(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization

International Bureau



(10) International Publication Number WO 2024/009291 A1

(43) International Publication Date 11 January 2024 (11.01.2024)

(51) International Patent Classification: A47C 1/026 (2006.01) A47C 7/50 (2006.01) A47C 4/12 (2006.01)

(21) International Application Number:

PCT/IL2023/050395

(22) International Filing Date:

13 April 2023 (13.04.2023)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

294549 06 July 2022 (06.07.2022) IL

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- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, MG, MK, MN, MU, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, ME, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

with international search report (Art. 21(3))

(54) Title: CHAIR

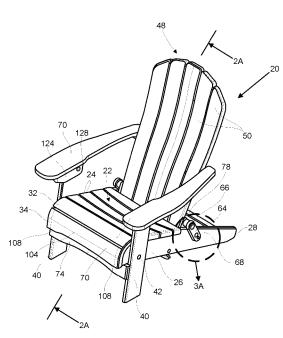
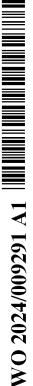


FIG. 1A

(57) Abstract: The disclosure concerns foldable chairs that comprise a seat portion with a pair of rear legs extending backwardly from sides of the seat portion; a pair of front legs each pivotally secured at a middle portion thereof foldable chair to a front portion of the seat portion, a backrest, a pair of side links, each pivotally extending between a side, bottom portion of the backrest, and a front portion of the rear legs; a pair of armrests each pivotally articulated at a rear end thereof to a middle portion of a side of the backrest and at a front portion each armrest is pivotally coupled to a top portion of a respective front leg; and a footrest displaceable between an extended position and a stowed position, wherein said footrest is slidable between its respective positions along a curved path, and wherein the chair is manipulable between an erect, siting position, and a folded position, wherein at the folded position the front legs are dispose parallel along side bars of the seat portion, and the backrest extends over the seat portion.



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CHAIR

TECHNOLOGICAL FIELD

The present disclosure concerns a chair. More particularly, the disclosure is directed to a foldable chair, and even more particularly, the disclosure concerns an Adirondack chair.

BACKGROUND ART

References considered to be relevant as background to the presently disclosed subject matter are listed below:

- CA2711017;

- US5,911,469;

- US8,814,261; and

- USD704,464

Acknowledgement of the above references herein is not to be inferred as meaning that these are in any way relevant to the patentability of the presently disclosed subject matter.

BACKGROUND

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Folding chairs with which the present disclosure concerns are commonly known as "Adirondack chairs", occasionally also known as "Westport plank" chairs, "Muskoka chairs" or "Laurentian chairs". Such chairs are believed to be first created in 1903, and have little changed.

CA2711017 discloses a chair provided with a leg support integrated into the seat on the principle of a horizontal drawer. The chair is provided a handle on the side of the seat, slide horizontally which allows the leg support to be moved forward or backward.

US5,911,469 discloses a folding Adirondack chair that has a collapsed position and an in-use position. The chair includes a combined seat bottom and rear leg assembly that is pivotally mounted to the combined seat bottom and rear leg assembly, a front leg assembly that is pivotally mounted to the combined seat bottom and rear leg assembly, an armrest assembly that is pivotally mounted to both the seat back assembly and the front leg assembly, and a stop assembly that maintains the chair in the in-use position. The stop

assembly comprises a pair of pivot blocks that are fixedly attached to the pair of rails of the combined seat bottom and rear leg assembly and pivotally connected to the seat back assembly, and a pair of stop blocks that are fixedly attached to the pair of rails of the combined seat bottom and rear leg assembly and extend forwardly from fixed abutment with the pair of pivot blocks to abutment with the pair of front legs of the front leg assembly when the folding Adirondack chair is in the in-use position so as to prevent pivoting of the pair of front legs of the front leg assembly, which by way of the elongated ribs of the armrest assembly, prevents pivoting of the seat back assembly and maintains the folding Adirondack chair in the in-use position.

US8,814,261 discloses collapsible chairs and related chair systems, including a base member comprising a seat surface configured to support a user sitting thereon, a back supporting member behind the seat surface configured to support a user's back when a user is seated, and parallel first and second side members each including first and second fulcrums. The first fulcrums connect the side members to the base member disposed therebetween. The second fulcrums connect the side members to the back supporting member disposed therebetween. The side members define a frame within which the back supporting member and the base member may be rotated about their respective fulcrums. The fulcrums allow the chair to be collapsed to a more compact configuration (e.g., for storage).

USD704,464 is an ornamental design for a lounge chair.

GENERAL DESCRIPTION

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According to the present disclosure there is provided a foldable chair comprising a seat portion with a pair of rear legs extending backwardly from sides of the seat portion; a pair of front legs each pivotally secured at a middle portion thereof to a front portion of the seat portion; a backrest; a pair of side links, each pivotally extending between a side, bottom portion of the backrest, and a front portion of the rear legs; a pair of armrests each pivotally articulated at a rear end thereof to a middle portion of a side of the backrest and at a front portion each armrest is pivotally coupled to a top portion of a respective front leg; and a footrest displaceable between an extended position and a stowed position, wherein said footrest is slidable between its respective positions along a curved path, and wherein the chair is manipulable between an erect, siting position, and a folded position,

wherein at the folded position the front legs are dispose parallel along side bars of the seat portion, and the backrest extends over the seat portion.

Any one or more of the following features, designs and configuration can be applied to any one or more of the aspects and embodiments of the present disclosure, separately or in various combinations thereof:

- The backrest can be reclinable between at least two positions, wherein a fore end of each armrest is configured with a plurality of arresting recesses selectively engageable with a positioning pin fixed at a top portion of each front leg, and wherein the backrest pivots about the backrest arresting arrangement;
- The rear legs can be configured at a front portion thereof with a backrest arresting arrangement for pivotally arresting a bottom pivot of the backrest at the siting position and however released at the folded position;

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- At the folded position a bottom end of each front leg faces backwards, in direction of the rear leg;
- A backrest arresting arrangement can be configured as a socket disposed at a front portion of the rear legs, configured for partially cradling pivot pins projecting sidewards at a bottom portion of the backrest;
- The pivot pins of the backrest coaxially extend with a pivot axle of the side link articulated to the backrest;
- The bottom edge of the backrest is floating, whereby at the folded position it disengages from an arresting rear edge portion of the seat portion, and the floating side link swings backwards, whereby the pivot pins of the backrest disengage from the sockets;
- A bottom edge of the backrest can be supported over a rear edge portion of the seat portion;
 - An inside face of each side bar of the seat portion is configured with an arc-shaped reses slidingly accommodating a curved guide rail laterally projecting along side edges of the footrest;
- At the extended position a front bottom edge of the footrest can reach a bottom end of the front legs;
- At the extended position of the footrest a front portion of the seat portion overlaps over a rear portion of the footrest;

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- The footrest can be configured, at a fore portion thereof, with a support leg for elevating a fore end of the footrest at the extended position;
- At the stowed position the support leg of the footrest is collapsed backwards and is fully received within a space below the footrest;
- At the stowed position a front edge of the footrest can extend flush over a front surface of the seat portion;
- At the stowed position a front edge of the footrest can extend flush within a front surface of the seat portion;
- A first locking arrangement can be provided for arresting the chair at the folded position, whereby at the folded position a first safety pin is insertable through at least one of the front legs and through a neighboring side bar of the seat portion, thereby preventing the chair from unfolding;
- At the sitting position the first safety pin of the first locking arrangement is insertable through the side leg and through a front portion of the neighboring side bar of the seat portion, thereby preventing the chair from folding;
- A second locking arrangement can be provided for arresting the chair at the sitting position, whereby a second safety pin is insertable through a bottom end of at least one of the side links and through a front portion of a neighboring rear leg, thereby preventing the chair from folding;
- At the folded position the second safety pin of the second locking arrangement is insertable through a side portion of the stowed footrest, thereby preventing the footrest from sliding into an extended position;
- The first safety pin and the second safety pin can be secured by a tie down cable to the chair;
- The front legs can be fixedly secured at a spaced-apart relation by a front bar extending at a front portion of the front legs, below the support seat;
- The rear legs can be fixedly secured at a spaced-apart relation by a rear bar extending at a rear portion of the rear legs;
- The footrest can be ergonomically designed and has a curved cross section;
- At the extended position the footrest smoothly coextends with the seat portion;

• The side bars of the seat portion are coextensive with the rear legs;

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- The rear legs are uniform with the side bars of the seat portion;
- A seating surface of the seat portion is integral with the side bars of the seat portion;
- The seat portion comprises a pair of side bars and the rear legs are coextensive with said side bars;
 - The chair is made of polymeric material;
 - The chair is made of recycled material;
 - The cahier has the appearance of natural wood;
- At the sitting position of the chair, a bottom edge of the backrest is supported over a rear edge portion of the seat portion and at the folded position the bottom edge of the backrest disengages from the rear edge portion of the seat portion, and the floating link swings backwards, whereby the pivot pins disengage from the sockets.

15 BRIEF DESCRIPTION OF THE DRAWINGS

In order to better understand the subject matter that is disclosed herein and to exemplify how it may be carried out in practice, embodiments will now be described, by way of non-limiting example only, with reference to the accompanying drawings, in which:

- Fig. 1A is a front perspective view of a chair according to the present disclosure;
 - **Fig. 1B** is a rear perspective view of the chair of Fig. 1A;
 - **Fig. 1C** is a bottom perspective view of the chair of Fig. 1A, with the backrest at an upright position;
 - Fig. 2A is a section along line 2A 2A in Fig. 1A;
- Fig. 2B is a planar side view of Fig. 2A;
 - Fig. 3A is an enlargement of the portion marked 3A in Fig. 1A;
 - **Fig. 3B** is the same as Fig. 3A, however with a side link removed for sake of clarification;
- **Fig. 4A** is a perspective view of the chair according to the present disclosure, with its footrest at an extended position;
 - Fig. 4B is a section along line 4B 4B in Fig. 4A;
 - Fig. 4C is a bottom view of Fig. 4B;

Fig. 5A is the same as Fig. 4A, however with a support leg of the footrest at a deployed position;

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- Fig. 5B is section along line 5B 5B in Fig. 5A;
- Fig. 6A is a side view of the chair subject of the present disclosure, with the backrest at an intermediate reclined position;
 - Fig. 6B is a section through the chair of Fig. 6A;
 - **Fig. 7A** is a side view of the chair subject of the present disclosure, with the backrest at a third reclined position;
 - Fig. 7B is a section through the chair of Fig. 7A;
- Fig. 8A is a front, top perspective view of the chair subject of the present disclosure, at a folded position;
 - Fig. 8B is a side view of Fig. 8A;
 - **Fig. 8C** is a planar side view, section along line 8C 8C in Fig. 8A;
- **Fig. 9A** is a rear, top perspective view of the chair subject of the present disclosure, at a folded position;
 - Fig. 9B is a section along line 9B 9B in Fig. 9A;
 - Fig. 9C is an enlargement of the portion marked 9C in Fig. 9B;
 - **Fig. 9D** is a rear, bottom perspective view of the chair subject of the present disclosure, at a folded position;
- Fig. 9E is a section along line 9E 9E in Fig. 9A;
 - **Fig. 10A** is a right side, rear perspective view of the chair subject of the present disclosure, at a folded position;
 - Fig. 10B is a section along line 10B 10B in Fig. 10A;
 - Fig. 10C is a section along line 10C 10C in Fig. 10A; and
- Fig. 10D is an enlargement of the portion marked 10D in Fig. 10C.

DETAILED DESCRIPTION OF EMBODIMENTS

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Attention is first directed to Figs. 1A-1C, directed to a folding chair according to an example of the present disclosure, generally designated **20**. The chair **20** is a so-called "Adirondack chair" made of molded plastic material.

The chair 20 comprises a seat portion 22 having a plurality of slats 24 integrally molded over a pair of side bars 26 with a pair of rear legs 28 integrally and coextensively extending backwardly from of the side bars 26. The seat portion 28 has an ergonomic

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cross section, i.e. a concavity (seen for example in Figs. 2A and 2B). A front portion of the seat portion is rounded and is configured with a front rounded slat **32** and a downward extending slat like end member **34**, to be discussed hereinafter in greater detail.

The chair **20** further comprises a pair of front legs **40**, each pivotally secured at a middle portion **42** thereof to a front portion of the side bars **26** of the seat portion **22**. A backrest **48** is monoblock molded and comprises a plurality of integral back slats **50**, ergonomically shaped (best seen in Figs. 6B and 7A). The backrest **48** is linked at a bottom portion of each respective side thereof to a floating side link **64**, wherein each side link is pivotally coupled by pivot axle **66** to a side, bottom portion of the backrest **48**, and pivotally coupled at **68** to a front portion of each of the rear legs **28**.

The chair **20** is further configured with a pair of armrests **70**, each pivotally articulated at a rear end thereof **72** to a middle portion of a side of the backrest **48**, and at a front portion each armrest **70** is pivotally coupled to a top portion of a respective front leg **40**, as will be discussed herein below.

The front legs 40 are fixedly secured to one another at a spaced-apart relation by a front bar 74 extending at a front portion of the front legs 40 and below the side bars 26 of seat portion 28. Likewise, the rear legs 28 are fixedly secured at a spaced-apart relation by a rear bar 78 extending at a rear portion of the rear legs 28.

As can be seen, best in Figs. 3A and 3B, a backrest arresting arrangement is configured for pivotally supporting a bottom end of the backrest 48, said backrest arresting arrangement comprises a socket 80 disposed at a top, front portion of each of the rear legs 28, said socket 80 configured for partially cradling pivot pins 82 projecting laterally (sidewards) at a bottom portion of the backrest 48, whereby the backrest 48 is pivotable thereabout. The arrangement is such that the pivot pins 82 of the backrest 48 coaxially extend with a pivot axle 66 of the side link 64 articulated to the backrest 48.

It is further seen that at a sitting position of the chair **20**, a bottom edge **25** of the backrest **48** is supported over a rear edge portion **27** of the seat portion **22** (Figs. 2A, 2B, 4B, 5B, 6B and 7B).

Chair 20 further comprises a curved (arched) footrest 90, configured at its respective sides with a laterally projecting curved guide rail 94 (Fig. 5A) curved in conformity with the curved footrest 90, and with a recess 98 (Figs. 4C and 5B) extending at an inside face 26i of each of the side bars 26, below the slats 24 of seat portion 22, whereby the footrest 90 is slidingly displaceable along a correspondingly curved path

between a stowed position (Figs. 1A-1C, 2A, 2B, 6A, 6B, 7C) and an extended position (Figs. 4A-5B).

The footrest 90 is also a monoblock molded element comprising a plurality of slats 102, wherein a front-most slat 104 faces downward such that at the extended position a bottom edge of said slat 104 engages a floor surface (not shown) and supports a front end of the footrest 90. It can be seen that a bottom edge of the slat 104 is configured with two ground engaging portions 108 at end portions thereof. At the stowed position, the footrest 90 is fully received under the seat portion 22, wherein the front slat 104 extends flush between end members 34 of the seat portion, below front rounded slat 32, whereby slat 108 is flush and compliments the ergonomic shape of the front portion of seat portion 22.

When the footrest 90 is at the extended position, it is coextensive and continuous with the ergonomic shape of the seat portion 22.

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Optionally, at the extended position of footrest 90, its front portion can be elevated by a support leg 116 (Figs. 5A and 5B) pivotally articulated at a fore end 118 of the footrest, and however wherein at the stowed position said support leg 116 is folded and is fully received within a space 120 below the footrest 90 (as seen in Fig. 6B), so as not to obstacle free sliding displacement of the footrest 90.

The backrest 48 is pivotally reclinable between several positions (three in the illustrated example). Accordingly, a fore end of each armrest 70 is configured with a front leg arresting portion 124 configured in turn with a plurality (three) arresting recesses 126_i, 126_{ii} and 126_{iii}, selectively engageable with a positioning pin 128 fixed at a top portion of each front legs 40. Changing the angle of reclination of the backrest 48 takes place by elevating the front end of the armrests 70 (in direction of arrow 130 in Fig. 6A) and pulling/pushing the armrest 70 with the backrest 48 articulated thereto, wherein the backrest pivots about the backrest arresting arrangement into the desired position, and then lowering the front end of the armrests 70 so that positioning pin 128 re-arrests within a respective one of arresting recesses 126_i, 126_{ii} and 126_{iii}. In Figs. 6A and 6B the back rest is illustrated at an intermediate reclined position, wherein positioning pin 128 is arrested by recess 126_{ii}. In Figs. 7A and 7B the back rest is illustrated at a rear-most reclined position, wherein positioning pin 128 is arrested by recess 126_{ii}. Likewise, in Fig. 1C the back rest 48 is illustrated at a front-most position, wherein positioning pin 128 is arrested by recess 126_{ii}.

The chair **20** is manipulable between an erect, siting position, and a folded position (Figs. 8A-8C and 9A-9E), wherein at the folded position the front legs **40** are dispose parallel along side bars **26** of the seat portion **22**, with bottom end **136** of each front leg faces backwards, in direction of the rear leg **28**, and the backrest **48** extends over the seat portion **22**.

Folding the chair is carried out by first displacing the footrest 90 into the stowed position, and disengaging the first locking arrangement and second locking arrangement, as will be discussed hereinafter. Then, backrest 48 is pivotally tilted forward, in direction of arrow 140 (Fig. 7A), resulting in the front legs 40 pivoting in the same direction (as illustrated by arrow 142 in Fig. 7A), until reaching the fully collapsed/folded position (Figs. 8A-8C). Erecting the chair 20 into its sitting position takes place in a reverse operation, namely the backrest is pivotally displaced in direction opposing that of arrow 140.

It is noted (Fig. 8A-8C) that at the folded position the bottom edge 25 of the backrest 48 disengages from the rear edge portion 27 of the seat portion 22, and the floating link 64 swings backwards, whereby the pivot pins 82 disengage from the sockets 80.

With further reference made to Figs. 9A to 10D, it is seen that the chair 20 is further configured with a first locking arrangement generally designated 150 and a second locking arrangement generally designated 170. The first locking arrangement 150 is configured for arresting the chair at the folded position, whereby at the folded position a first safety pin 152 is insertable through at least one of the front legs 40 and through a neighboring side bar 26 of the seat portion 22, thereby preventing the chair 20 from unintentional unfolding.

At the sitting position the first safety pin 152 of the first locking arrangement 150 is insertable through the side leg 40 and through a front portion of the neighboring side bar 26 of the seat portion 22, thereby preventing the chair from unintentional folding.

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The second locking arrangement 170 is provided for arresting the chair 20 at the sitting position, whereby a second safety pin 172 is insertable through a bottom end of at least one of the side links 64 and through a front portion of a neighboring rear leg 26, thereby preventing the chair from unintentional folding. At the folded position the second safety pin 172 of the second locking arrangement 170 is insertable through a side portion

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of the stowed footrest 90, thereby preventing the footrest from unintentional sliding into an extended position.

The first safety pin 152 and the second safety pin 172 are each secured to a portion of the chair by tie down cables 160.

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CLAIMS:

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1. A foldable chair comprising a seat portion with a pair of rear legs extending backwardly from sides of the seat portion; a pair of front legs each pivotally secured at a middle portion thereof foldable chair to a front portion of the seat portion; a backrest; a pair of side links, each pivotally extending between a side, bottom portion of the backrest, and a front portion of the rear legs; a pair of armrests each pivotally articulated at a rear end thereof to a middle portion of a side of the backrest and at a front portion each armrest is pivotally coupled to a top portion of a respective front leg; and a footrest displaceable between an extended position and a stowed position, wherein said footrest is slidable between its respective positions along a curved path, and wherein the chair is manipulable between an erect, siting position, and a folded position, wherein at the folded position the front legs are dispose parallel along side bars of the seat portion, and the backrest extends over the seat portion.

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- 2. The foldable chair of claim 1, wherein the backrest is reclinable between at least two positions, wherein a fore end of each armrest is configured with a plurality of arresting recesses selectively engageable with a positioning pin fixed at a top portion of each front leg, and wherein the backrest pivots about the backrest arresting arrangement.
 - 3. The foldable chair of claim 1, wherein the rear legs are configured at a front portion thereof with a backrest arresting arrangement for pivotally arresting a bottom pivot of the backrest at the siting position and however released at the folded position.
 - **4.** The foldable chair of claim 1, wherein, at the folded position, a bottom end of each front leg faces backwards, in direction of the rear leg.
 - 5. The foldable chair of claim 1, further comprising a backrest arresting arrangement in the form of a socket disposed at a front portion of the rear legs, and configured for partially cradling pivot pins projecting sidewards at a bottom portion of the backrest.
 - 6. The foldable chair of claim 5, wherein the pivot pins of the backrest coaxially extend with a pivot axle of the side link articulated to the backrest.
 - 7. The foldable chair of claim 5, wherein the bottom edge of the backrest is floating, whereby at the folded position it disengages from an arresting rear edge portion of the seat portion, and the floating side link swings backwards, whereby the pivot pins of the backrest disengage from the sockets.
 - **8.** The foldable chair of claim 1, wherein a bottom edge of the backrest is supported over a rear edge portion of the seat portion.

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- 9. The foldable chair of claim 1, wherein an inside face of each side bar of the seat portion is configured with an arc-shaped reses slidingly accommodating a curved guide rail laterally projecting along side edges of the footrest.
- 10. The foldable chair of claim 1, wherein at the extended position a front bottom edge of the footrest reaches a bottom end of the front legs.
- 11. The foldable chair of claim 1, wherein, at the extended position of the footrest, a front portion of the seat portion overlaps over a rear portion of the footrest.
- 12. The foldable chair of claim 1, wherein the footrest is configured, at a fore portion thereof, with a support leg for elevating a fore end of the footrest at the extended position.
- 10 **13.** The foldable chair of claim 12, wherein, at the stowed position, the support leg of the footrest is collapsed backwards and is fully received within a space below the footrest.
 - 14. The foldable chair of claim 1, wherein, at the stowed position, a front edge of the footrest extends flush over a front surface of the seat portion.
- 15. The foldable chair of claim 1, wherein, at the stowed position, a front edge of the footrest extend flush within a front surface of the seat portion.
 - 16. The foldable chair of claim 1, wherein a first locking arrangement is provided for arresting the chair at the folded position, whereby at the folded position a first safety pin is insertable through at least one of the front legs and through a neighboring side bar of the seat portion, thereby preventing the chair from unfolding.
- 17. The foldable chair of claim 16, wherein at the sitting position the first safety pin of the first locking arrangement is insertable through the side leg and through a front portion of the neighboring side bar of the seat portion, thereby preventing the chair from folding.
- 18. The foldable chair of claim 1, wherein a second locking arrangement is provided for arresting the chair at the sitting position, whereby a second safety pin is insertable through a bottom end of at least one of the side links and through a front portion of a neighboring rear leg, thereby preventing the chair from folding.
 - 19. The foldable chair of claim 18, wherein, at the folded position, the second safety pin of the second locking arrangement is insertable through a side portion of the stowed footrest, thereby preventing the footrest from sliding into an extended position.
 - 20. The foldable chair of claim 1, wherein the front legs are fixedly secured at a spaced-apart relation by a front bar extending at a front portion of the front legs, below the side bars of the seat portion.

- 21. The foldable chair of claim 1, wherein the rear legs are fixedly secured at a spaced-apart relation by a rear bar extending at a rear portion of the rear legs.
- 22. The foldable chair of claim 1, wherein the footrest is ergonomically designed and has a curved cross section.
- 5 **23.** The foldable chair of claim 1, wherein at the extended position the footrest smoothly coextends with the seat portion.
 - 24. The foldable chair of claim 1, wherein the side bars of the seat portion are coextensive with the rear legs.
- 25. The foldable chair of claim 1, wherein the rear legs are uniform with the side bars of the seat portion.
 - **26.** The foldable chair of claim 1, wherein a seating surface of the seat portion is integral with the side bars of the seat portion.
 - 27. The foldable chair of claim 1, wherein the seat portion comprises a pair of side bars and the rear legs are coextensive with said side bars.
- 15 **28.** The foldable chair of claim 1, wherein the chair is made of polymeric material.
 - 29. The foldable chair of claim 28, wherein the chair is made of recycled material.
 - **30.** The foldable chair of claim 28, wherein the chair has the appearance of natural wood.
- 31. The foldable chair of claim 7, wherein, at the sitting position of the chair, a bottom edge of the backrest is supported over a rear edge portion of the seat portion and at the folded position the bottom edge of the backrest disengages from the rear edge portion of the seat portion, and the link swings backwards, whereby the pivot pins disengage from the sockets.

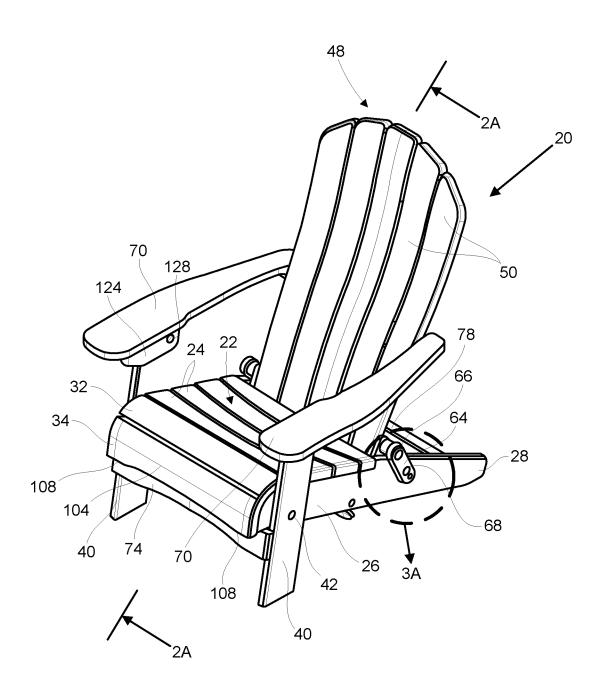


FIG. 1A

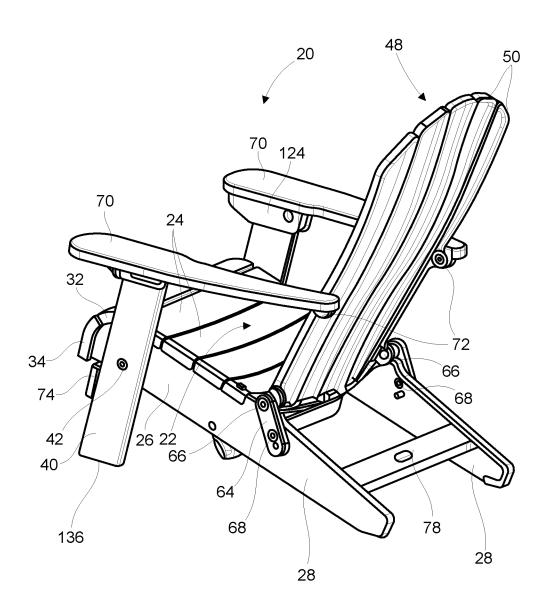


FIG. 1B

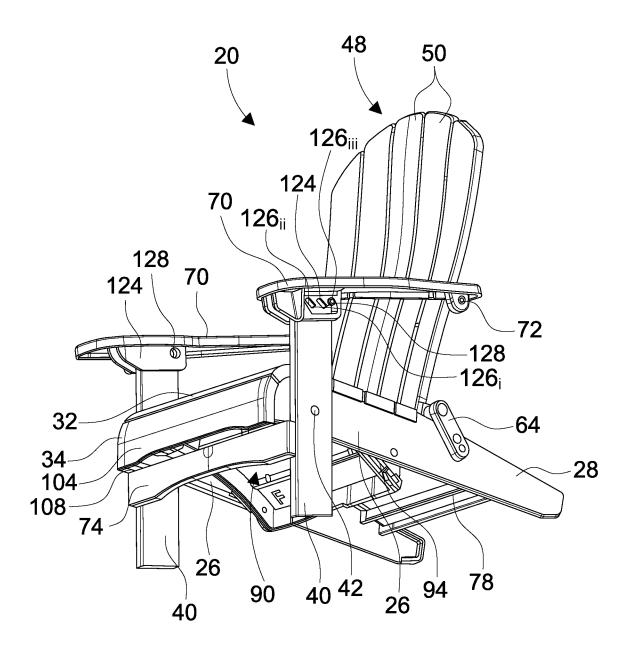
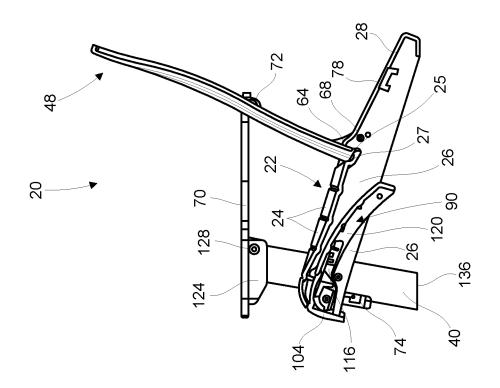
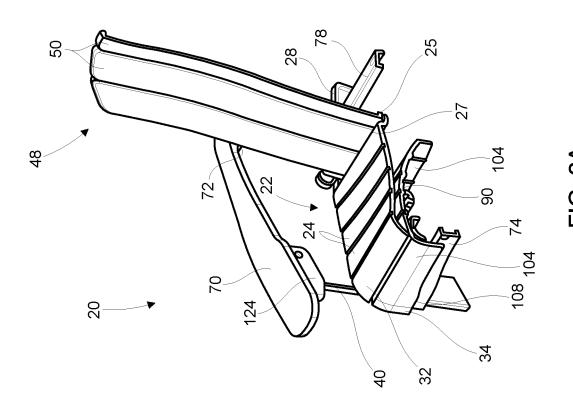


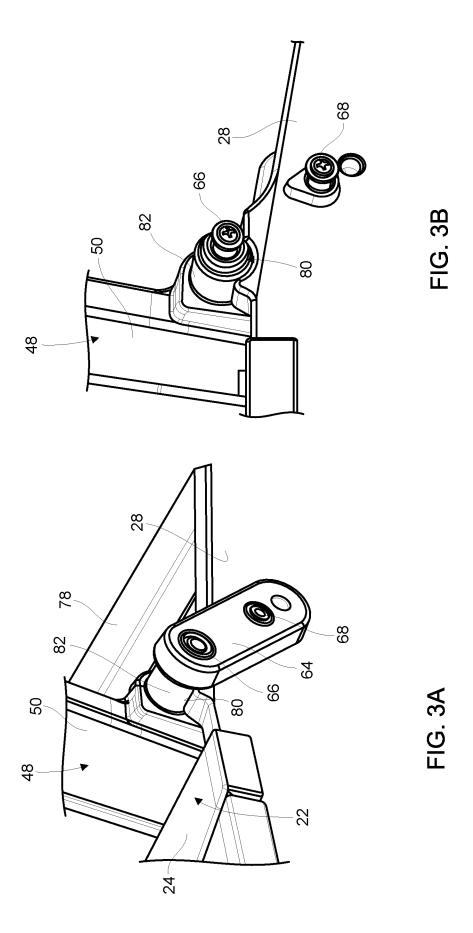
FIG. 1C











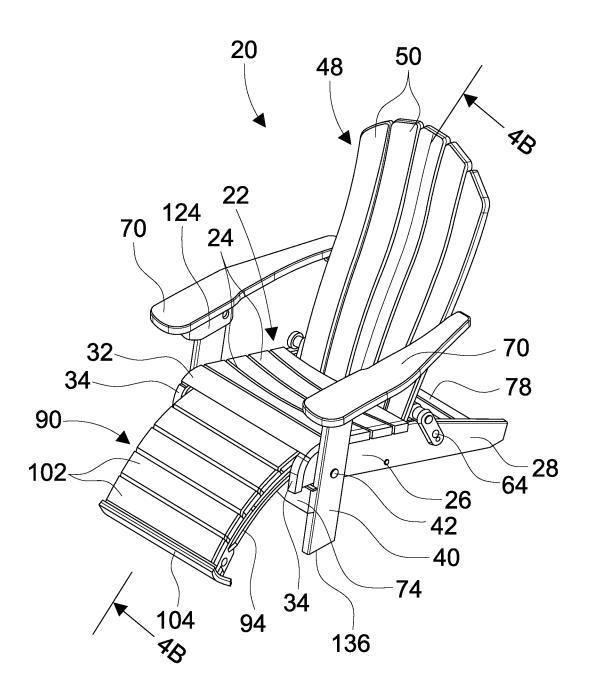
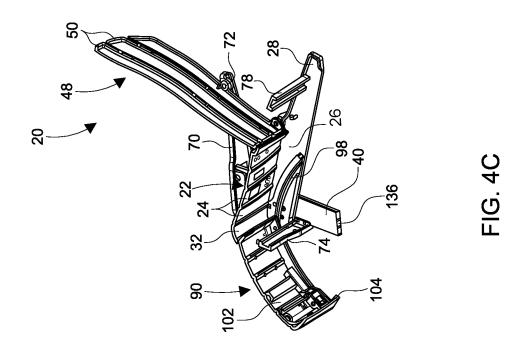
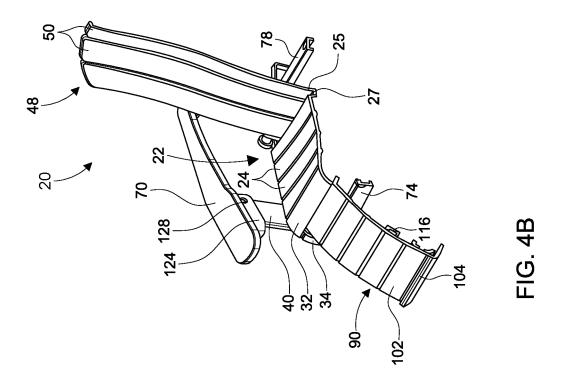
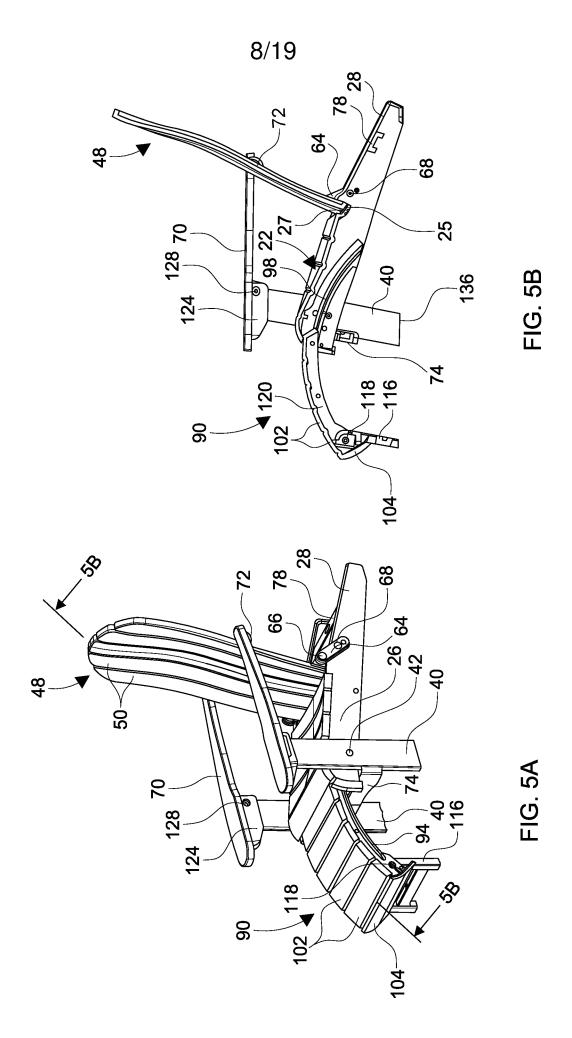


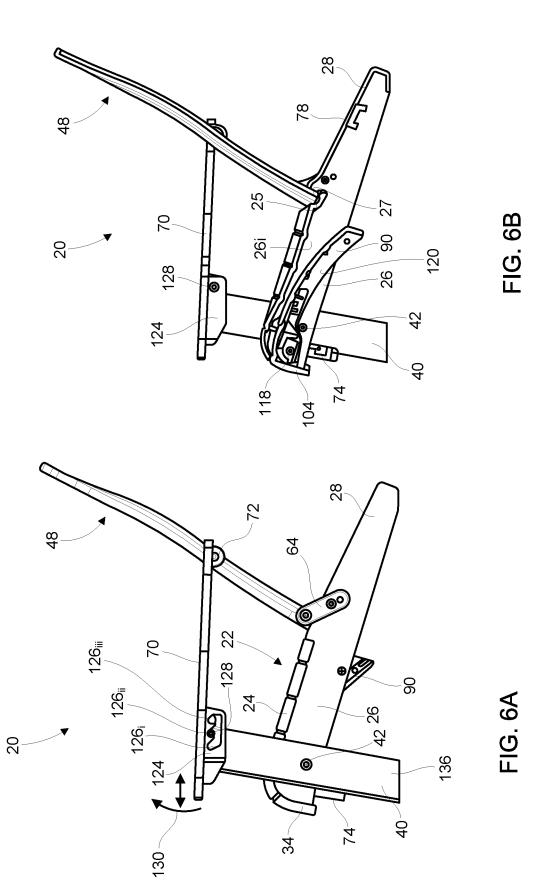
FIG. 4A











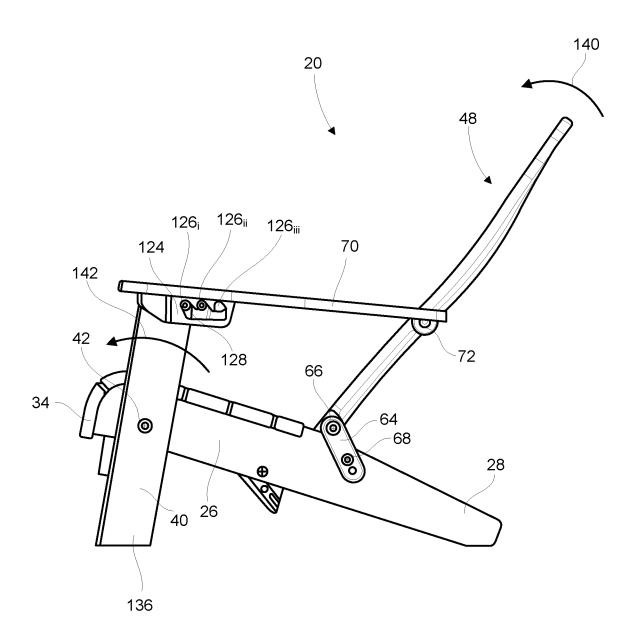


FIG. 7A

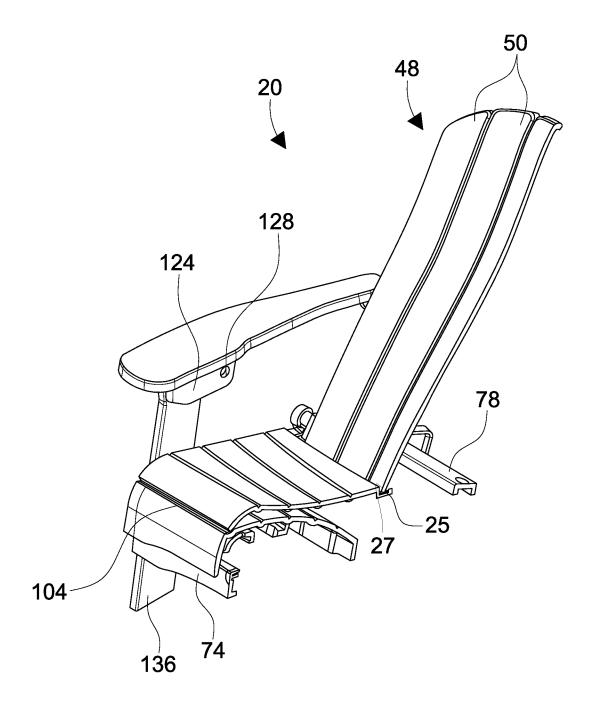
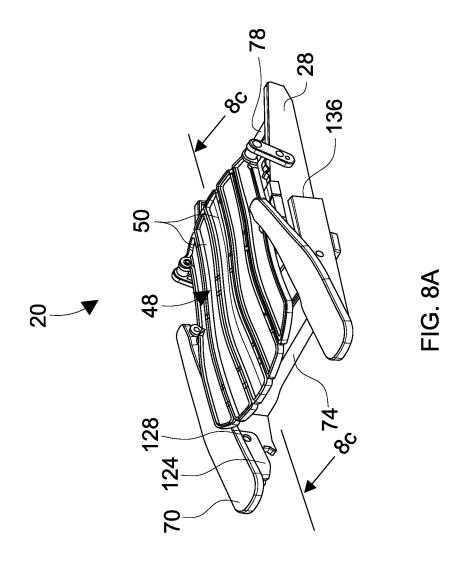
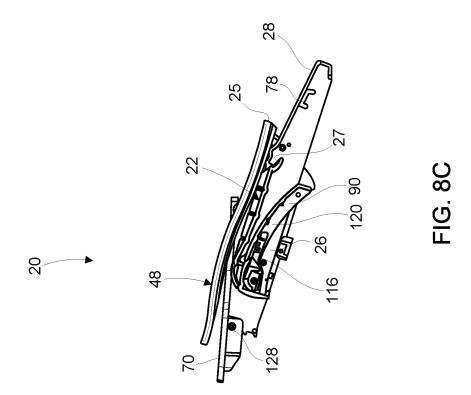
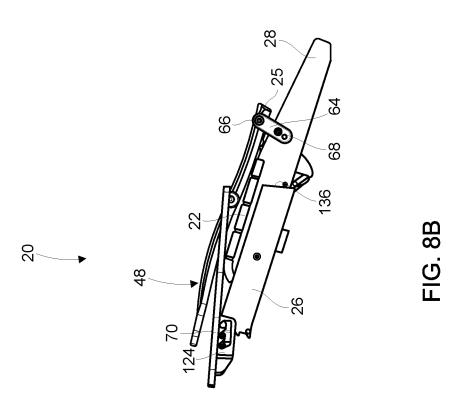


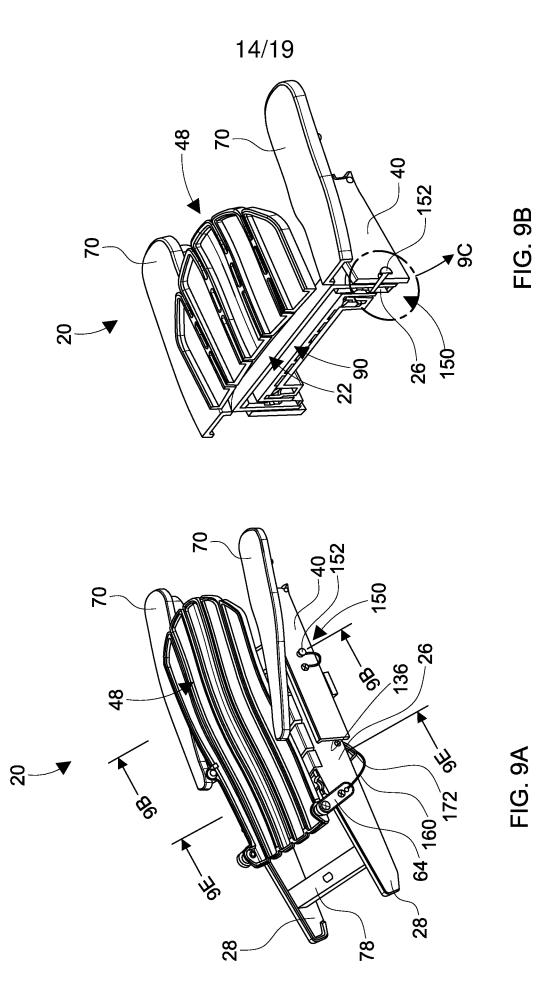
FIG. 7B



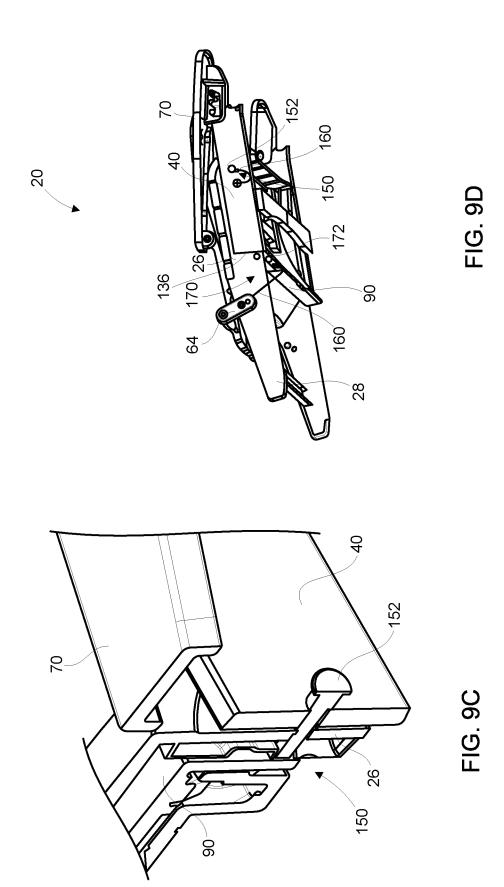












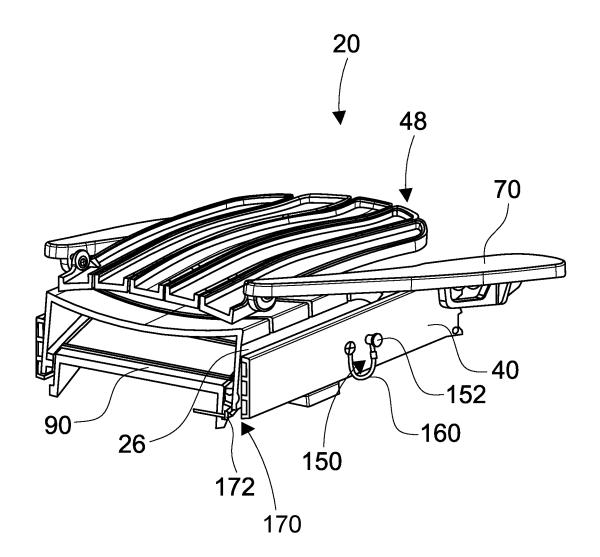


FIG. 9E

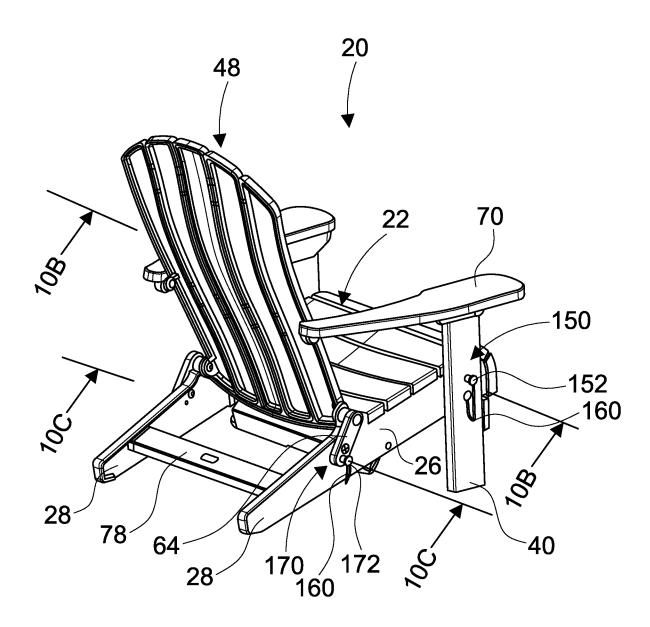
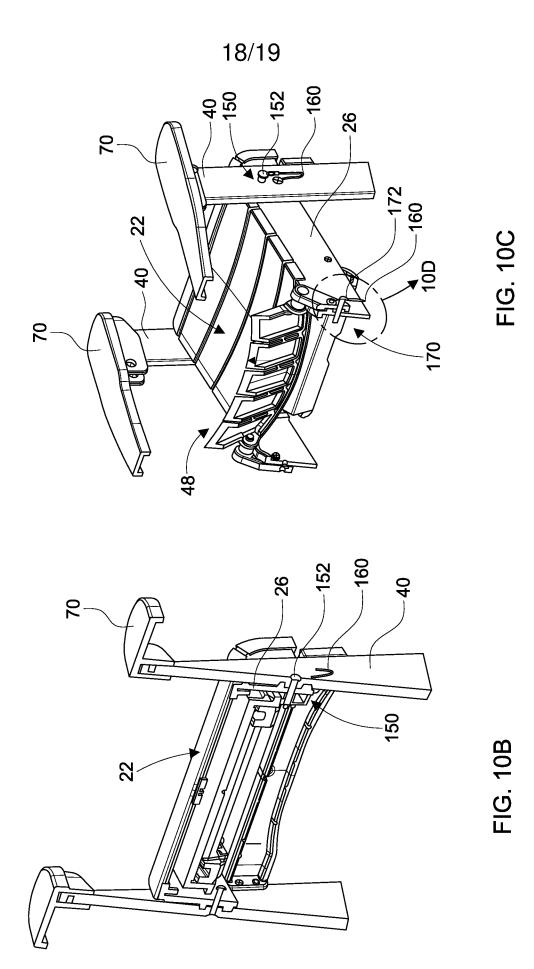


FIG. 10A



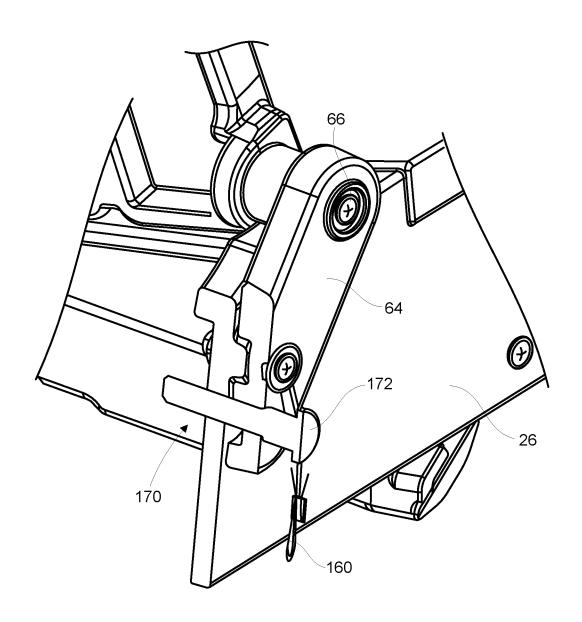


FIG. 10D

INTERNATIONAL SEARCH REPORT

International application No

PCT/IL2023/050395

A. CLASSIFICATION OF SUBJECT MATTER
INV. A47C1/026 A47C4/12 A47C7/50
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A47C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
ĸ	CA 2 711 017 A1 (DE LADURANTAYE YVON Y D L [CA]) 6 February 2012 (2012-02-06)	1-6,8,9, 14,16-30
	cited in the application page 4 - page 5; figure 1	
x	FR 330 261 A (MAXIME CLAIR [FR])	1-4,7,
	14 August 1903 (1903-08-14)	10-13, 15,31
	figures 1-4 	
A	GB 451 194 A (JOHN CHARLES OSWALD GRUNERT) 31 July 1936 (1936-07-31) figures 1-4	20-22
A	US 3 301 596 A (EOS ERIC A) 31 January 1967 (1967-01-31) figure 1	1
	 -/	

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Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention		
"E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"X" document of particular relevance;; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance;; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search	Date of mailing of the international search report		
20 June 2023	28/06/2023		
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Ibarrondo, Borja		

INTERNATIONAL SEARCH REPORT

International application No
PCT/IL2023/050395

egory* Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
DE 40 35 652 A1 (KURZ GMBH [DE]) 14 May 1992 (1992-05-14) figure 1	1

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Information on patent family members

International application No
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