

June 24, 1941.

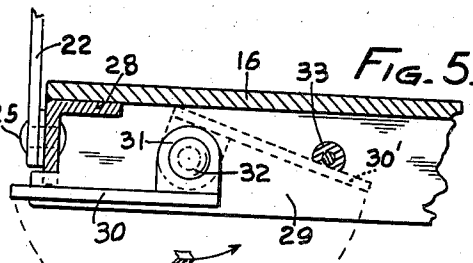
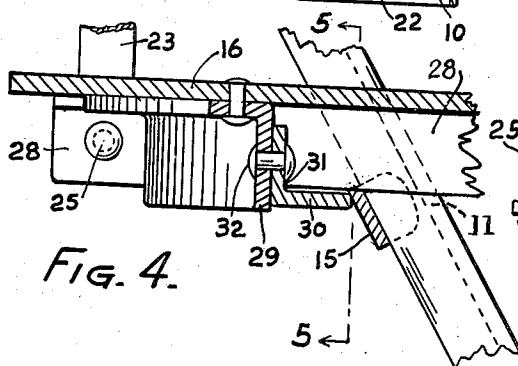
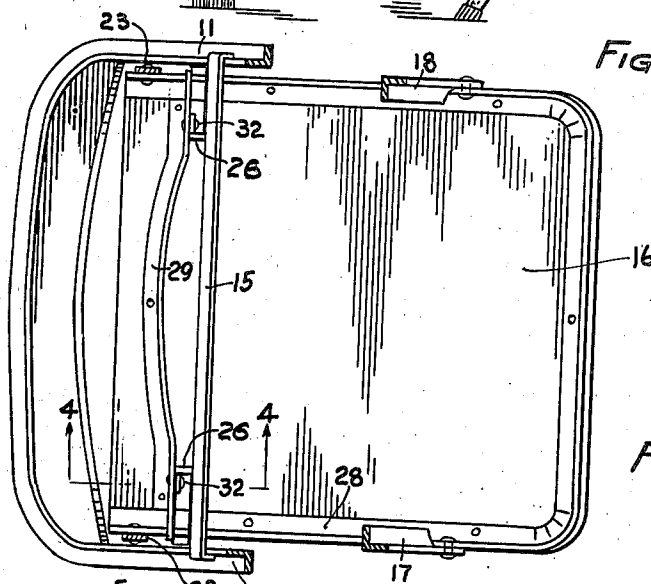
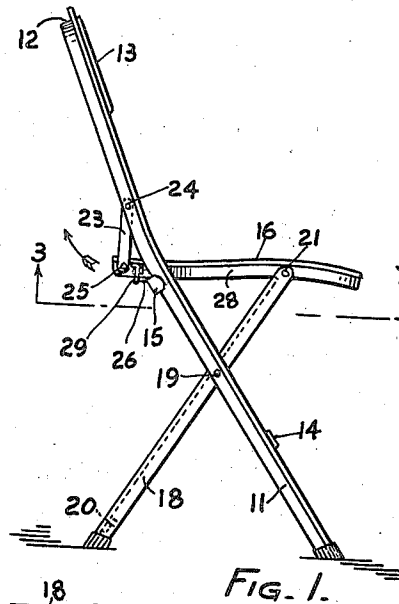
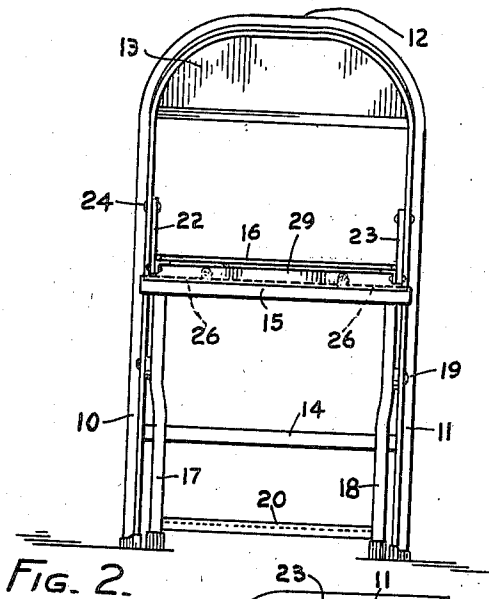
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2,247,236

FOLDING CHAIR ADJUSTING MEANS

Filed Feb. 27, 1940

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

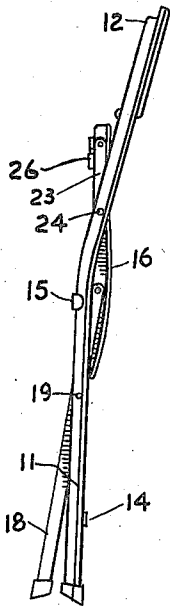


FIG. 6.

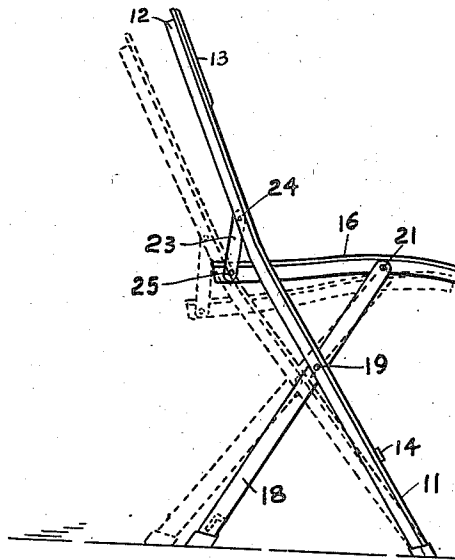


FIG. 7.

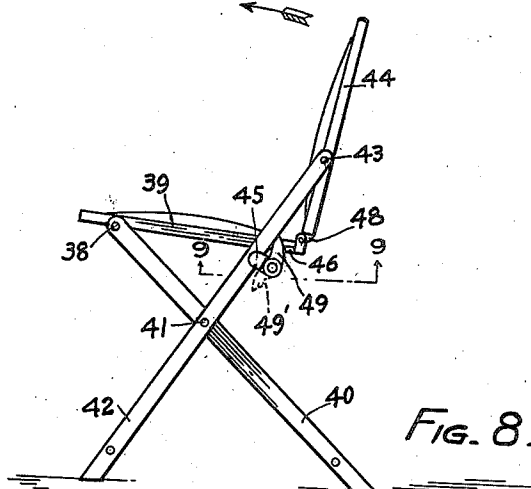


FIG. 8.

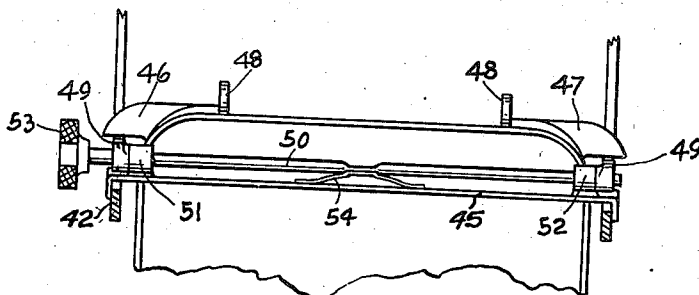


FIG. 9.

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FOLDING CHAIR ADJUSTING MEANS

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4 Claims. (Cl. 155—143)

The present invention relates to portable chairs of the foldable X-type in which the seat panel and supporting legs may be compactly collapsed into planiform alignment, and more particularly has to do with providing such lazy tong leg structure with simple adjustable control means adapted to selectively raise or lower the unfolded seat level within predetermined limits and to appropriately alter the back inclination, all without resort to telescopically extensible legs or the like structural complications.

As generally marketed, the fabricator of standardized folding chairs relies upon a fixed seat height and relative back inclination. This product usually proves deficient in fully meeting wide range personal requirements as regards seat elevation, such for instance as satisfying the preferred seating posture of a tall or short occupant. Furthermore, when used as a dining chair for banquet tables or the like purposes, the same person will naturally desire a higher seat level and more erect back inclination than when a folding chair is utilized for auditorium or the like repose duty where a lower seat level and greater back reclination is likely to prove much more comfortable.

My adjusting appurtenances may be effectively applied to a conventional X-type of foldable seat in which the erected rear legs are pivotally attached to the forward edge region of the seat panel while the rear panel edge is shiftably linked from and between a pair of front legs. Such crossed leg structure when opened in scissor fashion, is herein definitely but selectively stopped against excessive divergence or angular spread.

The present improvements essentially provide for alternative leg spread positions by the use of an oscillatory stop lever device which when set in one extreme position will invariably bring the unfolded seat panel into a desired elevation, except when said device is deliberately readjusted for a different seat level. Such adjusting mechanism is kept inconspicuous but readily accessible and does not interfere with folding or unfolding the chair components.

The object of my chair refinements is to devise an inherently simple control mechanism of the character indicated that can be applied to many X-type folding chairs without involving extensive alterations in the conventional leg structure or materially adding to the fabrication cost thereof.

Other objects and advantages will become apparent from the accompanying two sheets of drawings, in which:

Fig. 1 represents an elevational side view of an

erected folding chair equipped with my adjusting devices, and Fig. 2 shows a rear view thereof.

Fig. 3 is a bottom seat view looking upward along 3—3 of Fig. 1.

Fig. 4 depicts an enlarged detail as seen along 4—4 of Fig. 3, and Fig. 5 a transverse section taken along 5—5 of Fig. 4.

Fig. 6 shows the Fig. 1 style of chair in its fully collapsed position, and Fig. 7 schematically illustrates my unfolded chair in different adjusted seat elevations.

Fig. 8 corresponds to Fig. 1 but represents a reversely foldable style of chair provided with a modified adjusting mechanism, and Fig. 9 is a detail thereof taken along 9—9 of Fig. 8.

Referring more specifically to Figs. 1 to 7, this X-type of folding chair preferably comprises a pair of spacedly aligned metallic front legs 10 and 11 of which the upper regions are yoke interconnected at 12 for fabrication from a one piece angle iron including a continuous flange component that may be directed outwardly as shown. An inbuilt head rest or back panel 13 may span such yoke region in any suitable manner. Said front legs may be provided with a rung 14, also with an intermediate cross bar 15. The rear legs 17 and 18 are respectively crossed with and pivoted at 19 to a mated front leg and may additionally be laterally braced by the rear leg rung 20. Each upper end of the respective rear legs are preferably pivoted at 21 to opposed forward edges of the rigid seat panel 16. Companion suspension links 22 and 23 may respectively be pivoted at 24 to a corresponding front leg and at 25 to the rear edge region of the seat panel as shown.

A preferred interposed location of my manipulative adjusting mechanism as a whole is identified as 26 in Figs. 1 and 2. As will be understood, an upward lift of the rear seat edge in the arrowed direction (see Fig. 1) serves to carry the erected chair members into their collapsed Fig. 6 position.

As detailed in Fig. 3, the rigid seat panel 16 may be fabricated from thin plywood or the like material that is reenforced by a U-shaped metal underframe 28. A transverse panel stop flange 29 may be affixed to span the frame ends and preferably serve to mount my interposed adjustment devices thereon but these may also be otherwise arranged. Such controls may be of the twin type whereby to maintain a stable leg spread, one such being exemplified in Figs. 4 and 5. The retractible stop means or manipulative lever shank 30 may be provided with an

offset lug 31 that is snugly but rockably riveted at 32 to the stop flange to provide for a fulcrum about which said lever may swing between its extreme full-lined operative and dotted idle positions 30 and 30' indicated in Fig. 5. Frictional drag retains the set lever in either of such adjustments and for convenient access, the idle lever position may be limited by the pin 33.

When set into its active position, the lever shank 30 serves as an interposed spacer element against which the cross bar 15 abuts and thereby restricts the scissorlike angle between the front and rear legs in the manner indicated by full lines in Fig. 7. When these mated lever shanks are brought into their respective idle position 30', said cross bar is free to unobstructedly travel onward into direct abutment with the stop flange 29. Such setting additionally spreads the floor contacting ends of the front and rear legs to lower the seat level and simultaneously augments the back inclination as represented by dotted outline in Fig. 7. It will be observed that the erected seat of my chair will always unfold into a fixed height above the floor level while the stop lever remains selectively set. A deliberate lever readjustment is required to alter such prior seat height. In either case, the lever mechanism 26 may be compactly and automatically stowed within the collapsed chair confines as in Fig. 6. Instead of placing each lever shank into its extreme active position 30, they may also be set into a depending intermediate stop position; Figs. 1 to 3 show such intermediate lever disposition for clarity of illustration. As a further alternative, my interposed lever device may be fulcrumed to and carried by the cross bar 15.

By resort to my adjusting mechanism, the crossed chair legs require no telescopic extension to alter the seat height. When utilized for either dining room or auditorium purposes, the selective change in lever setting is readily accomplished in an easily understood manner. The underlying principle being extremely simple, it may be applied generally to an essentially lazy tong structure of the kind disclosed in Fig. 7. The pivoted crossed legs 11 and 16 are tied by the seat 16 of which the guided rear edge region is shiftably suspended by a link 23 pivoted above the unfolded seat level to the upwardly extended front leg 11.

As a structural modification, reference is had to Fig. 8 which is of the so-called reversibly folding type of chair substantially similar to that more explicitly defined in the Stannard patent, #1,746,634 of Feb. 11, 1930. In this figure, the rear legs such as 40 are pivotally crossed at 41 with the front legs 42, the latter being extended to terminate in the pivot 43 that swingingly mounts a back panel 44. A cross bar 45 spans the front legs and each seat panel corner region may respectively be equipped with laterally extending seat stop lugs 46 and 47 which are equivalent to the stop means 29 of Fig. 3. The upper end of each rear leg is pivoted at 33 to the seat panel 39 and the adjoining edges of the seat and back panel may be hinge connected at 43. When the last named panel is swung forwardly in the arrowed direction, this folding chair will readily collapse flatwise between its front legs. In this lazy tong structure, the links 22 and 23 of Fig. 2 are developed to carry the back panel 44 of Fig. 8 and of which the pivots 43 and 48 respectively correspond to the link pivots 24 and 25.

Fig. 9 reveals a style of adjusting mechanism applied to the Fig. 8 chair. In this instance, a cam or lever shank 49 may be affixed to each end of a common adjustable rockshaft 50 that may be operatively bracketed as at 51 and 52 alongside the cross bar 45. This shaft may be provided with a manipulative knob 53 and a medial shaft region may be oppositely flattened to cooperate with a flat spring 54 carried by said cross bar to retain the shaft in an adjusted position.

When such twin levers are simultaneously shifted into their full-lined active stop position 49 indicated in Fig. 8, the level of the seat panel will be correspondingly raised, whereas when said levers are shifted into the dotted idle position designated 49', the floor contacting leg ends are allowed to spread apart further to lower the seat panel and increase the inclination of the back panel relative thereto.

Other advantages inherent in my improved chair adjusting appliances will, it is believed, be apparent to those skilled in this art, it being understood that the same underlying principle may likewise be applied to a wide range of folding chair linkages, all without departing from the spirit and scope of my invention herein described and more particularly defined in the appended claims.

I claim:

1. A portable folding chair of the X-type comprising a pair of interconnected rear legs, a pair of interconnected front legs each respectively pivoted to a mated rear leg in scissor fashion and which front legs in erected chair position extend beyond the upper rear leg terminals, rigid seat panel means of which a forward marginal portion is pivotally mounted between said rear leg terminals, companion suspension links each respectively pivoted to a contiguous front leg and to a rearward marginal panel portion, stop means carried by the last named panel portion and guided by said links toward the front legs when the chair is unfolded, and adjustable control means selectively interposed or withdrawn between the stop means and the front legs.

2. A portable folding chair of the X-type comprising a pair of interconnected rear legs, a pair of interconnected front legs each respectively pivoted to a mated rear leg in scissor fashion and which front legs in erected chair position extend beyond the upper rear leg terminals, cross bar means bridging the front legs intermediate the respective ends thereof, rigid seat panel means of which a forward marginal portion is pivotally mounted between said rear leg terminals, companion suspension links each respectively pivoted to a contiguous front leg and to a rearward marginal panel portion, stop means carried by the last named panel portion and guided by said links toward the cross bar means when the chair is unfolded, and manipulative lever means selectively interposed or withdrawn to alter the spacing of the stop means with respect to said bar means.

3. A portable folding chair of the X-type comprising a pair of interconnected rear legs, a pair of interconnected front legs each respectively pivoted to a mated rear leg in scissor fashion and which front legs in erected chair position extend beyond the upper rear leg terminals, cross bar means bridging the front legs intermediate the respective ends thereof, a rigid seat panel of which a forward marginal portion is pivotally mounted between said rear leg terminals, com-

panion suspension links each respectively pivoted to a contiguous front leg and to a rearward marginal panel portion, stop means carried by the last named panel portion and guided by said links toward the front legs when the chair is unfolded, a plurality of manipulative levers retractibly interposed between the stop means and said front legs, and means for actuating said levers in unison.

4. A portable folding chair of the X-type comprising a pair of interconnected rear legs, a pair of interconnected front legs each respectively pivoted to a mated rear leg in scissor fashion and which front legs in erected chair position extend beyond the upper rear leg terminals, back panel means bridging the front leg extensions, rigid seat panel means of which a forward marginal portion is pivotally mounted between said rear

leg terminals, companion suspension links each respectively pivoted to a contiguous front leg and to a rearward marginal portion of the seat panel means, stop means carried by the last named means and guided by said links toward the front legs when the chair is unfolded, and a retractible lever mechanism which in one position is interposed between the stop means and said front legs to limit the spread of the floor contacting ends of the crossed legs whereby to retain the seat panel means in a certain erected elevation above the floor level and which mechanism in another position permits increased leg spread to lower the aforesaid elevation and simultaneously augment the reclined relation between the back panel means and the lowered seat panel means.

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