portions 14' and secured by nuts threaded onto the bolts, and said supporting portions are thus capable of being mounted on the leg portions to extend in various angular positions relative to said leg portions, the ends of said portions extending forward of the connection and parallel with the leg portions and are adapted to serve as arm rests. The curvature of the intermediate sections of the arm supporting portions coincides with the curved portion 14' of the leg sections to assure an even and neat appearing connection. The ends of leg portions are beneath the arm supporting portions and the heads of the bolts 24' are rounded to present a smooth surface and prevent injury to the arms or the tearing of the clothing of the user. The supporting portions 22 are connected in spaced relation by a pair of cross bars 24, 25, the bar 24 being fixed at the opposite ends to the uppermost ends of the portions 22 by bolts passed from the front through alined perforations in the members and nuts engaged thereon at the rear of the chair, as at 26 in Figure 5. The other cross bar 25 is removably mounted on the lowermost ends of the frame portions 22 to be adjustably positioned longitudinally of said portions for a purpose hereinafter set forth by providing a series of holes 27 in said ends of the portions 22 for the engagement of a bolt 28 passed from the front through a perforation in cross bar 25 and one of the holes 27 and retained in position by nuts threaded onto the bolts at the under surface of the portions 22.

The seat and back supporting member of the chair is of unitary structure and adapted to readily assume the posture of the body. The seat and back supporting member is suspended between the cross bars 24, 25 and comprises a plurality of flexible stringers 29, such as brass wire to prevent the destructive oxidation of the same by the atmosphere, and formed from a length of wire into U shape with the connecting portion 30 of a length to form pairs of parallel and adjacent stringers, as shown in Figure 6. The stringers are passed through pairs of perforations 31 extended through and adjacent each end of the cross bar 24, and drawn through the perforations 31 until the connecting portions 30 of the stringers abut the cross bar between the perforations. The stringers are of sufficient length so that the free ends will extend through pairs of perforations 32 in the cross bar 25 with a sag in the stringers to permit them to assume an arcuate position between the cross bars 24, 25. The stringers are secured in this suspended position between the cross bars by bending the free ends at right angles toward each other and over portions of the cross bars between each pair of perforations 32, as at 33. To enhance the appearance of the chair the connecting portions 30 and the bent ends 33 of the stringers are concealed from view by recessing the bars at the outer entrance to and between the pairs of perforations 31, 32, as at 34, said recesses being of a depth to position the stringers below the surface of the cross bars, as shown in Figures 4 and 8, and concealed by strips 35 secured to the outer sides of the cross bars, as by nailing.

The supporting surface of the seat and back rest comprises slats 36, preferably strips of wood, having pairs of perforations 37 transversely therethrough adjacent the ends of the slats to be engaged on the stringers, the slats being maintained in equidistant spaced relation to each other by tubular members 38 engaged on the stringers in interposed relation to the slats. In assembling the seat and back support the stringers are extended through the bar perforations 31 when the tubular members and the slats are strung onto the stringers and before the free ends of the stringers are engaged in the perforations 32 of bar 25 by first engaging tubular members 38 thereon and then a slat 36 which procedure is successively performed until the necessary length of the seat and back support to be suspended between the cross bars is produced, as clearly shown in Figures 1, 2, 4 and 5. The curvature of the seat and back support is adjustable to meet the requirement for different body supporting positions by engaging the bar securing bolts 28 in different openings 27, thus securing the crossbar 25 in different positions to the arm rest of the frame 22 and varying the length of the seat and back rest. The body supporting positions of the seat and back rest may be also varied as an entirety by adjusting the entire arm supporting frame portions 22 through the moving of said portions along the leg sections 14 and engaging the bolts 24' in different holes 23 in the leg sections 14.

The seat and back rest of the chair is of a length to support the body of the user at just above the knees, and to comfortably rest the entire body there is provided a foot rest releasably connected to the cross bar 25, whereby it may be utilized as a separate seat or stool. The foot rest comprises a supporting frame embodying a pair of opposed U-shaped frame members of resilient material, the connecting portions of which extend in a flat horizontal plane, as at 39 in Figure 2, with the leg portions 40 arranged of opposed ogee form, as clearly shown in Figures 2 and 9, whereby great resiliency is embodied in the frame members. The frame members are connected in spaced relation corresponding to the spacing of the frame members of the chair by supports 41 of flat form secured, as by bolts 42, to the free ends of the leg portions 40. The supporting surface of the foot rest or stool is resilient and comprises two pairs of resilient stringers, in the present instance brass wire, formed to U-shape and anchored to cross bars 43 in a manner similar to the connecting of the stringers 29 of the seat and back rest of the chair to the cross bars 24, 25, with a series of slats 44 mounted on the stringers alternately with and equidistantly spaced from each other by tubular members 45 engaged on the stringers alternately with the slats 44, similar to the arrangement of the slats 36 and tubular spacers 38 of the seat and back rest of the chair. The resilient leg supporting mat formed by the stringers, slats 44 and tubular members 45 extends in the form of an arch to permit the flexing of the same in a downward direction without abutting the connecting portions 39 of the frame members by mounting the cross bars 43 on the connecting portions 39 a distance apart less than the length of the stringers, as clearly shown in Figure 2,

to extend the supporting mat in an arc similar to the upward curvature of the lower front end of the seat portion of the chair whereby the supporting surface of the stool will extend as a continuation of the seat supporting portion of the chair. To readily attach the foot rest to the chair there is provided a pair of hook shaped members formed from sheet metal having one end bent to U shape, as at 45', and the opposite end 46 arranged to arcuate shape to conform to the curvature of the juncture of the connecting portion 39 with a leg portion 40 of the frame members of the stool and having a perforation for the engagement and mounting on the bolts for securing the cross bars 43 to the frame members 39, the hook members being clamped between the cross bar and the frame members, as shown in Figure 2. The U portions of the hook members are of a size to be readily engaged over the cross bar 25 of the chair. It will be obvious that the stool may be utilized independent of the chair.

To reduce the cost of manufacture and when the foot rest is to be used with and as a unitary part of the chair, the supporting frame thereof is arranged with only one pair of legs 47 extending from one end of the horizontal portions 39 in ogee form and connected at the ends by a support similar to the supports 41. The ends of the horizontal portions 39 opposite to the legs 47 are connected to and supported by the cross bar 25 of the chair by extending said ends beyond the adjacent cross bar 43 of the leg supporting mat of the foot rest and forming the ends to U-shape, as shown at 48 in Figure 3, to be readily engaged over the cross bar 25 of the chair.

While I have illustrated one embodiment of my invention it will be obvious that various modifications may be made in construction and arrangement of parts, and that portions of the invention may be used without others, and come within the scope of the invention.

Having thus described my invention, I claim:

1. In a chair, a pair of members of resilient material and of ogee form, means connected intermediate the ends of and supporting said members with one end portion of said members extending upward and the other end portion curved downwardly to serve as arm rests, bars connected to the opposite ends of and spacing said members, and a flexible unitary seat and back rest suspended from the bars.

2. In a chair, a pair of members of resilient material and of ogee form, a flexible unitary seat and back rest, means connected to the ends of the seat and back rest and the opposite ends of the ogee members to suspend the seat and back rest from the ends of and between said members and means to support said ogee members, comprising a pair of members of resilient material, each member being bent upon itself intermediate the ends to form a loop at the bend and curved in opposite relation to each other, arranging one leg of bowed shape and adapted to engage a horizontally disposed surface adjacent the loop and free end, and the end of the other leg curved reversely and connected to the ogee member intermediate the ends thereof.

3. In a chair, a frame embodying a pair of members and each member including a leg portion of resilient material shaped to Y form with one end section forming a supporting base, and a portion of resilient material of ogee form connected intermediate the ends to the end of the leg portion opposite to the supporting base, rigid bars connected to the end portions of the ogee members, and a unitary seat and back support suspended by said bars between the frame members supporting members to which the supporting base of the leg portions are fixed at the ends and having sliding connection at an intermediate portion of said supporting base to permit flexing of the leg portions by the weight of the user and movement thereof relative to the supporting members.

4. In a chair, a pair of frames, each frame including a member of wish-bone shape, a pair of base boards to which one leg of said members is fixed at the end and having a sliding connection therewith at the connecting portion of said member, a second member of resilient material and ogee form connected intermediate its ends to the free end of the other leg of the first member, cross bars connected to the ends of the ogee formed members, and a flexible seat and back rest suspended between the cross bars comprising flexible stringers secured at the ends to the cross bars and a series of slats mounted on the stringers in equidistantly spaced relation to each other.

5. A chair as claimed in claim 4, wherein the cross bars are arranged with pairs of parallel and alined perforations extended transversely through said bars and a recess in the bars communicating with each pair of perforations, and the stringers extended through said perforations with the ends folded laterally within the recesses to secure the stringers to the cross bars.

6. A chair as claimed in claim 4, wherein the sliding connection of the one member of the frames with the base boards comprise plates mounted on the base boards and having ears engaged over the opposite edges of and embrace the leg members adjacent the leg connecting portion thereof.

7. A chair as claimed in claim 4, wherein the cross bars are arranged with pairs of parallel and alined perforations extended transversely through said bars and a recess in the bars in communication with each pair of perforations, and the stringers are of U form adapted to be extended through an alined pair of perforations with the leg connecting portion abutting the portion of the cross bar between the pair of perforations in one of the cross bars and the opposite ends of the stringers extended through the alined pair of perforations in the other bar and the projecting ends bent to engage in the bar recess.

8. A chair as claimed in claim 4, wherein the ends of the leg of the first member of the frames connected to the ogee members of the frames are provided with a plurality of perforations for the adjustable connection of the ogee members thereto, and the lower ends of the ogee members have a plurality of perforations for the adjustable connection of the cross bar therewith.

9. In a chair, a unitary flexible seat and back rest, a pair of resilient members, means to suspend the seat and back rest at the ends from the opposite ends of and between said resilient members, and resilient supports to which the resilient members are fixed intermediate the ends and suspending the seat and back rest to cause the weight on the seat to assume the position of the center of gravity thereof, and said resilient members arranged as arm rests.

HARRY G. TRAVER.