Jan. 21, 1958 A. LORENZ 2,820,508

ARTICLE OF REPOSE WITH COORDINATED SEAT, BACK-REST AND LEG-REST

Filed Jan. 28, 1954 3 Sheets-Sheet 1

Fig. 1.

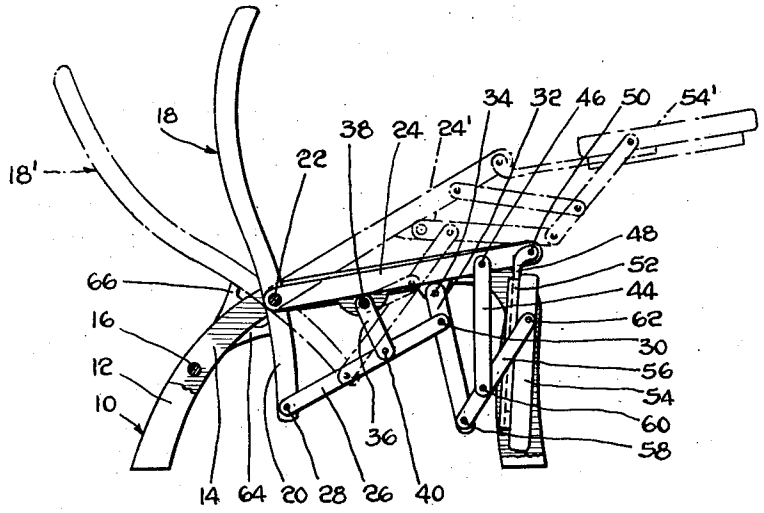
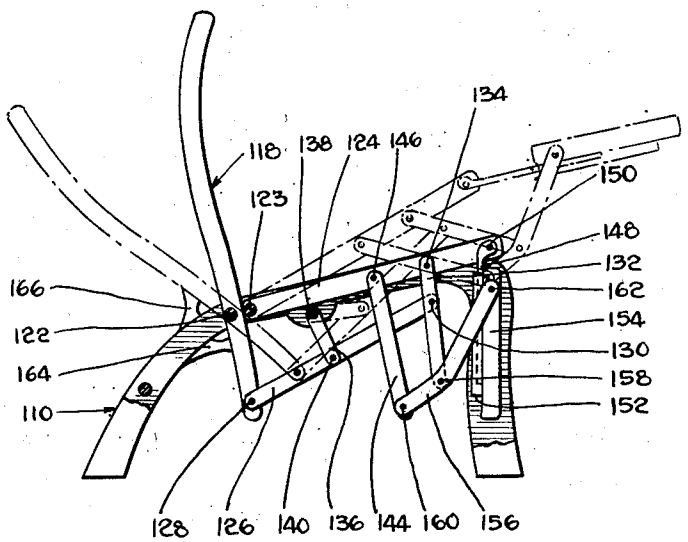


Fig. 2.



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Fig. 3.

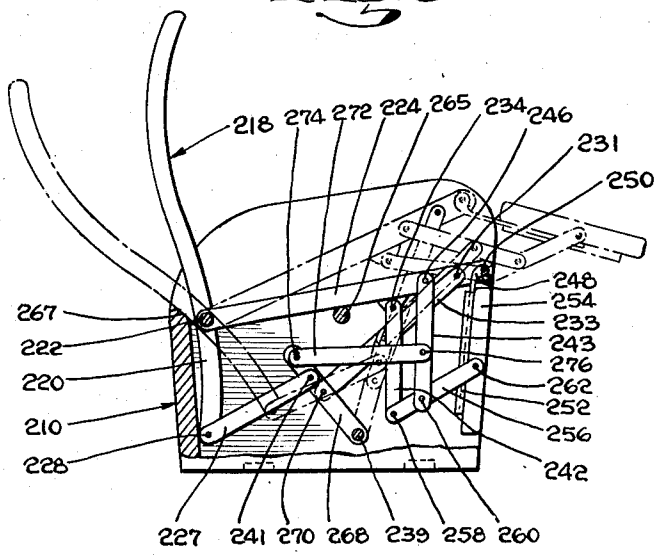
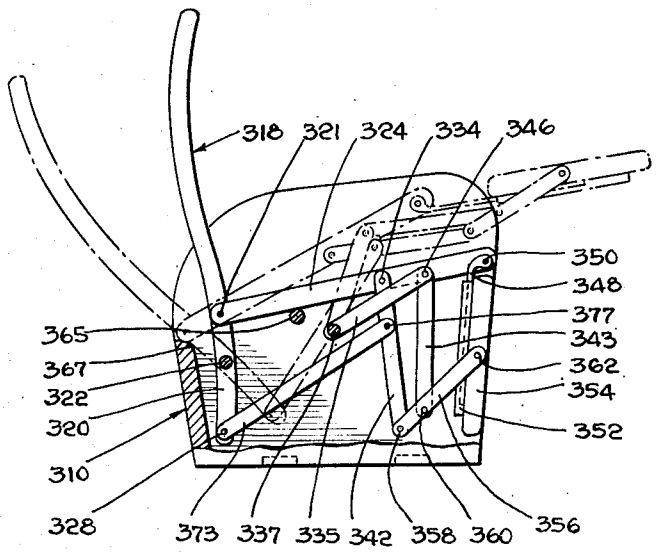


Fig. 4.



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Fig. 5.

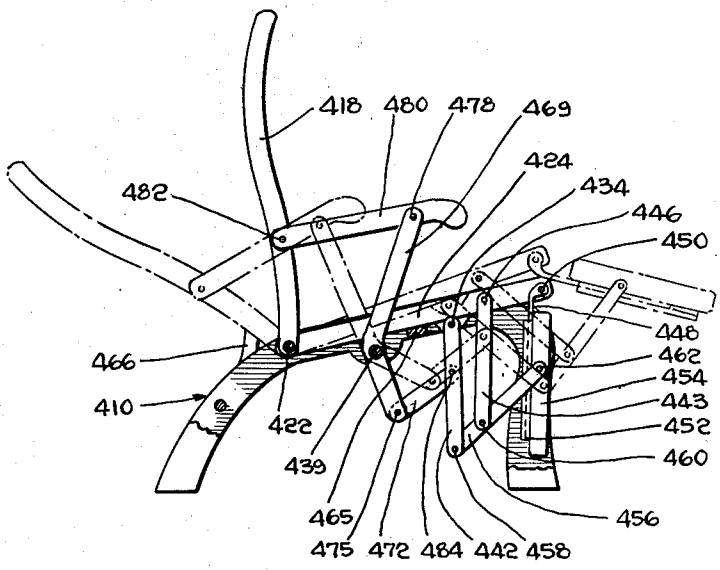
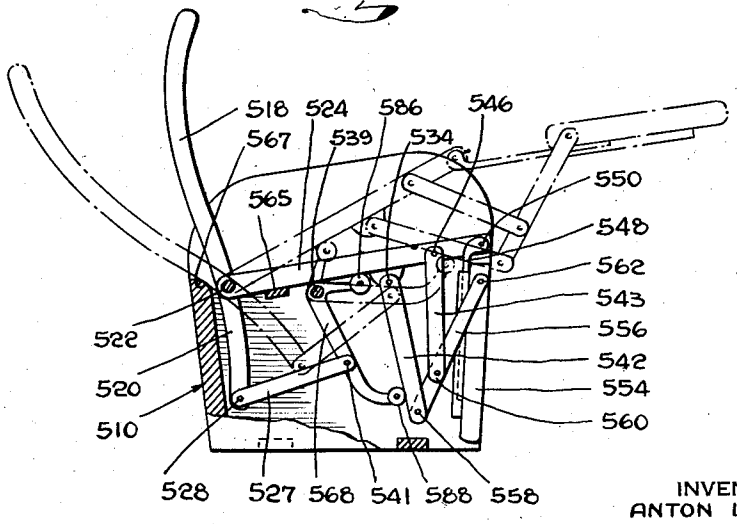


Fig. 6.



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2,820,508

ARTICLE OF REPOSE WITH COORDINATED SEAT, BACK-REST AND LEG-REST

Anton Lorenz, Ocean Ridge, Boynton Beach, Fla.

Application January 28, 1954, Serial No. 406,735

10 Claims. (Cl. 155—106)

This invention relates to articles of furniture and more particularly to reclining articles of furniture wherein a structure including a seat and a back-rest coordinated with each other in respect to their movements is rockably mounted on a support.

An object of the invention is to provide a leg-rest control arrangement in a reclining article of furniture of the type described above by means of which on one hand the leg-rest is swung upwardly and on the other hand is advanced forwardly when the back-rest and seat of the article of furniture are moved from the sitting position into the reclined position, so that the supporting portion of the leg-rest in the elevated position of the latter is extended to such a degree that a full support of the legs of a tall person resting on the article of furniture is assured.

Another object of the invention is to improve on the construction of articles of repose for supporting the body of a person, as customarily made.

Other objects and structural details of the invention will be apparent from the following description when read in conjunction with the accompanying drawings forming part of this specification, wherein:

Fig. 1 is a side elevational view of a reclining chair according to the invention, a portion of a side frame being broken away,

Fig. 2 is a side elevational view of a different embodiment of a reclining chair according to the invention, a portion of a side frame being broken away,

Fig. 3 is a side elevational view of another embodiment of a reclining armchair according to the invention, a portion of a side frame being broken away,

Fig. 4 is a side elevational view of a further embodiment of a reclining armchair according to the invention, a portion of a side frame being broken away,

Fig. 5 is a side elevational view of still another embodiment of a reclining chair according to the invention, a portion of a side frame being broken away, and

Fig. 6 is a side elevational view of a further embodiment of a reclining chair according to the invention, a portion of a side frame being broken away.

Referring now to Fig. 1, **10** generally indicates a support comprising two side frames **12** and **14** connected with each other by a transverse rod **16**.

A back-rest member **18** including a downward extension **20** is swingably mounted on said support **10** at **22**. The rear end portion of a seat **24** is likewise pivoted to the support **10** at **22**. The rear end portion of a lower connecting link **26** is pivoted to the downward extension **20** of the back-rest **18** at **28**. The front end portion of said connecting link **26** is pivoted at **30** to a front connecting link or controlling link **32** pivoted at its upper end to the seat **24** at **34**. A guiding link **36** is pivoted to the support **10** at **38** and to the lower connecting link **26** at **40**. The seat **24**, the back-rest member **18**, the lower connecting link **26**, the front connecting link **32** and the guiding link **36** form the

movable members of a constrained linkage which includes the portion of the support between the pivots **22** and **38** as a stationary link.

The front connecting link or controlling link **32** extends downwardly beyond the pivot **30** between said link **32** and the lower connecting link **26**. The upper end of a controlling link **44** is pivoted to the seat **24** at the point **46** spaced from the pivotal connection **34** between the seat **24** and the controlling link **32**. Furthermore an arm **48** in the shape of a rod is swingably mounted on the front end portion of the seat **24** at the point **50** spaced from the pivotal connection **46** between the controlling link **44** and the seat **24**. Said arm **48** is slidably engaged, in telescopic form, with a tube **52** rigidly connected with a leg-rest **54**. A controlling bar **56** is pivotally engaged at spaced points **58**, **60** and **62** with the controlling link **32**, the controlling link **44** and the leg-rest **54**. Thus the controlling link **44** is arranged between the controlling link **32** and the arm **48**.

When the back-rest **18** is moved from the sitting position into the extreme reclined position **18'**, owing to the linkages described above, the seat **24** is brought into the position **24'** while at the same time the leg-rest **54** is swung upwardly together with the arm **48** and propelled forwardly along the arm **48** into the position **54'**.

The sitting position of the movable members of the chair shown in full lines is limited by a stop **64** attached to the support **10** and the extreme reclined position of the movable members of the chair shown in dash and dot lines is limited by another stop **66** secured to the support **10**.

According to the embodiment shown in Fig. 2, the back-rest member **118** and the seat **124** are swingably mounted on the support **110** at spaced points **122** and **123** respectively. Again a lower connecting link **126** is pivoted to the back-rest member **118** at **128**, to the guiding link **136** at **140** and to the front connecting link or controlling link **132** at **130**. The guiding link **136** is pivoted to the support **110** at **138** and the controlling link **132** is pivoted to the seat **124** at **134**.

The other controlling link **144** is pivoted to the seat **124** at the point **146** which is located between the pivotal connections **123** and **134** of the seat **124** with the support **110** and the controlling link **132** respectively. The arm **148** swingably mounted on the front end portion of the seat **124** at **150** is telescopically engaged with a tube **152** attached to the leg-rest **154**. The controlling bar **156** is pivoted to the controlling link **144**, the controlling link **132** and the leg-rest **154** at **160**, **158** and **162** respectively. In this embodiment the controlling link **132** pivoted to the lower connecting link **126** is arranged between the other controlling link **144** and the arm **148**.

The sitting position of the movable members of the chair shown in full lines is limited by a stop **164** mounted on the support **110** and the extreme reclined position of the movable members of the chain shown in dash and dot lines is limited by a stop **166** attached to the support **110**.

Again, during a movement of the movable members of the chair from the sitting position into the reclined position, the leg-rest **154** is swung upwardly and moved away from the front end of the seat **124**.

According to the embodiment shown in Fig. 3, the back-rest member **218** and the seat **224** are pivoted to the support **210** at **222**. One end of a connecting link **227** is pivoted at **223** to the downward extension **220** of the back-rest member **218**. The other end of said connecting link **227** is pivoted at **241** to a controlling member **268** swingably mounted on the support **210** at **239**. The lower end of another connecting link **233** is pivoted to

said controlling member 268 at 270. The upper end of said connecting link 233 is pivoted at 231 to the seat 224. The seat 224, the back-rest member 218, the connecting link 227, the controlling member 268 and the connecting link 233 form the movable members of a constrained linkage, the stationary link of which is included in the support 210 between the pivots 222 and 239.

A first controlling link 242 and a second controlling link 243 are pivoted to the seat 224 at spaced points 234 and 246 respectively. An arm 248 swingably mounted at the front end of the seat 224 at 250 is telescopically engaged with a tube 252 attached to the leg-rest 254. The controlling bar 256 is pivoted at spaced points 258, 260 and 262 to the two controlling links 242 and 243 and to the leg-rest 254. A link 272 is pivoted at spaced points 274 and 276 to the controlling member 268 and to the second controlling link 243 respectively.

The sitting position of the movable members of the chair shown in full lines is limited by a transverse rod 265 of the support 210 arranged for abutting engagement with the seat 224.

The extreme reclined position of the movable members of the chair shown in dash and dot lines is limited by an abutment of the back-rest 218 against the upper edge 267 of the rear wall of the support 210.

During a movement of the movable members of the chair from the sitting position into the reclined position the leg-rest 254 is swung upwardly and propelled away from the seat 224.

According to the embodiment shown in Fig. 4, the back-rest member 318 is swingably mounted on the support 310 at 322. The rear end portion of the seat 324 is pivoted to the back-rest 318 at 321 at a point above the pivotal connection 322 of the back-rest 318 with the support 310. A guiding link 335 swingably mounted on the support 310 at 337 is pivoted to the seat 324 at 346.

A first controlling link 342 is pivoted to the seat 324 at 334. A second controlling link 343 is pivoted to the seat 324 at 346 in coaxial alignment with the pivotal connection of the guiding link 335 with the seat 324. An arm 348 swingably mounted on the seat 324 at 350 is in telescopic engagement with a tube 352 attached to the leg-rest 354. The controlling bar 356 is pivoted to the two controlling links 342 and 343 and the leg-rest 354 at 358, 360 and 362 respectively.

The coordination of the movements of the leg-rest 354 with the movement of the back-rest member 318 is obtained by a connecting link 373 pivoted at spaced points 328 and 377 to the downward extension 320 of the back-rest member 318 and to the first controlling link 342 respectively.

The sitting position of the movable members of the chair shown in full lines is limited by an abutment of the seat 324 against a transverse rod 365 of the support 310 and the extreme reclined position of the movable members of the chair shown in dash and dot lines is limited by an abutment of the back-rest member 318 against the upper edge 367 of the rear wall of the support 310.

A movement of the movable members of the chair from the sitting position into the reclined position displaces the leg-rest 354 upwardly and away from the seat 324.

According to the embodiment shown in Fig. 5, the back-rest 418 and seat 424 are swingably mounted on the support 410 at 422. The upper end of a controlling member 469 in the shape of a bell-crank swingably mounted on the support 410 at 439 is pivoted at 478 to a top connecting link 480 forming an arm-rest. The rear end of said top connecting link 480 is pivoted to the back-rest 418 at 482.

Again the leg-rest control comprises a first controlling link 442 and a second controlling link 443 pivoted to the seat 424 at spaced points 434 and 446 respectively. The arm 448 swingably mounted on the seat 424 at 450 is in telescopic engagement with a tube 452 attached to the leg-rest 454. Furthermore the leg-rest control comprises

the controlling bar 456 pivoted to the first controlling link 442 at 458, to the second controlling link 443 at 460 and to the leg-rest 454 at 462. The front end portion of the connecting link 472 is pivoted to the first controlling link 442 at 484. The rear end portion of said connecting link being pivoted to the controlling member 469 at 475, thus upon a movement of the back-rest 418 from the sitting position shown in full lines into the reclined position shown in dash and dot lines the leg-rest 454 is lifted and moved forwardly from its position shown in full lines into the position shown in dash and dot lines.

The sitting position of the movable members of the chair is limited by an abutment of the seat 424 against a transverse bar 465 of the support 410 and the extreme reclined position of said movable members of the chair is limited by an abutment of the back-rest 418 against a stop 466 mounted on the support 410.

According to the embodiment shown in Fig. 6, the back-rest 518 and the seat 524 are swingably mounted on the support 510 at 522. One end of a connecting link 527 is pivoted at 528 to the downward extension 520 of the back-rest 518. The other end of said connecting link 527 is pivoted at 541 to the controlling member 568 swingably mounted on the support 510 at 539. The controlling member 568 is in the shape of a bell-crank lever carrying rollers 586 and 588 at the ends of its arms. The roller 586 is in abutting engagement with the seat 524 and the roller 588 is in abutting engagement with the first controlling link 542 swingably mounted on the seat 524 at 534. A second controlling link 543 is swingably mounted on the seat 524 at 546. An arm 548 swingably mounted on the seat 524 at 550 is in slidable engagement with the leg-rest 554. The controlling bar 556 is pivoted to the first controlling link 542, to the second controlling link 543 and to the leg-rest 554 at 558, 560 and 562 respectively.

The sitting position of the movable members of the chair shown in full lines is limited by the abutment of the seat 524 against the stop 565 and the extreme reclined position of the movable members of the chair shown in dash and dot lines is limited by an abutment of the back-rest 518 against the edge 567 of the rear wall of the support 510.

I have described preferred embodiments of my invention, but it is understood that this disclosure is for the purpose of illustration and that various changes in shape, proportion of parts, as well as the substitution of equivalent elements for those herein shown and described may be made without departing from the spirit and scope of the invention as set forth in the appended claims.

What I claim is:

1. An article of repose for supporting the body of a person, comprising in combination: a support, a constrained linkage having stationary link-means and a plurality of movable links, said stationary link-means being included in said support, said movable links including a seat-member, a back-rest member, guiding means and a chain of links including a first link at one end of the chain and a first controlling link at the other end of the chain, said guiding means being connected to said support and engaged with at least one of said links of said chain, said first link being pivoted to said back-rest member, said first controlling link being pivoted to said seat-member, means pivotally connecting at least one of said back-rest and seat-members with said support, a second controlling link pivoted to said seat, an arm swingably mounted on said seat, a leg-rest slidably engaged with said arm, and a controlling bar pivoted at spaced points thereof to said first controlling link, to said second controlling link and to said leg-rest.

2. An article of repose for supporting the body of a person, comprising in combination: a support, a back-rest structure, a seat-structure, said back-rest and seat-structures being pivotally connected with at least one of said structures pivotally mounted on said support, a controlling

member swingably mounted on said support, a connecting link pivoted at spaced points to said back-rest structure and to said controlling member, first means positioned between said swingable controlling member and said seat-structure to effect movement of said seat-structure in coordination with said controlling member, a first controlling link pivoted to said seat, a second controlling link pivoted to said seat, an arm swingably mounted on said seat, said second controlling link being arranged between said first controlling link and said arm, a leg-rest slidably engaged with said arm, a controlling bar pivoted at spaced points thereof to said controlling links and to said leg-rest, and second means positioned between said swingable controlling member and one of said two controlling links to effect movement of the latter and of the leg-rest in coordination with said controlling member.

3. An article of repose for supporting the body of a person, comprising in combination: a support, a back-rest structure pivoted to said support, a seat, the rear end portion of said seat being pivoted to said back-rest structure at a point above the pivotal connection between said back-rest structure and the support, a guiding link pivoted at spaced points to said support and to said seat, a first controlling link pivoted to said seat, a second controlling link pivoted to said seat, an arm swingably mounted on said seat, said second controlling link being arranged between said first controlling link and said arm, a leg-rest slidably engaged with said arm, a controlling bar pivoted at spaced points thereof to said controlling links and to said leg-rest, and means positioned between said back-rest structure and one of said two controlling links to effect movement of the latter and of the leg-rest in coordination with said back-rest structure.

4. An article of repose for supporting the body of a person, comprising in combination: a support, a back-rest structure, a seat-structure, said back-rest and seat-structures being pivotally connected with at least one of said structures pivotally mounted on said support, a controlling member swingably mounted on said support, a connecting link pivoted at spaced points to said back-rest structure and to said controlling member, a first controlling link pivoted to said seat, a second controlling link pivoted to said seat, an arm swingably mounted on said seat, said second controlling link being arranged between said first controlling link and said arm, a leg-rest slidably engaged with said arm, a controlling bar pivoted at spaced points thereof to said controlling links and to said leg-rest, and means positioned between said controlling member and one of said two controlling links to effect movement of the latter and of the leg-rest in coordination with said controlling member.

5. An article of repose for supporting the body of a person comprising a support, a structure rockably mounted on said support and including a seat and a back-rest, linkage means interconnected between said seat and back-rest and operable in response to rocking movement of said structure to coordinate the relative movement of said seat with relation to said back-rest, a first controlling link pivoted to said seat, a second controlling link pivoted to said seat, an arm swingably mounted on said seat, said second controlling link being arranged between said first controlling link and said arm, a leg-rest slidably engaged with said arm, and a controlling bar pivoted at spaced points thereof to said controlling links and to said leg-rest, said linkage means being in operative engagement with one of said two controlling links for effecting movement of the latter and of said leg-rest in dependence on movements of said structure.

6. An article of repose for supporting the body of a person comprising a support, a structure rockably mounted on said support and including a seat and a back-rest, linkage means interconnected between said seat and back-rest and operable in response to rocking movement of said back-rest into a reclined position to coordinate the relative movement of said seat with relation to said back-rest, a first controlling link pivoted to said seat, a second controlling link pivoted to said seat, an arm movably mounted on said seat, said second controlling link being arranged between said first controlling link and said arm, a leg-rest slidably engaged with said arm, and a controlling bar having respective pivotal connections to said controlling links and to said leg-rest, said linkage means being in operative engagement with one of said two controlling links for effecting movement of the latter and of said leg-rest in dependence on movement of said back-rest.

7. An article of repose for supporting the body of a person, comprising in combination: a support, a constrained linkage having stationary link-means and a plurality of movable links, said stationary link-means being included in said support, said movable links including a seat-member, a back-rest member, guiding means and a chain of links including a first link at one end of the chain and first and second controlling links at the other end of the chain, said guiding means being connected to said support and engaged with at least one of said links of said chain, said first link being pivoted to said back-rest member and having a pivotal connection to said first controlling link, said first controlling link being pivoted to said seat-member, means pivotally connecting at least one of said back-rest and seat-members with said support, said second controlling link being pivoted to said seat-member, an arm swingably mounted on said seat-member, said second controlling link being arranged between said first controlling link and said arm, a leg-rest slidably engaged with said arm, and a controlling bar pivoted at spaced points thereof to said first controlling link, to said second controlling link and to said leg-rest.

8. An article of repose for supporting the body of a person, comprising in combination: a support, a constrained linkage having stationary link-means and a plurality of movable links, said stationary link-means being included in said support, said movable links including a seat-member, a back-rest member, guiding means and a chain of links including a first link at one end of the chain and first and second controlling links at the other end of the chain, said guiding means being connected to said support and engaged with at least one of said links of said chain, said first link being pivoted to said back-rest member and having a pivotal connection to said second controlling link, said first controlling link being pivoted to said seat-member, means pivotally connecting at least one of said back-rest and seat-members with said support, said second controlling link being pivoted to said seat-member, an arm swingably mounted on said seat-member, said second controlling link being arranged between said first controlling link and said arm, a leg-rest slidably engaged with said arm, and a controlling bar pivoted at spaced points thereof to said first controlling link, to said second controlling link and to said leg-rest.

9. A reclining chair for supporting the body of a person comprising a support, a structure rockably mounted on said support and including a seat and a back-rest, a first controlling link pivoted to said seat, a second controlling link pivoted to said seat, an arm swingably mounted on said seat, said second controlling link being arranged between said first controlling link and said arm, a leg-rest slidably engaged with said arm, a controlling bar pivoted at spaced points thereof to said controlling links and to said leg-rest, and linkage means in operative engagement with one of said two controlling links for effecting movement of the latter and of said leg-rest in dependence on movements of said structure.

10. A reclining chair for supporting the body of a person comprising a support, a structure rockably mounted on said support and including a seat and a back-rest, a first controlling link pivoted to said seat, a second controlling link pivoted to said seat, an arm swingably mounted on said seat, said second controlling link being ar-

ranged between said first controlling link and said arm, a leg-rest slidably engaged with said arm, a controlling bar pivoted at spaced points thereof to said controlling links and to said leg-rest, and linkage means in operative engagement with one of said two controlling links for effecting movement of the latter and of said leg-rest in dependence on movements of said structure, said linkage means including a connecting link having an operative connection to one of said controlling links and a pivotal connection to said back-rest at a point below the level of said seat.

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