Jan. 1, 1963 C. C. GIBSON ETAL 3,071,409

FOLDING CHAIR

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FIG_1

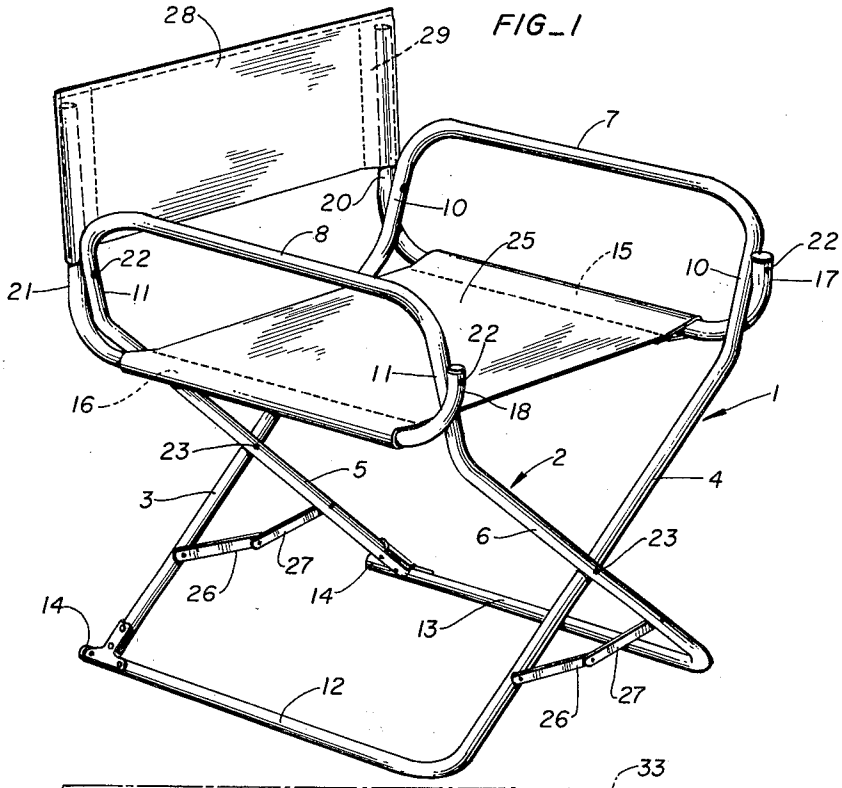
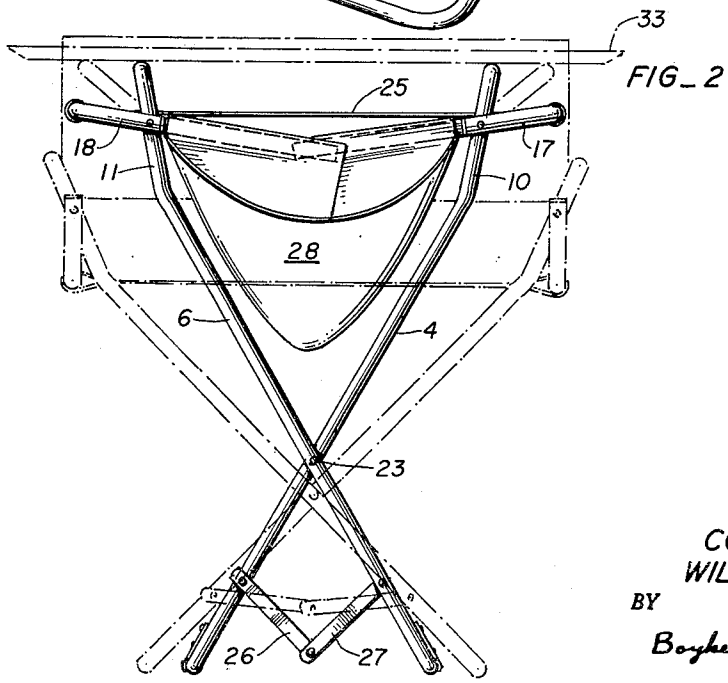


FIG_2



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FIG_3

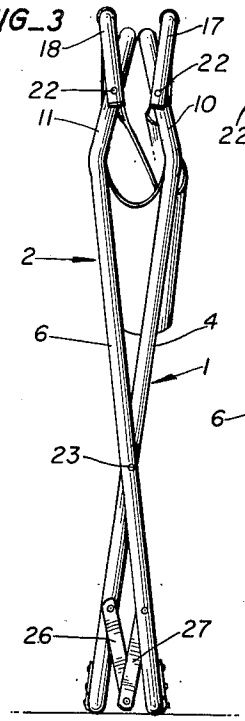


FIG_4

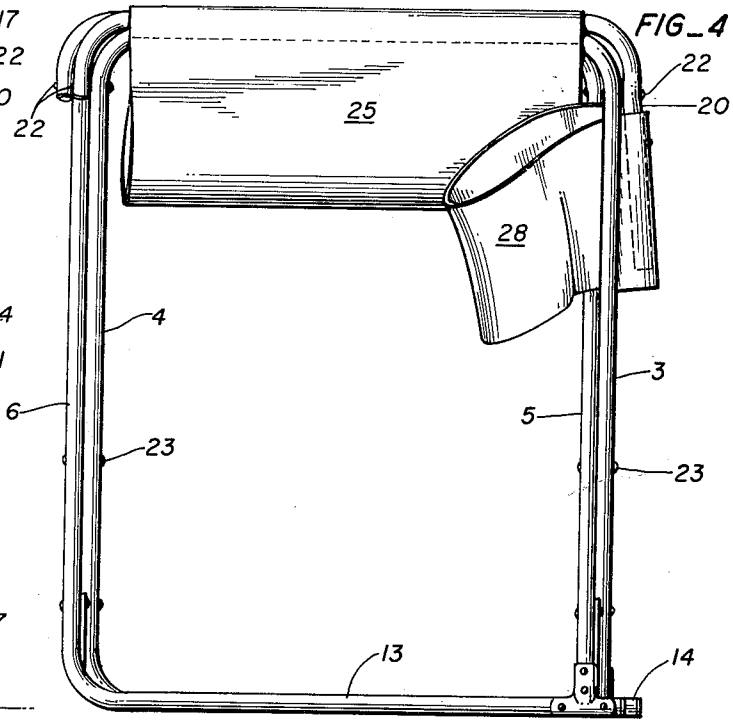
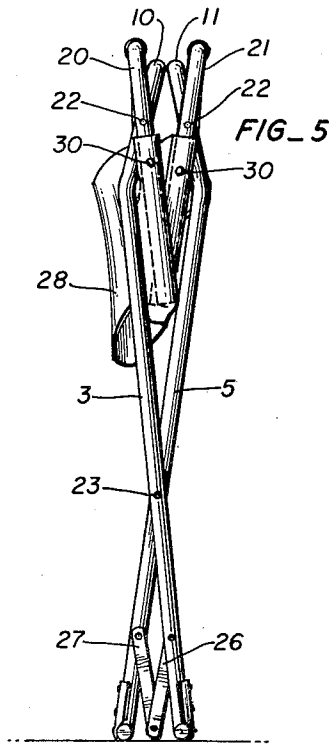


FIG_5



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3,071,409
FOLDING CHAIR

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This invention relates to a folding chair of the type heretofore known as a yacht chair or patio chair.

One of the objects of the invention is the provision of a folding chair of the above type that is economical to make, comfortable, sturdy and of a structure and operation that are simple as compared with prior chairs of the same type.

In explanation of the above, the most common structure heretofore available in chairs of the type with which the present invention is concerned, employ flexible, collapsible, canvas or duck seats and back rests, or other material having similar characteristics, with arm and back supports hinged to the sides of the seat frame, and the back rests must be disconnected from one of the two supports therefor so that the arm rests and back supports can be collapsed outwardly before the chair can be collapsed to its folded position. When said arm rests and back supports are so collapsed they add undesirable bulk to the chair, and the loosened back rest is difficult to secure to the folded chair.

One of the objects of the present invention is the provision of structure that overcomes the above objections without sacrificing the back rest, arm rests and other desirable features in a folding chair.

A still further object of the invention is the provision of a folding chair of the yacht and patio type having a back and arm rests, seat and seat supports, and which chair is so constructed as to provide a tray support or a support for any other article or object, without interference from the back or arm rests, when the chair is partially folded.

Other objects and advantages will appear in the description and drawings.

In the drawings:

FIG. 1 is an isometric view of the chair when unfolded for use.

FIG. 2 is a front elevational view of the chair of FIG. 1 as seen from the front side thereof, and which chair is shown in full line in a partially folded position, and in dot-dash lines from an expanded or unfolded position indicated in dot-dash lines. Also in dot-dash lines a tray is shown supported on the partially folded chair,

FIG. 3 is a front elevational view of the chair in fully collapsed position.

FIG. 4 is a side elevational view of the chair in fully collapsed or folded position.

FIG. 5 is a rear elevational view of the chair in fully collapsed position.

Referring to FIG. 1 the chair comprises a pair of generally inverted U-shaped members generally designated 1, 2 providing spaced opposed legs 3, 4 for member 1 and similar legs 5, 6 for member 2. These legs are preferably of relatively light weight, yet strong, tubular metal, and the closed upper ends 7, 8 of the members 1, 2 respectively, are integral with the legs of said members.

The elements 7, 8 of the tubular metal of said legs providing the closed upper ends of the inverted U-members are straight, except where they are curved at their ends that join the legs, and they constitute arm rests for supporting the arms of a person seated on the chair.

It is to be noted that the upper end portions 10 of legs 3, 4 and 11 of 5, 6 extend slightly at a slight angle to the remaining lower portions of said legs. This not only

enables the said portions to be positioned closer to the sides of a person seated in the chair, as will later appear, but it provides a structural advantage when the chair is expanded and collapsed, as will also appear later on.

The legs 4, 6 of the chair are the legs at the front side of the chair, and a horizontal rearward extension 12 of leg 4 at its lower end, and integral with said leg, forms a supporting runner that extends below and past the lower end of leg 3, and is rigidly secured to said leg in any suitable manner.

A similar runner 13 extends rearwardly from the lower end of leg 6 and is joined to the lower end of leg 5 in the same manner as the runner 12 is secured to leg 3.

Preferably these runners are provided by bending extensions of the tubular legs 4, 6 rearwardly so that the junctions between the forward ends of the runners and the lower ends of legs 4, 6 are curved. This enables the chair to be tilted and drawn forwardly over a deck, floor or ground without injury to the deck, floor or ground, and provides a strong connection between the legs and runners. The rear end portions 14 may project rearwardly from the lower ends of legs 3, 5 to stabilize the chair against tipping completely over rearwardly should a person seated thereon tilt the chair rearwardly.

A pair of spaced opposed, horizontally extending seat bars 15, 16 are respectively secured to the upper portions 10 of the legs 3, 4 and portions 11 of legs 5, 6.

These seat bars are straight and horizontal, except that the forward end portion 17 of bar 15, and the forward end portion 18 of bar 16, are curved upwardly (as seen in FIG. 1) to extend over and substantially against the forwardly facing surfaces of portions 10, 11 respectively. These forward end portions 17, 18 terminate below the level of the arm rest 8, and they are curved at their junctures with the seat bars 15, 16 to extend across the oppositely outwardly facing sides of said portions 10, 11.

The rear ends of the seat bars 15, 16 also extend upwardly (as seen in FIG. 1) and these constitute back rest supports respectively designated 20, 21. These back rest supports are substantially longer than the forward end portions 17, 18, and they extend across the rearwardly facing surfaces of the upper portions 10, 11 of legs 3, 5 in the same manner as the portions 17, 18 extend across the forwardly facing surfaces of portions 10, 11.

Coaxial horizontal pivots 22 respectively secure the end portions of the seat bars to the portions 10, 11, and coaxial pivots 23 connect the legs 3, 5 and 4, 6, the latter being at points intermediate the ends of said legs. These pivots 23 secure the legs 3, 5 and 4, 6 together for swinging the upper and lower ends of the legs toward and away from each other and the pivots 22 secure the end portions 17, 18, 20 and 21 to the upper end portions 10, 11 of the legs 3–6 for swinging the seat bars and back rest supports about axes parallel with the axis of pivots 22.

A rectangular, flexible, collapsible seat 25 is secured along two of its opposite edges to the seat bars 15, 16 in any suitable manner, such as by extending the marginal portions of said seat around the seat bars and stitching them to the body of the seat, as indicated in FIG. 1. Thus seat 25 cooperates with the mounted U-members 1, 2 to limit the degree of movement of the ends of the pair of members apart, although pairs of pivotally connected links 26, 27 that are respectively pivotally connected with the lower ends of legs 4, 6 and 3, 5 will also function to limit the said degree of movement of the ends of members 1, 2 apart in the event the seat 25 should become stretched beyond a predetermined degree.

In effect, the seat 25 is suspended from the upper end portions 10, 11 of the legs of members 1, 2 since the seat bars are suspended by pivots 22 from said end portions. However the inward swinging of the seat bars

15, 16 toward each other is restricted by the engagement of the end portions 17, 18, 20, and 21 with the portions 10, 11 of the upper ends of the legs of members 1, 2 when the chair is expanded for use as seen in FIG. 1.

The back rest 28 is also of flexible, collapsible material, such as canvas, and it is formed to provide downwardly opening sockets 29 at its opposite ends thereof into which the back rest supports 20, 21 of the seat bars extend. Thus the back rest connects and extends between the back rest supports 20, 21 and limit the degree of movement of said back rest supports apart. When the chair is expanded or unfolded and is ready for use, as seen in FIG. 1, these back rest supports extend vertically upwardly, and the upper ends of the sockets at the ends of the back rest are closed. The back supports extend to said closed ends. Rivets 30 (FIG. 5) or any other suitable means secures the back rest to the back rest supports so that the back rest cannot be removed from the supports.

When the seat is unfolded to the position shown in FIG. 1 the seat 25 is at normal seat height, and the arm rests are at normal arm supporting height. Also the back rest is at the most comfortable height for a sitter.

By having the upper closed ends 7, 8 of the members 1, 2 form the arm rests, the space between the arm rests may be slightly greater than the space between the back rest supports and the seat bars, which adds to the comfort of the sitter by enabling the arms of the sitter to be more widely spread apart when on the arm rests, than would otherwise be the case, and the outward inclination of the upper portions 10, 11 of the members 1, 2 also provides the sitter with greater freedom than were the ends 10, 11 vertical.

To fold or collapse the chair, it is merely necessary to swing the back rest supports inwardly toward each other, in succession, and downwardly (FIG. 2) toward positions alongside the portions of legs 3—6 that extend downwardly from pivots 22, as seen in FIG. 5, but the members may not be swung to the fully collapsed positions of FIGS. 3, 5, hence the chair may function to support a tray 33 as indicated in dot-dash lines in FIG. 2, or any other article without interference from the back supports, and such tray will be seated on the arm rests 7, 8. The elevation of the tray in this position is approximately table height, hence the tray is at the proper serving height. Obviously the chair seat 25 may itself support an object or person at said elevated height, if desired, and may be used as a high chair for a child.

By swinging the arm rests toward each other to engaging relation from the full line position of FIG. 2, the chair will be fully collapsed. The back rest 28 is folded inwardly to be between the members 1, 2, hence is out of the way.

When the chair is fully collapsed, the runners 12, 13 will be spaced apart, as seen in FIGS. 3, 5, so that the collapsed chair will be self-supporting on any substantially horizontal surface.

To expand or to unfold the chair, it is merely necessary to swing the back rest supports upwarly to upwardly vertically extending positions and the chair will automatically unfold to the position of FIG. 1.

The open ends of the tubular members, such as the upper ends of the portions 17, 18, 20, 21, as seen in FIG. 1 and the rear ends of runners 12, 13 are capped or plugged by any suitable means, both for appearance and for comfort to a person handling the chair or sitting in it.

Changes in details may be made to the form of the invention herein shown and described without departing from the spirit of the invention or the scope of the following claims.

We claim:

1. A folding chair comprising a pair of separate, horizontally extending, parallel, horizontally opposed seat bars and a flexible, folding seat connected along two opposite edges thereof with said bars; rigid angularly extending extensions on opposite ends of said bars similarly projecting therefrom to the same side thereof, a seat support adapted to support said seat bars spaced a substantial distance apart and to support said seat spaced a substantial distance above the ground, means pivotally connecting said extensions with said seat support for swinging said extensions about horizontal axes parallel with said seat bars from downwardly extending positions, when said chair is in folded, collapsed position, toward each other and upwardly to upright positions extending above said seat adjacent to one edge of the latter and vice versa and said extensions being free from obstruction by said seat support for said swinging, a flexible, collapsible back support inseparably secured to the extensions at one of the correspondingly positioned ends of said seat bars for limiting the movement of said last mentioned extensions away from each other when said last mentioned extensions are in said upright position, thereby providing a back rest for a person seated on said seat.

2. A folding chair comprising a pair of separate, horizontally extending, parallel horizontally opposed seat bars and a flexible, folding seat connected along two opposite edges thereof with said bars; rigid angularly extending extensions on opposite ends of said bars similarly projecting therefrom to the same side thereof, a seat support adapted to support said seat bars spaced a substantial distance apart and to support said seat spaced a substantial distance above the ground, means pivotally connecting said extensions with said seat support for swinging said extensions about horizontal axes parallel with said seat bars from downwardly extending positions toward each other and upwardly to upright positions extending above said seat adjacent to one edge of the latter and vice versa, a flexible, collapsible back support inseparably secured to the extensions at one of the correspondingly positioned ends of said seat bars for limiting the movement of said last mentioned extensions away from each other when said last mentioned extensions are in said upright position, thereby providing a back rest for a person seated on said seat, said seat support including arm rests rigid therewith engageable wtih said seat bars when said extensions are in their downward extending positions for limiting the movement of said extensions away from each other.

3. A folding chair comprising a pair of separate, horizontally extending, parallel, horizontally opposed seat bars and a flexible, folding seat connected along two opposite edges thereof with said bars; rigid angularly extending extensions on opposite ends of said bars similarly projecting therefrom to the same side thereof, a seat support adapted to support said seat bars spaced a substantial distance apart and to support said seat spaced a substantial distance above the ground, means pivotally connecting said extensions with said seat support for swinging said extensions about horizontal axes parallel with said seat bars from downwardly extending positions toward each other and upwardly to upright positions extending above said seat adjacent to one edge of the latter and vice versa, a flexible, collapsible back support inseparably secured to the extensions at one of the correspondingly positioned ends of said seat bars for limiting the movement of said last mentioned extensions away from each other when said last mentioned extensions are in said upright position, thereby providing a back rest for a person seated on said seat, said seat support including arm rests rigid therewith engageable with said seat bars when said extensions are in their downward extending positions for limiting the movement of said extensions away from each other, the extensions to which said back supports are secured being substantially longer than the extensions at the other ends of said seat bars.

4. A folding chair comprising a pair of separate, horizontally extending, parallel, horizontally opposed seat

bars and a flexible, folding seat connected along two opposite edges thereof with said bars; rigid angularly extending extensions on opposite ends of said bars similarly projecting therefrom to the same side thereof, a seat support adapted to support said seat bars spaced a substantial distance apart and to support said seat spaced a substantial distance above the ground, means pivotally connecting said extensions with said seat support for swinging said extensions about horizontal axes parallel with said seat bars from downwardly extending positions toward each other and upwardly to upright positions extending above said seat adjacent to one edge of the latter and vice versa, a flexible, collapsible back support inseparably secured to the extensions at one of the correspondingly positioned ends of said seat bars for limiting the movement of said last mentioned extensions away from each other when said last mentioned extensions are in said upright position, thereby providing a back rest for a person seated on said seat, said seat support including a pair of horizontally elongated, arm rests rigidly connected thereto positioned between said seat bars and at approximately the same level as the latter when said extensions extend generally downwardly, whereby said support is adapted to support a horizontally disposed tray thereon.

5. A folding chair that includes a pair of inverted, generally U-shaped members providing two pairs of spaced, opposed upwardly extending legs and a pair of horizontally extending elements integral with and extending between the upper ends of the legs of said pairs, forming the upper closed end of each member, respectively, horizontal, coaxial pivot means connecting the legs of one pair thereof with the legs of the other pair at points intermediate the opposite ends of said legs for swinging said pairs of legs about said pivot means from a collapsed, vertically extending position of said legs with said elements parallel and in relatively close, side by side relation to an extended position in which the legs of said pairs are at a substantial angle to each other and said elements are relatively widely spaced apart, and vice versa; a pair of corresponding horizontally extending rigid seat bars, each extending between the upper end portions of the legs of each pair thereof; means including coaxial pivots connecting each of said bars adjacent to its opposite ends with the upper end portion of the legs of each pair thereof for moving said seat bars relative to said pairs of legs about horizontal axes parallel with said seat bars; a flexible, horizontally extending, collpsible seat secured to said seat bars and extending between them; corresponding extensions integral with said seat bars at one of the corresponding ends thereof extending vertically upwardly when said legs are in said expanded position; a flexible, vertically disposed, collapsible back secured to and extending between said extensions when the latter are in said vertically extending position providing a back support for a person seated on said seat and restricting the movement of said extensions away from each other; said pivots connecting said seat bars with said legs supporting said seat bars in positions spaced a substantial and sufficient distance below the said elements that connect the upper ends of said legs so that said elements will provide arm rests above said seat for a person seated on the latter; said vertical extensions and said seat bars being free from obstruction to movement of said extensions toward each other to downwardly extending positions upon swinging said pairs of legs from said expanded position to said collapsed position.

6. A folding chair comprising: a pair of inverted, generally U-shaped members providing two pairs of spaced opposed legs and a pair of horizontally extending elements integral with and extending between the upper ends of the legs of said pairs forming the upper closed end of each member, respectively, coaxial pivot means connecting the legs of one pair with the legs of the other pair at points intermediate the opposite ends of said legs for swinging said pairs of legs about said pivot members; a pair of corresponding generally U-shaped seat members each providing a pair of upwardly projecting opposed arms and a horizontally extending seat bar integral with and extending between the lower ends of said arms forming the lower closed end of each seat member; coaxial, horizontal pivots securing the arms on each of said seat members to the upper end portions of the legs of each pair thereof with said upper end portions of each pair of legs disposed between the arms of each seat member and with the upper end portions of the two pairs of legs disposed between the seat bars of said pair of seat members; the arms at one of the corresponding ends of said seat bars extending upwardly a substantial distance above the elements connecting the upper ends of said pairs of legs to provide a pair of back supports for a back; a flexible, collapsible back extending between and secured to the said back supports and a flexible, collapsible horizontal seat extending between and secured to said seat bars; said elements connecting the upper ends of said pairs of legs being a substantial distance above said seat bars to provide arm rests for a person seated on said seat.

7. In a folding chair as defined in claim 6, said seat restricting the oppositely outwardly swinging of said seat bars upon swinging the said back supports toward each other and downwardly about said coaxial horizontal pivots whereby the said upper end portions of said pairs of legs including said elements will automatically swing toward each other and toward a collapsed position about said coaxial pivot means of said chair upon said swinging of said back supports.

8. In a folding chair as defined in claim 6, said back restricting movement of said back supports apart about said coaxial horizontal pivots, whereby said seat will be secured against collapse under the weight of a person thereon and the resultant tension on said pair of seat bars tending to move them toward each other about said coaxial horizontal pivots.

References Cited in the file of this patent

UNITED STATES PATENTS

28,430	Willett	May 22, 1860
204,543	Davis	June 4, 1878
278,447	Mitchell	May 29, 1883
707,841	Harrison	Aug. 26, 1902
1,765,845	Melish	June 24, 1930
1,799,029	Smith	Mar. 31, 1931

FOREIGN PATENTS

1,038,103	France	May 6, 1953
1,091,112	France	Oct. 27, 1954
1,135,681	France	Dec. 17, 1956
1,161,907	France	Mar. 31, 1958
164,416	Sweden	Aug. 26, 1958