July 22, 1958 A. LORENZ 2,844,190

CHAIR WITH RECLINING BACK-REST AND COORDINATED SEAT AND LEG-REST

Filed April 23, 1954 3 Sheets-Sheet 1

FIG. 1.

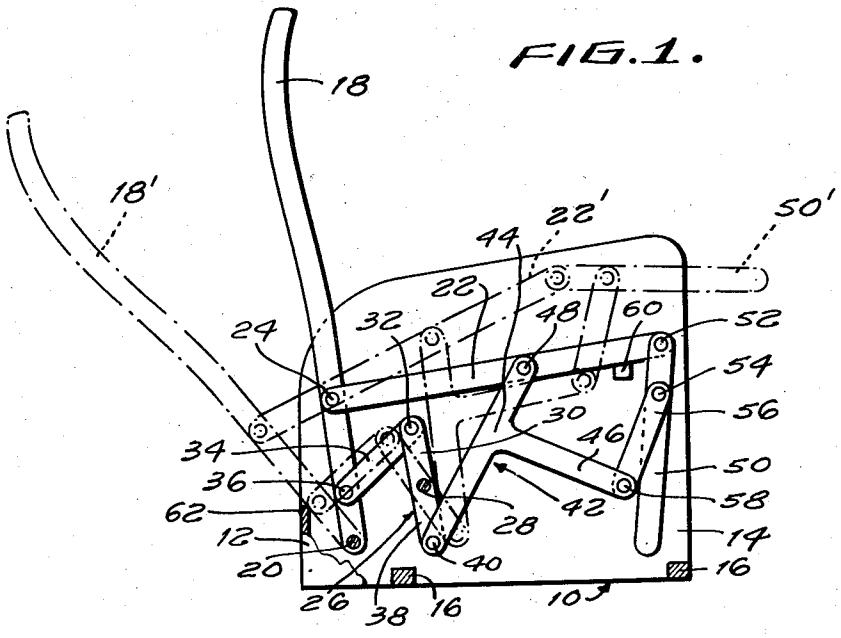
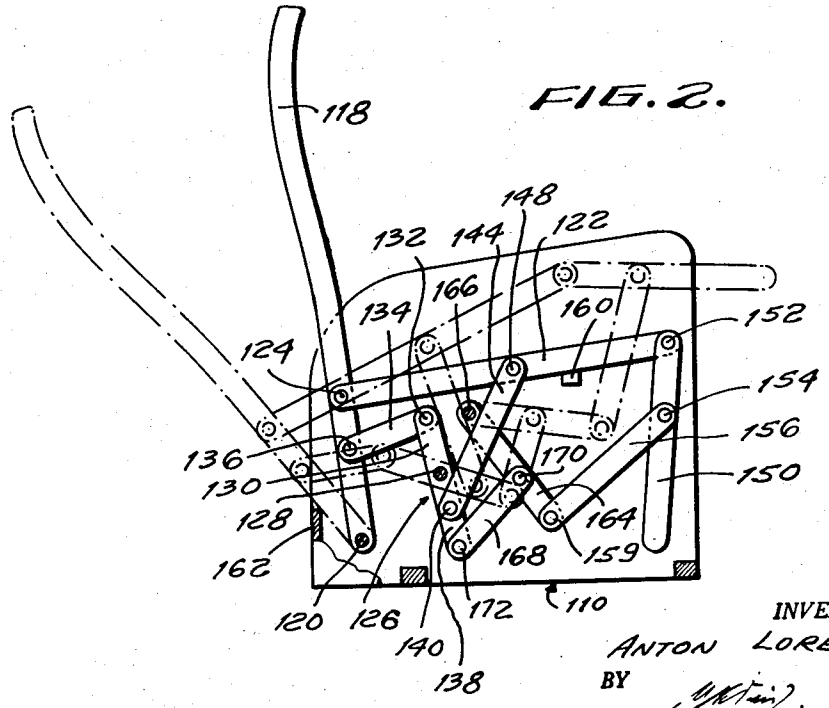


FIG. 2.



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Filed April 23, 1954 3 Sheets-Sheet 2

FIG. 3.

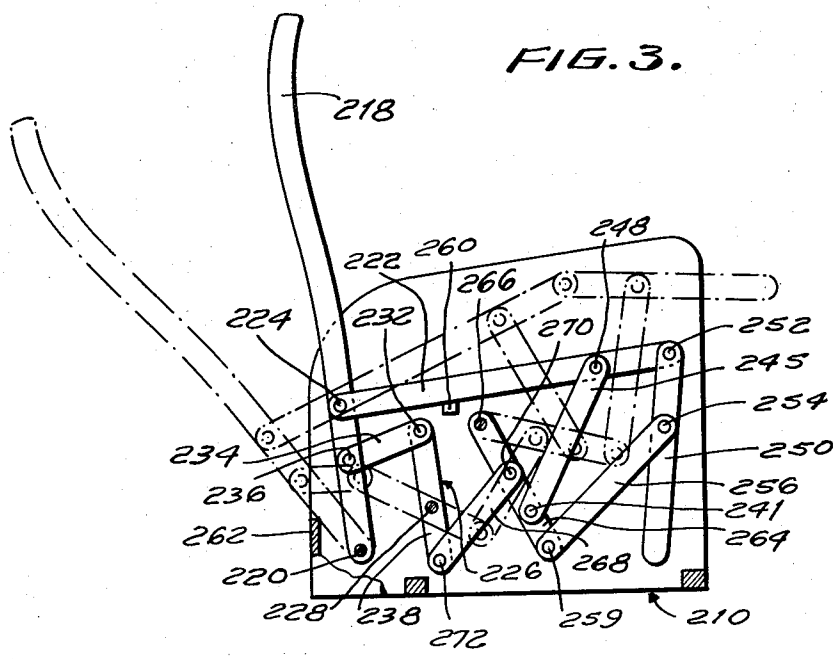
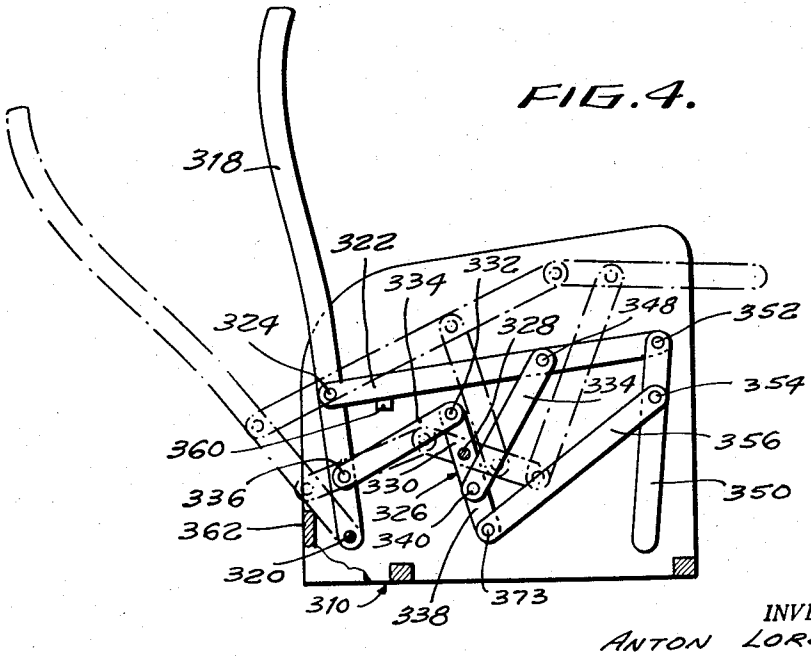


FIG. 4.



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Filed April 23, 1954 3 Sheets-Sheet 3

FIG. 5.

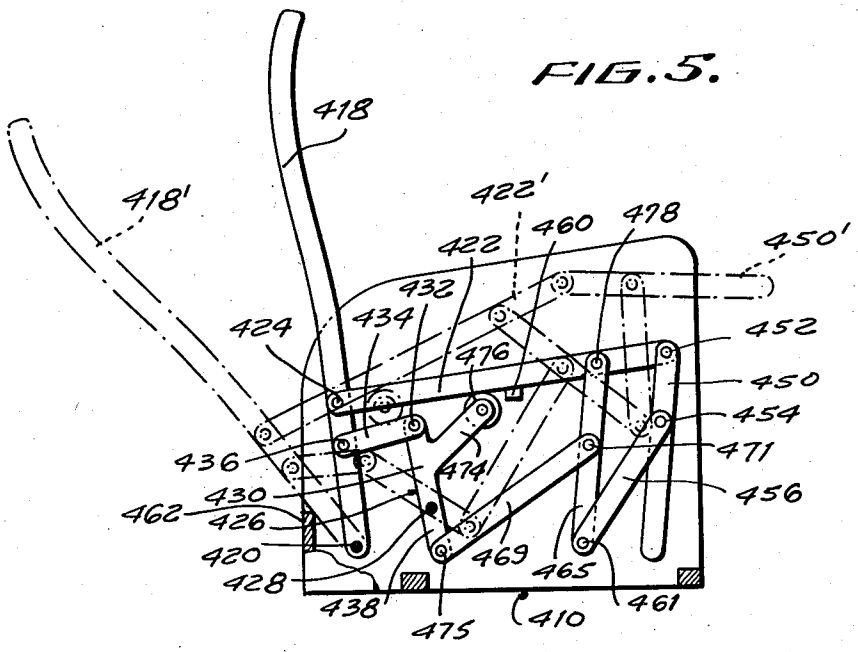
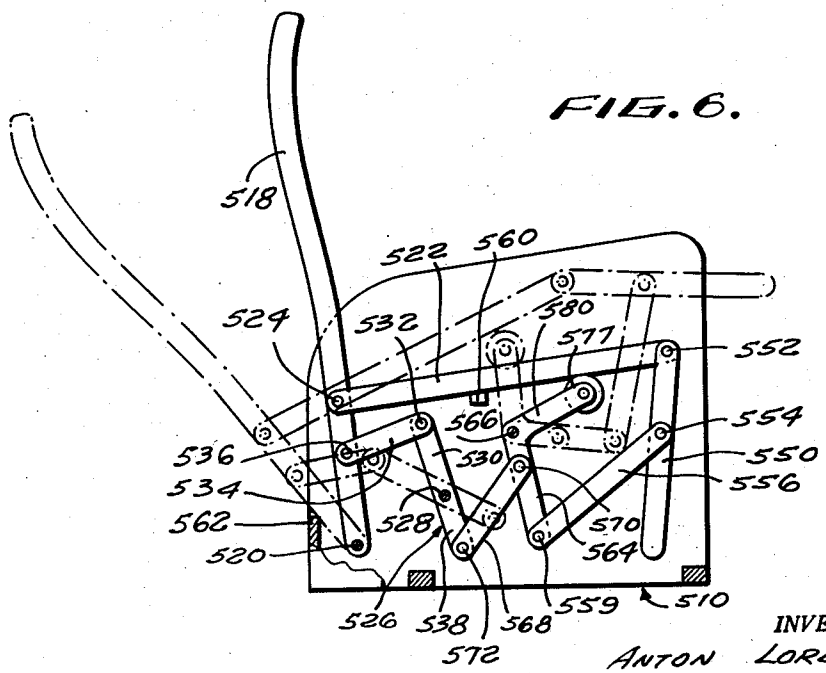


FIG. 6.



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2,844,190

CHAIR WITH RECLINING BACK-REST AND COORDINATED SEAT AND LEG-REST

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Application April 23, 1954, Serial No. 425,253

18 Claims. (Cl. 155—106)

This invention relates to articles of furniture and more particularly to articles of repose for supporting the body of a person wherein a back-rest and a seat connected with each other by a link system are movable relative to each other in a predetermined relationship.

An object of the invention is to provide articles of respose of above described type with an improved link mechanism.

Another object of the invention is to provide articles of repose of above described type with a leg-rest swingably mounted on the seat and with a mechanism for controlling the movements of the leg-rest.

A further object of the invention is to improve on the construction of articles of repose as now 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 armchair according to the invention, a portion of a side frame being broken away,

Fig. 2 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. 3 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. 4 is a side elevational vew of still another 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 a further embodiment of a reclining armchair according to the invention, a portion of a side frame being broken away, and

Fig. 6 is a side elevational vew of still another embodiment of a reclining armchair according to the invention, a portion of a side frame being broken away.

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

The lower end of a back-rest **18** is swingably mounted on the support **10** at **20**. The rear end portion of a seat **22** is pivoted to the back-rest **18** at **24** at a point above the plane of the pivotal connection **20** between the back-rest **18** and the support **10**.

A controlling element **26** in the shape of a double-armed lever is swingably mounted on the support **10** at **28**. The upper arm **30** of said double-armed controlling element **26** is pivoted at **32** to one end of a connecting link **34**. The other end of said connecting link **34** is pivoted to the back-rest **18** at **36** at a point below the pivotal connection **24** between the back-rest **18** and the seat **22**.

The lower arm **38** of the double-armed controlling element **26** is pivoted at **40** to an element **42** in the shape of a link **44** having a lateral extension **46**. The upper end of the link **44** is pivoted at **48** to the seat **22**.

Furthermore a leg-rest **50** swingably mounted on the front portion of the seat **22** at **52** is pivoted at **54** to the upper end of a controlling link **56**. The lower end of said controlling link **56** is pivoted at **58** to the extension **46** of the link **44**.

The sitting position of the movable members of the chair limited by a stop **60** arranged on the support **10** for cooperation with the lower surface of the seat **22** is shown in full lines. When the back-rest **18** is swung into a reclined position, for example into the extreme reclined position **18'** shown in dash and dot lines, limited by the rear wall **62** of the support **10**, the above described link system causes a movement of the seat and the leg-rest into the positions **22'** and **50**, respectively.

According to the embodiment shown in Fig. 2, again the back-rest **118** is pivoted to the support **110** at **120** and the seat **122** is pivoted to the back-rest **118** at **124** at a point above the pivotal connection **120** of the back-rest **118** with the support **110**. The upper arm **130** of the double-armed controlling element **126** swingably mounted on the support **110** at **128** is pivoted at **132** to one end of a connecting link **134**, the other end of which is pivoted to the back-rest **118** at **136** at a point between the pivotal connections **120** and **124** of the back-rest **118** with the support **110** and the seat **122** respectively. The ends of the link **144** are pivoted at **140** and at **148** to the lower arm **138** of the double-armed controlling element **126** and to the seat **122** respectively.

A leg-rest **150** swingably mounted on the seat **122** at **152** is pivoted at **154** to one end of a controlling link **156**, the other end of which is pivoted at **159** to the lower end of an arm **164** swingably mounted on the support **110** at **166**. Furthermore one end of a link **168** is pivoted to said arm **164** at **170**, the other end of said link **168** is pivoted at **172** to the lower arm **138** of the controlling element **126**.

Again the movements of the back-rest **118**, seat **122** and leg-rest **150** are in a predetermined relationship to each other. The sitting position of the movable members of the chair limited by the stop **160** is shown in full lines. The extreme reclined position of the movable members of the chair limited by the rear wall **162** is shown in dash and dot lines.

According to the embodiment shown in Fig. 3, the back-rest **218** pivoted to the support **210** at **220** is pivoted to the rear end portion of the seat **222** at **224** and to the rear end of the connecting link **234** at **236**. The front end of said connecting link **234** is pivoted at **232** to the controlling element **226** swingably mounted on the support **210** at **228**. The lower arm **238** of said controlling element **226** is pivoted at **272** to the rear end of a link **268**, the front end of which is pivoted at **270** to a controlling arm **264** swingably mounted on the support **210** at **266**. A link **245** is pivoted at **241** to the controlling arm **264** and at **248** to the seat **222**.

One end of a controlling link **256** is pivoted at **259** to the controlling arm **264**. The other end of said controlling link **256** is pivoted at **254** to the leg-rest **250** swingably mounted on the seat **222** at **252**.

The sitting position of the movable members of the chair shown in full lines is limited by the stop **260** arranged on the support **210** and the extreme reclined position of the movable members of the chair shown in dash and dot lines is limited by the rear wall **262** of the support **210**.

According to the embodiment shown in Fig. 4, the rear end of the seat **322** is pivoted to the back-rest **318** at **324** at a point above the pivotal connection **320** of the back-rest **318** with the support **310**. The upper arm **330** of the double-armed controlling element **326** swingably mounted on the support **310** at **328** is pivoted at **332** to one end of the connecting link **334**, the other end of which is pivoted to the back-rest **318** at **336** at a point

below the pivotal connection 324 between the back-rest 318 and the seat 322. The lower end of a link 334 is pivoted to the lower arm 338 of the controlling element 326 at 340. The upper end of said link 344 is pivoted to the seat 322 at 348.

One end of a controlling link 356 is pivoted at 373 to the lower arm 338 of the controlling element 326. The other end of said controlling link 356 is pivoted at 354 to the leg-rest 350 swingably mounted on the seat 322 at 352.

The sitting position of the movable members of the chair shown in full lines is limited by the stop 360 and the extreme reclined position of the movable members of the chair shown in dash and dot lines is limited by the rear wall 362 of the support 310.

According to the embodiment shown in Fig. 5, again the lower end of the back-rest 418 is swingably mounted on the support 410 at 420. The rear end of the seat 422 is pivoted to the back-rest 418 at 424 at a point above the pivotal connection 420 between the back-rest 418 and the support 410.

The upper arm 430 of the controlling element 426 swingably mounted on the support 410 at 428 is pivoted at 432 to one end of the connecting link 434. The other end of said connecting link 434 is pivoted to the back-rest 418 at 436 at a point below the pivotal connection 424 of the back-rest 418 with the seat 422. The upper arm 430 of said controlling element 426 has an extension 474 carrying a roller 476. Said roller 476 is in abutting engagement with the lower surface of the seat 422.

The leg-rest 450 swingably mounted on the front portion of the seat 422 at 452 is pivoted at 454 to one end of the controlling link 456. The other end of said controlling link 456 is pivoted at 461 to an arm 465 swingably mounted on the seat 422 at 478. The front end of a link 469 is pivoted to said arm 465 at 471. The rear end of said link 469 is pivoted at 475 to the lower arm 438 of the controlling element 426.

When the back-rest 418 is swung from the sitting position shown in full lines into the reclined position 418' shown in dash and dot lines, the above described link system causes a movement of the seat 422 into the reclined position 422' shown in dash and dot lines and of the leg-rest 450 into the position 450' likewise shown in dash and dot lines.

The sitting position of the movable members of the chair is limited by the stop 460, the extreme reclined position of the movable members of the chair is limited by the rear wall 462 of the support 410.

According to the embodiment shown in Fig. 6, again a roller 577 is in movable engagement with the seat 522 for controlling the movements thereof in dependence on movements of the back-rest 518 pivoted to the support 510 at 520. However according to this embodiment said roller 577 is rotatably mounted on an arm 580 rigid with an arm 564 swingably mounted on the support 510 at 566. Said arm 564 is pivoted at 570 to one end of a link 568, the other end of which is pivoted at 572 to the lower arm 538 of the controlling member 526 swingably mounted on the support 510 at 528. The upper arm 530 of said controlling element 526 is pivoted at 532 to one end of the connecting link 534 pivoted to the back-rest 518 at 536 at a point below the pivotal connection 524 between the back-rest 518 and the seat 522.

The swingable arm 564 is pivoted at 559 to one end of a controlling link 556, the other end of which is pivoted at 554 to the leg-rest 550 swingably mounted on the front end of the seat 522 at 552.

The sitting position of the movable members of the chair shown in full lines is limited by the stop 560 arranged on the support 510 and the extreme reclined position of the movable members of the chair shown in dash and dot lines is limited by the rear wall 562 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.

For example each of above described embodiments of a reclining chair may be equipped with locking means for holding the movable members of the chair in a desired position.

What I claim is:

1. An article of repose for supporting the body of a person, comprising in combination: a support, a back-rest pivoted to said support, a seat, the rear end portion of said seat being pivoted to said back-rest at a point above the plane of the pivotal connection between the back-rest and the support, a double-armed controlling element swingably mounted on said support, a connecting link pivoted at different regions thereof to one arm of said double-armed controlling element and to said back-rest at a point below the pivotal connection between said back-rest and said seat, a first link pivoted at different regions thereof to said other arm of said double-armed controlling element and to said seat, a leg-rest swingably mounted on the front portion of said seat, and a second link pivoted at different regions thereof to said leg-rest and to said first link.

2. In an article of repose as claimed in claim 1, said first link including a lateral extension, and said second link being pivoted to said lateral extension.

3. An article of repose for supporting the body of a person, comprising in combination: a support, a back-rest pivoted to said support, a seat, the rear end portion of said seat being pivoted to said back-rest at a point above the plane of the pivotal connection between the back-rest and the support, a double-armed controlling element swingably mounted on said support, a connecting link pivoted at different regions thereof to one arm of said double-armed controlling element and to said back-rest at a point below the pivotal connection between said back-rest and said seat, first controlling means interposed between the other arm of said double-armed controlling element and said seat for effecting movements of said seat in coordination with movements of said controlling element, a leg-rest swingably mounted on the front portion of said seat, an arm swingably mounted on said support, a controlling link pivoted at different regions thereof to said leg-rest and to said arm, and second controlling means interposed between said arm and said other arm of said controlling element for effecting movements of said arm and said leg-rest in coordination with movements of said controlling element.

4. In an article of repose as claimed in claim 3, said second controlling means including a link pivoted at different regions thereof to said arm and to said other arm of the controlling element.

5. In an article of repose as claimed in claim 3, said first controlling means including a first link pivoted at different regions thereof to said other arm of said double-armed controlling element and to said seat, and said second controlling means including a second link pivoted at different regions thereof to said arm and to said other arm of the controlling element.

6. An article of repose for supporting the body of a prson, comprising in combination: a support, a back-rest pivoted to said support, a seat, the rear end portion of said seat being pivoted to said back-rest at a point above the plane of the pivotal connection between the back-rest and the support, a double-armed controlling element swingably mounted on said support, a connecting link pivoted at different regions thereof to one arm of said double-armed controlling element and to said back-rest at a point below the pivotal connection between said back-rest and said seat, cooperating abutting means arranged

on said controlling element and on said seat and movably engaged with each other for effecting movements of said seat in coordination with movements of said controlling element, a leg-rest swingably mounted on the front portion of said seat, an arm swingably mounted on said seat, a first link pivoted at different regions thereof to said leg-rest and to said swingable arm, and a second link pivoted at different regions thereof to said swingable arm and to said controlling element.

7. In an article of repose as claimed in claim 6, said cooperating abutting means including a roller rotatably arranged on said first mentioned arm of said double-armed controlling element and engaged with an abutting surface on said seat.

8. An article of repose for supporting the body of a person, comprising in combination: a support, a back-rest having a pivotal connection to said support, a seat, the rear end portion of said seat having a pivotal connection to said back-rest at a point spaced above the pivotal connection between the back-rest and the support, a controlling element swingably mounted on said support, a connecting link pivoted at different portions thereof to said controlling element and to said back-rest at a point between the respective pivotal connections to said support and said seat, and controlling means operative between said controlling element and said seat for effecting movements of said seat in coordination with movements of said back-rest which are transmitted to said controlling element.

9. An article of repose for supporting the body of a person, comprising in combination: a support, a back-rest having a pivotal connection to said support, a seat, the rear end portion of said seat having a pivotal connection to said back-rest at a point spaced above the plane of the pivotal connection between the back-rest and the support, a controlling element swingably mounted on said support, a connecting link pivoted at different portions thereof to said controlling element and to said back-rest at a point between the respective pivotal connections to said support and said seat, a leg-rest swingably mounted on the front portion of said seat, and controlling means operative between said controlling element and said seat and leg-rest for effecting movements of said seat and leg-rest in coordination with movements of said back-rest which are transmitted to said controlling element.

10. An article of repose for supporting the body of a person, comprising in combination: a support, a back-rest having a pivotal connection to said support, a seat, the rear end portion of said seat having a pivotal connection to said back-rest at a point spaced above the pivotal connection between said back-rest and said support, a double-armed controlling element swingably mounted on said support, a connecting link pivoted at different portions thereof to one arm of said controlling element and to said back-rest at a point between the respective pivotal connection to said support and said seat, and controlling means interconnected between the other arm of said controlling element and said seat for effecting movements of said seat in coordination with movements of said back-rest which are transmitted to said controlling element.

11. An article of repose for supporting the body of a person, comprising in combination: a support, a back-rest having a pivotal connection to said support, a seat, the rear end portion of said seat having a pivotal connection to said back-rest at a point spaced above the pivotal connection between said back-rest and said support, a double-armed controlling element swingably mounted on said support, a connecting link pivoted at different portions thereof to one arm of said controlling element and to said back-rest at a point between the respective pivotal connections to said support and said seat, a leg-rest swingably mounted below the front portion of said seat, and controlling means interconnected between

the other arm of said controlling element and said seat and said leg-rest for effecting movements of said seat and said leg-rest in coordination with movements of said back-rest which are transmitted to said controlling element.

12. An article of repose for supporting the body of a person, comprising in combination: a support, a back-rest having a pivotal connection to said support, a seat, the rear end portion of said seat having a pivotal connection to said back-rest at a point spaced above the plane of the pivotal connection between the back-rest and the support, a controlling element swingably mounted on said support, a connecting link pivoted at different regions thereof to said controlling element and to said back-rest at a point between the respective pivotal connections to said support and said seat, and controlling means operative between said controlling element and said seat for effecting movement of said seat in coordination with movement of said controlling element, said controlling means including cooperating abutments on said controlling element and on said seat and movably engaged with each other.

13. An article of repose for supporting the body of a person, comprising in combination: a support, a back-rest having a pivotal connection to said support, a seat, the rear end portion of said seat having a pivotal connection to said back-rest at a point spaced above the plane of the pivotal connection between the back-rest and the support, a double-armed controlling element swingably mounted on said support, a connecting link pivoted at different regions thereof to one arm of said controlling element and to said back-rest at a point between the respective pivotal connections to said support and said seat, and controlling means interposed between the other arm of said controlling element and said seat for effecting movements of said seat in coordination with movements of said controlling element.

14. An article of repose for supporting the body of a person, comprising in combination: a support, a back-rest pivoted to said support, a seat, the rear end portion of said seat having a pivotal connection to said back-rest at a point spaced above the plane of the pivotal connection between the back-rest and the support, a double-armed controlling element swingably mounted on said support, a connecting link pivoted at different regions thereof to one arm of said controlling element and to said back-rest at a point between the respective pivotal connections to said support and said seat, and a first link pivoted between the other arm of said controlling element and said seat for effecting movement of said seat in coordination with movement of said controlling element, a leg-rest swingably mounted below the front portion of said seat, and a second link pivoted between said other arm of said controlling element and said leg-rest for effecting movement of said leg-rest in coordination with movement of said controlling element.

15. An article of repose for supporting the body of a person, comprising in combination: a support, a back-rest having a pivotal connection to said support, a seat, the rear end portion of said seat having a pivotal connection to said back-rest at a point spaced above the plane of the pivotal connection between the back-rest and the support, a double-armed controlling element swingably mounted on said support, a connecting link pivoted at different regions thereof to one arm of said controlling element and to said back-rest at a point below the pivotal connection between said back-rest and said seat, and controlling means interposed between the other arm of said controlling element and said seat for effecting movement of said seat in coordination with movement of said controlling element, said controlling means comprising an arm swingably mounted on said support, a first link pivoted at different regions thereof to said other arm of said controlling element and to said swingable arm, additional means interposed between said swingable arm and said

seat for effecting movement of said seat in coordination with movement of said swingable arm, a leg-rest swingably mounted below the front portion of said seat, and a second link pivoted at different regions thereof to said swingable arm and to said leg-rest.

16. An article of repose for supporting the body of a person, comprising in combination: a support, a back-rest having a pivotal connection to said support, a seat, the rear end portion of said seat having a pivotal connection to said back-rest at a point spaced above the plane of the pivotal connection between the back-rest and the support, a double-armed controlling element swingably mounted on said support, a connecting link pivoted at different regions thereof to one arm of said controlling element and to said back-rest at a point below the pivotal connection between said back-rest and said seat, and controlling means interposed between the other arm of said controlling element and said seat for effecting movement of said seat in coordination with movement of said controlling element, said controlling means comprising an arm swingably mounted on said support, a first link pivoted at different regions thereof to said other arm of said controlling element and to said swingable arm, a second link pivoted at different regions thereof to said swingable arm and to said seat, a leg-rest swingably mounted below the front portion of said seat, and a third link pivoted at different regions thereof to said swingable arm and to said leg-rest.

17. An article of repose for supporting the body of a person, comprising in combination: a support, a back-rest having a pivotal connection to said support, a seat, the rear end portion of said seat having a pivotal connection to said back-rest at a point spaced above the plane of the pivotal connection between the back-rest and the support, a double-armed controlling element swingably mounted on said support, a connecting link pivoted at different regions thereof to one arm of said controlling element and to said back-rest at a point below the pivotal connection between said back-rest and said seat, and controlling means interposed between the other arm of said

controlling element and said seat for effecting movement of said seat in coordination with movement of said controlling element, said controlling means comprising a double-armed lever swingably mounted on said support, a first link pivoted at different regions thereof to said other arm of said double-armed controlling element and to one arm of said double-armed lever, cooperating abutting means arranged on the other arm of said double-armed lever and on said seat and movably engaged with each other, a leg-rest swingably mounted below the front portion of said seat, and a second link pivoted at different regions thereof to said first mentioned arm of said double-armed lever and to said leg-rest.

18. An article of repose for supporting the body of a person, comprising in combination: a support, a back-rest having a pivotal connection to said support, a seat, the rear end portion of said seat having a pivotal connection to said back-rest at a point spaced above the plane of the pivotal connection between the back-rest and the support, a controlling element swingably mounted on said support, a connecting link pivoted at different portions thereof to said controlling element and to said back-rest at a point between the respective pivotal connections to said support and said seat, a leg-rest, and controlling means operative between said controlling element and said seat and leg-rest for effecting movements of said seat and leg-rest in coordination with movements of said back-rest which are transmitted to said controlling element.

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