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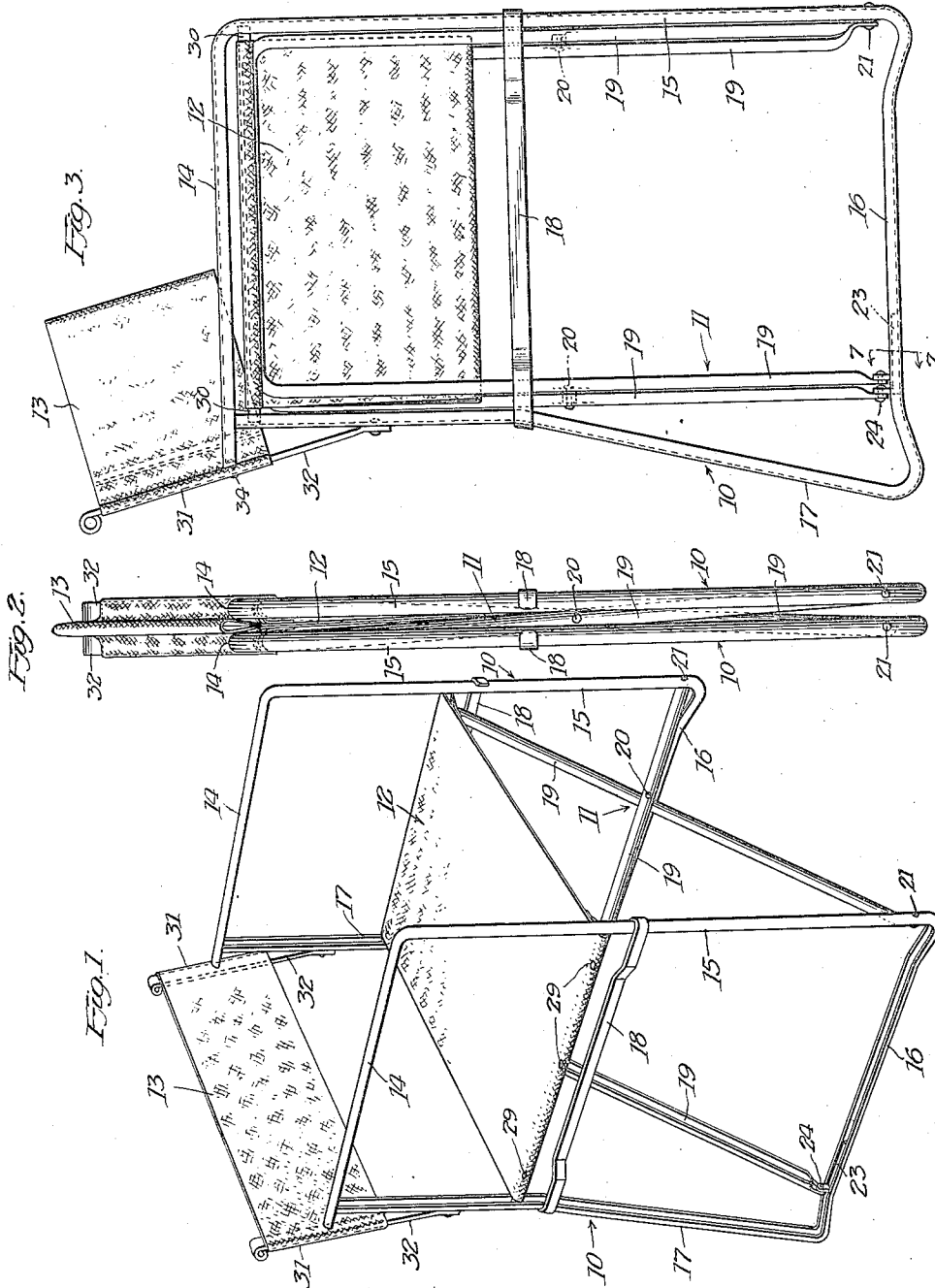
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FOLDING CHAIR

Filed Nov. 9, 1931

2 Sheets-Sheet 1



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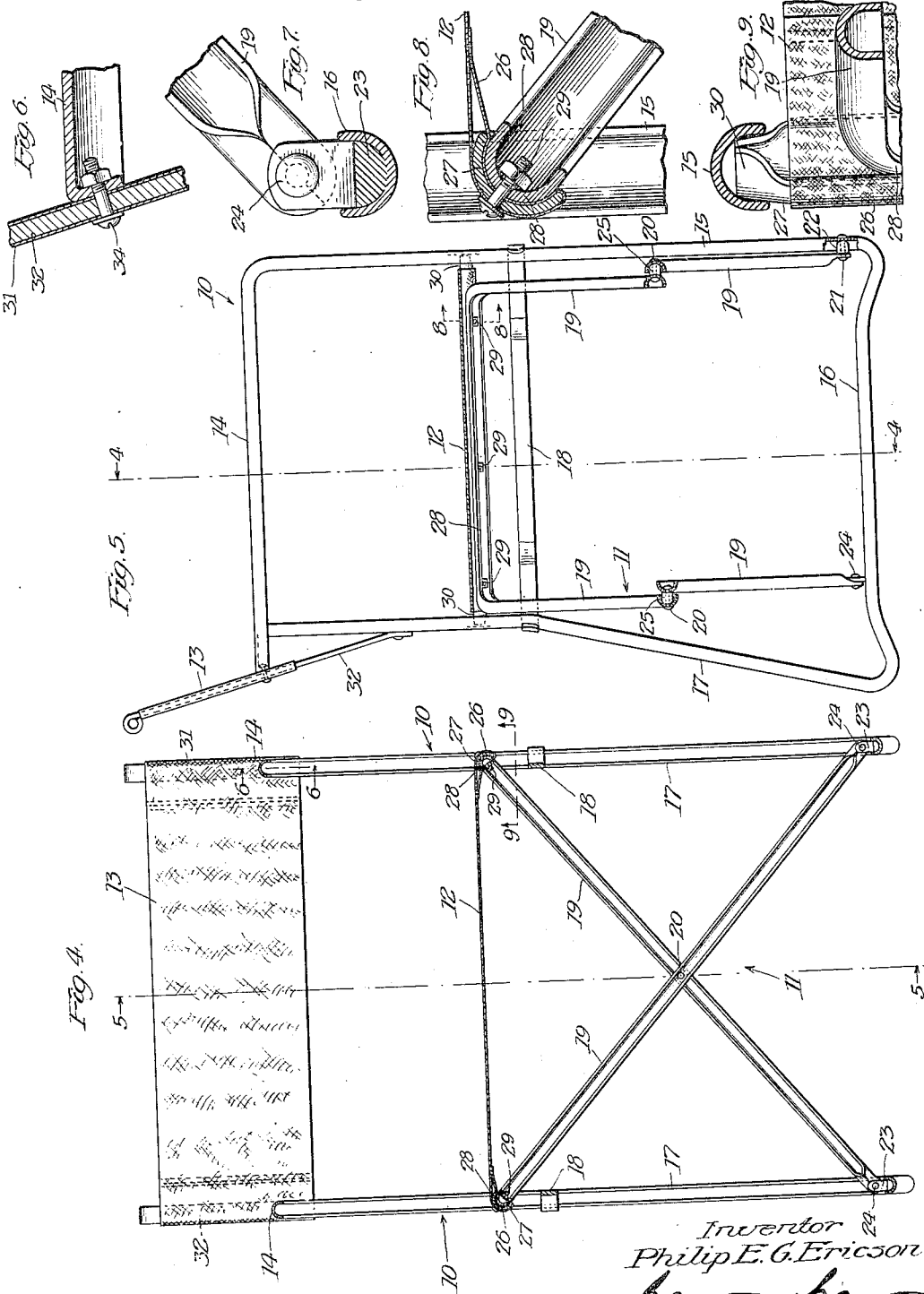
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UNITED STATES PATENT OFFICE

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FOLDING CHAIR

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This invention relates to folding chairs, and among its objects is the provision of a novel chair composed of a foldable metal frame and a fabric seat and back. Another object is to provide a metal chair frame formed of channel bars of curved cross section bent upon themselves to provide the legs, arms and cross frame of the chair, the convex sides of the channel bars being disposed outwardly of the chair, thereby enhancing its beauty, while the channels or troughs of the channel bars provide recesses for receiving the bearings which connect the several parts of the frame together.

- Another object is to provide an extremely light yet substantial and strong chair frame which may be handled with convenience and may be readily folded into compact form for storage or shipment or unfolded for use. Another object is to provide a metal chair frame devoid of any sharp corners.

Another object is to provide a metal chair frame composed of side frames and a foldable cross frame therebetween having pivotal connections with the side frames and also sliding connections therewith, whereby the chair may be folded and unfolded, the cross frame also serving to support the seat. Another object is to provide a foldable chair composed of a metal frame and a flexible seat and back that fold out of the way when the chair is folded.

Other objects and advantages will appear in the course of this specification, and with all of said objects and advantages in view, this invention consists in the several novel features hereinafter fully set forth and claimed.

One embodiment of the invention is exemplified in the drawings accompanying this specification in which—

Figure 1 is a perspective view of the chair set up in position for use;

Fig. 2 is an end view thereof showing the chair in its folded condition;

Fig. 3 is a side elevation of the folded chair;

Fig. 4 is a view, partly in front elevation and partly in vertical longitudinal section, taken on the line 4—4 of Fig. 5;

Fig. 5 is a view, partly in side elevation and partly in vertical cross section, taken on the line 5—5 of Fig. 4;

Fig. 6 is a fragmental sectional view of the connection between one of the chair arms and the frame extension which supports the back, the line of section being indicated at 6—6 in Fig. 4;

Fig. 7 is a fragmental view, partly in elevation and partly in cross section, of one of the joints between the cross frame and a side frame, the line of section being indicated at 7—7 in Fig. 3;

Fig. 8 is a fragmental view, partly in elevation and partly in vertical cross section, illustrating the sliding connection between the cross frame and side frame, the line of section being indicated at 8—8 in Fig. 5; and

Fig. 9 is a fragmental view, partly in inverted plan and partly in horizontal section, illustrating the sliding connection, the line of section being indicated at 9—9 in Fig. 4.

Referring to said drawings, which illustrate one embodiment of the invention, it will be seen that the chair comprises a pair of side frames 10 connected by a foldable cross frame 11, a flexible seat 12 carried thereby, and a flexible back 13 extending between the side frames. Each side frame is preferably composed of a channel bar desirably having a curved cross section and bent upon itself to provide an arm 14, a front leg 15, a lower brace 16, and a rear leg 17. The rear leg inclines forwardly to a point slightly below the seat and then continues upwards in a vertical direction to the arm 14 where it is spot welded or rigidly fastened thereto at a point slightly in front of its rear end.

The convex face of the channel bar forming the side frame is disposed outwardly of the chair and the bends at the corners of the side frames are rounded to avoid sharp corners. The lower brace 16 is offset in an upward direction intermediate its ends whereby the rounded lower ends only of the legs may rest on the surface upon which the chair stands. Preferably, a brace 18 connects the front and rear legs of each side frame at a place directly below the seat, and

said brace preferably takes the form of a flat bar having its ends curved about the convex faces of the legs and being spot welded thereto, the intermediate portion of the bar being inset to facilitate gripping the seat preliminary to folding the chair.

The cross frame 11, which also serves to support the chair seat, is preferably composed of two U-braces 19 pivotally connected together between their ends by rivets or the like 20 and also pivotally connected at their lower ends to the side frames and slidably connected at their upper ends to said side frames. This arrangement permits the two side frames to be moved together in folding the chair and also permits them to be moved away from each other when setting it up for use. The pivotal connections between the lower ends of the U-braces and the front legs are located at a point slightly above the lower ends thereof, and said connections may comprise rivets 21 and sleeves or spacing blocks 22 interposed between the legs and the U-braces, and serving to space the front arms of the cross frame from the front legs. The lower ends of the arms of the U-braces are flattened to receive the rivets and the flattened end of one is rearwardly offset to bring its arm behind the other one.

The pivotal connections between the lower ends of the rear arms of the cross frame comprise brackets 23 contained in the troughs or channels of the lower braces 16 spot welded or other secured thereto. The brackets 23 have upturned ends to which the rear arms of the cross frames are connected by rivets 24. The lower ends of the rear arms of the U-braces are also flattened to receive the rivets. Preferably, the arms of the U-braces are spaced apart by spacing blocks or sleeves 25 surrounding the rivets 20 to prevent them from rubbing upon each other when the chair is being folded or unfolded.

The seat 12 is preferably composed of fabric or other woven material, such as canvas and the like, and its ends are doubled upon themselves and stitched together to form loops 26 through which extend channel bars 27, the extremities of which project beyond the front and rear edges of the seat and present themselves in the opposing channels or troughs of the front and rear legs of the side frames. Said channel bars 27, with the loops of the seat disposed around them, are placed upon the cross connecting bars 28 of the U-braces 19 and fastened thereto by screws or bolts 29 with nuts upon their threaded ends and contained in the channels or troughs of said cross connecting bars 28. This arrangement provides simple means whereby the entire seat may be readily removed from the chair frame, should occasion arise, and replaced by another seat. The extremities of the bars 28 which enter the channels of the legs are bent up to form substan-

tially round parts 30 that fit in the channels or troughs and are guided to move along the length thereof.

The back 13 is also composed of fabric usually of the same kind which forms the seat, and the back is likewise formed with loops 31 through which extend frame extensions that take the form of flat bars 32 that are riveted at their lower ends to the rear legs 17 and fastened to the arms 14 by screws or bolts 34. Preferably the upper ends of the bars 32 are curled upon themselves or provided with any other suitable ornamental finish. The rear ends of the chair arms are fashioned with down turned tongues 33 which abut against the bars 32, and the bolts 34 extend through said bars, through the material of the loops 21 and through the tongues and have nuts upon their threaded ends which are contained in the channels of the arms. This arrangement provides simple means whereby the back 13 may be detached from the frame by removing the bolts 34 in case it should become desirable to replace the back.

It will be observed that the seat limits the extent to which the side frames may be drawn apart in unfolding the chair and that when in unfolded condition the cross frame forms a brace between the two side frames, thereby firmly holding the entire chair frame rigid. The chair is folded by gripping and raising the ends of the seat. As a result of the pivotal connection between the two U-braces of the cross frame, and the pivotal and sliding connections between the ends of the U-braces with the side frames, the latter are drawn together as the ends of the seat are raised, and the seat and back are folded out of the way between the side frames. When folded, the chair occupies only the space defined by the two adjacent side frames and the intervening folded seat and back.

From the above it is apparent that the chair frame may be made entirely of metal with the seat and back of fabric; that there are no sharp corners, and that the disposition of the convex side of the channel bars on the outer sides of the chair not only enhances its beauty, but provides recesses for the bearings of the cross frame. By reason of its broad base ample stability is given the chair and the curved lower ends of the legs provide suitable means whereby the chair may be rested or moved about on a lawn, porch, or interior floor. The folding cross frame enables the chair to be folded into compact condition for storage or shipment, and when extended makes the chair rigid, despite the fact that the frame is made of relatively light gauge material.

I claim:

1. In a chair, a side frame composed of a channel bar bent upon itself to provide an arm, front and rear legs and a lower brace,

the rear leg being joined to the arm adjacent the rear end thereof, and said rear end of the arm having a down turned tongue, a flexible back having a looped end, a bar extending through said loop and bearing against the rear leg and the rear end of the arm, removable securing means extending through said bar, loop and the tongue of the arm, and other means rigidly connecting the bar to the leg.

2. A folding chair in which is comprised a pair of side frames each produced from a single metallic bar having a concavo-convex cross section bent longitudinally at places to provide an arm rest from which depends a front leg connecting with one end of a horizontal brace whose opposite end joins to the lower end of an upstanding rear leg having its upper end secured to the arm rest, the concave side of the bar facing inwardly and the convex side outwardly throughout the length of the frame, two bars each bent to U-shape and pivotally joined together to form a cross frame, a pivotal connection between the bar ends of the cross frame and the lower portion of the side frames, and a flexible seat secured by retaining means comprising channel bars fitted over and detachably secured to the upper ends of the cross frames and having its ends co-acting with the inwardly facing concave sides of the front and rear legs of the side frames to slidingly connect the cross frame to the side frames, whereby to facilitate the assembly and disassembly of the parts.

3. In a folding chair having a flexible seat secured at its opposite sides to pivotally connected cross members which are movable toward each other when folding the chair, side frames to which said cross members are connected for both pivotal and sliding movements, each frame comprising a metallic bar bent into substantially rectangular formation to provide an arm, front and rear legs and a bottom brace for said legs, said bar being of channel cross section with the channel thereof facing inwardly of the frame, one end of the bar comprising the upper end of the rear leg portion being secured to the under side of the arm portion adjacent the other end of said bar, said other end of said bar extending at an acute angle to said arm portion to provide a tongue, and a back holding bar secured to said tongue and to said rear leg portion.

4. In a folding chair having a flexible seat secured at its opposite sides to pivotally connected cross members which are movable toward each other when folding the chair, side frames to which said cross members are connected for both pivotal and sliding movements, each frame comprising a metallic bar bent into substantially rectangular formation to provide an arm, front and rear legs and a bottom brace for said legs, said bar

being of channel cross section with the channel thereof facing inwardly of the frame, one end of the bar comprising the upper end of the rear leg portion being secured to the under side of the arm portion adjacent the other end of said bar, and the rear leg portion extending upwardly from said bottom brace portion toward said front leg portion, to provide a brace against rearward tilting of the chair, then extending in parallelism with said front leg portion to provide therewith guides for sliding engagement therein by said cross members.

5. In a folding chair having a flexible seat secured at its opposite sides to pivotally connected cross members which are movable toward each other when folding the chair, side frames to which said cross members are connected for both pivotal and sliding movements, each frame comprising a metallic bar bent into substantially rectangular formation to provide an arm, front and rear legs and a bottom brace for said legs, said bar being of channel cross section with the channel thereof facing inwardly of the frame, one end of the bar comprising the upper end of the rear leg portion being secured to the under side of the arm portion adjacent the other end of said bar, the rear leg portion extending upwardly from said bottom brace portion toward said front leg portion, to provide a brace against rearward tilting of the chair, then extending in parallelism with said front leg portion to provide therewith guides for sliding engagement therein by said cross members, and a brace member connected at one end to the rear leg adjacent the juncture of the angled portions thereof and at its other end to the front leg whereby to retain said guides in parallelism.

6. In a folding chair having supporting side frames composed of channel bars, the channels of which face inwardly of the frame, and a cross frame composed of pivotally connected channeled U-braces pivotally connected at their ends to the side frames, a flexible seat clamped between channel bars upon its ends removably fitted over and fastened to the horizontal portions of said U-braces, the ends of said bars extending beyond the sides of said braces and seat and shaped to closely fit within the inwardly facing channels of the side frames for vertical sliding movement therein when folding the chair.

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