

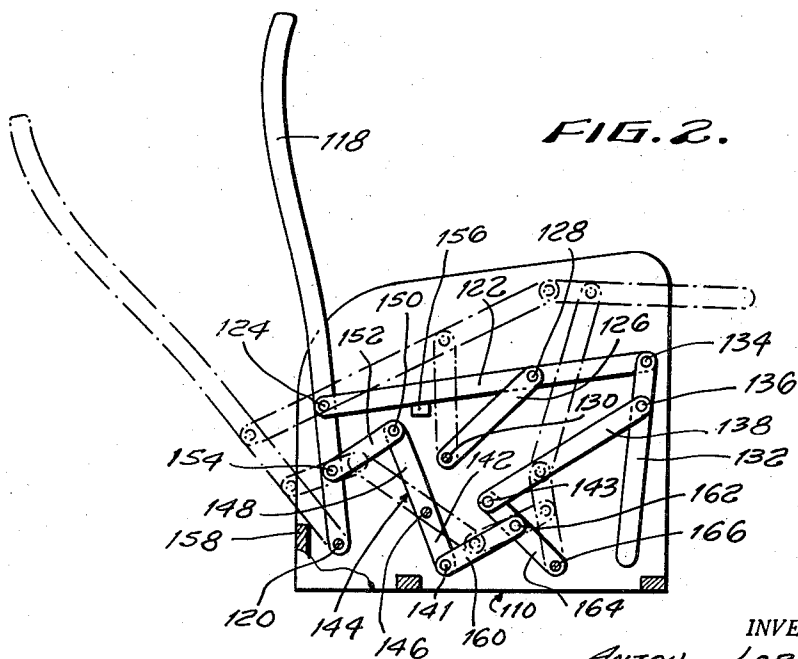
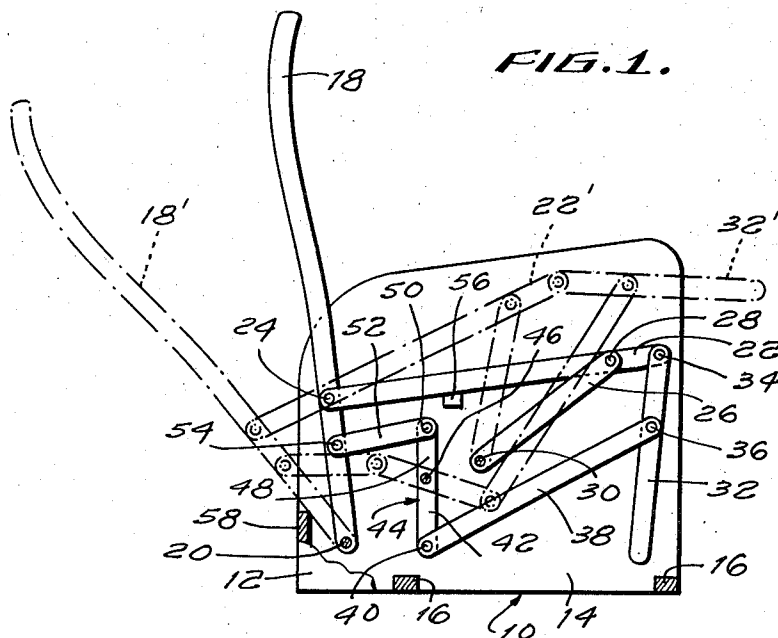
Sept. 2, 1958

A. LORENZ  
CHAIR WITH RECLINING BACK-REST AND COORDINATED  
SEAT AND LEG-REST

2,850,078

Filed April 23, 1954

3 Sheets-Sheet 1



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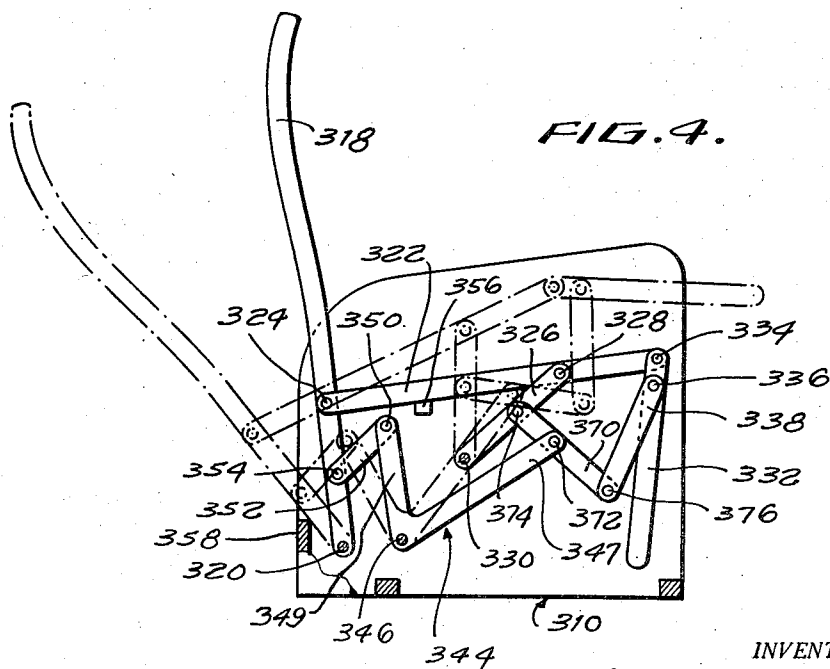
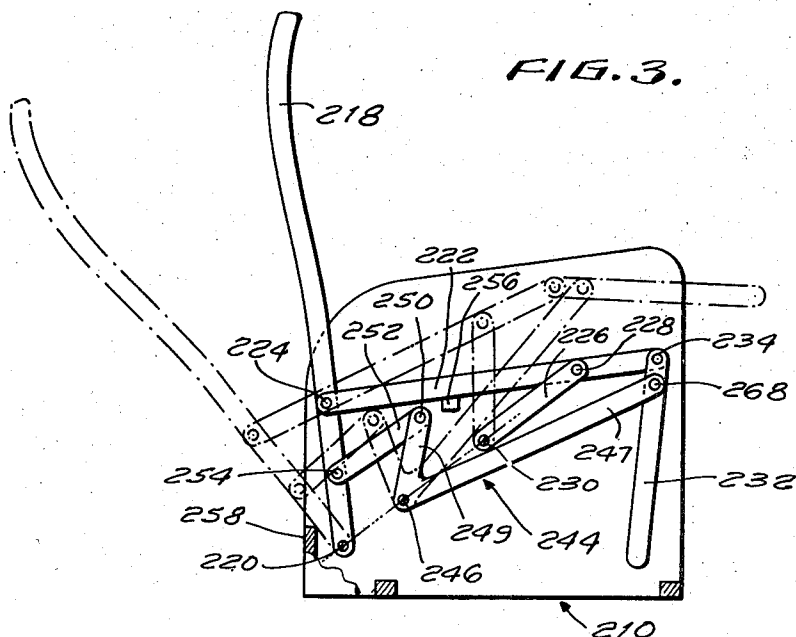
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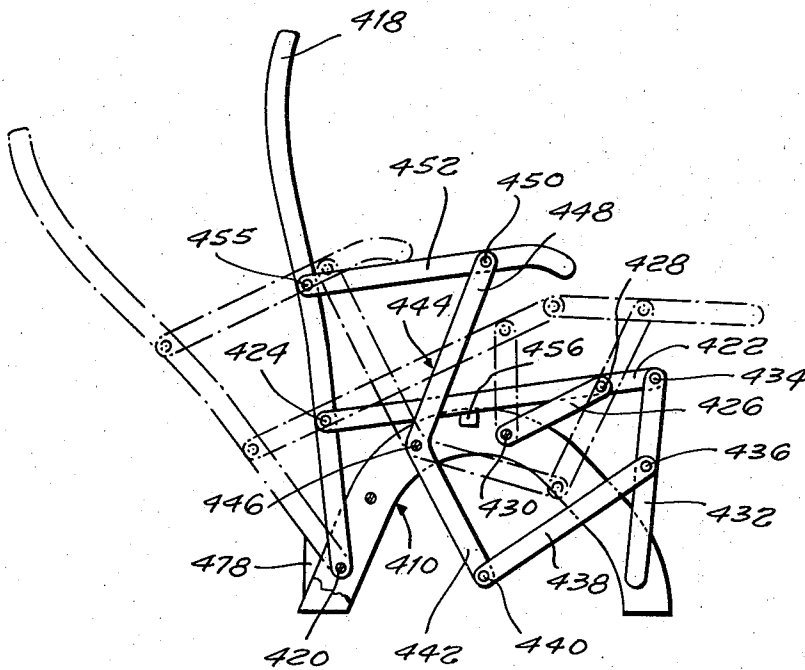
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FIG. 5.



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

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Application April 23, 1954, Serial No. 425,124

5 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 are movable relative to each other in a predetermined relationship, and wherein the movements of a leg-rest swingably mounted on the seat are controlled in relation to the movements of the back-rest and the seat by a controlling mechanism.

An object of this invention is to provide an article of repose of above described type with an improved controlling mechanism for the leg-rest.

A further object of the invention is to improve on the construction of articles of repose for supporting the body of a person 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 chair 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 chair 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 chair according to the invention, a portion of a side frame being broken away,

Fig. 4 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. 5 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 side frames 12 and 14 connected 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 pivotal connection 20 between the back-rest 18 and the support 10. The upper end of a guiding link 26 is pivoted to the seat 22 at 28. The lower end of said guiding link 26 is pivoted to the support 10 at 30.

Thus, upon a movement of the back-rest 18 from the sitting position, shown in full lines, into the reclined position 18', shown in dash-and-dot lines, the seat 22 is positively moved into the reclined position 22'.

A leg-rest 32 swingably mounted on the front portion of the seat 22 at 34 is pivoted at 36 to the front end of a controlling link 38. The rear end of said controlling link 38 is pivoted at 40 to the lower arm 42 of a double-armed controlling element 44 swingably mounted on the support 10 at 46. The upper arm 48 of said controlling element 44 is pivoted at 50 to one end of a connecting link 52. The other end of said connecting link 52 is pivoted to the back-rest 18 at 54 at a point below

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the pivotal connection 24 between the back-rest 18 and the seat 22.

Thus, the movements of the leg-rest 32 are coordinated with the movements of the back-rest 18 by means of the link mechanism 52, 44, 38, so that the leg-rest 32 reaches the position 32' when the back-rest 18 is moved into the reclined position 18'.

The sitting position of the movable members of the chair, shown in full lines, is limited by a stop 56 arranged on the support 10 for abutting engagement with the lower surface of the seat 22. The extreme reclined position of the movable members of the chair, shown in dash-and-dot lines, is limited by the rear wall 58 of the support arranged for abutting co-operation with the back-rest 18.

According to the embodiment shown in Fig. 2, the arrangement of the back-rest 118, the seat 122, the guiding link 126 and their pivotal connections 120, 124, 128, 130 are the same as in the embodiment shown in Fig. 1. Furthermore, the controlling element 144 swingably mounted on the support 110 at 146 is likewise controlled by the connecting link 152 pivoted to the back-rest 118 and to the upper arm 148 of said controlling element 144 at the points 154 and 150 respectively.

However, the controlling means for controlling the leg-rest 132 swingably mounted on the front portion of the seat 122 at 134 are of different arrangement. The rear end of a link 160 is pivoted to the lower arm 142 of the controlling element 144 at 141. The front end of said link 160 is pivoted at 162 to an arm 164 swingably mounted on the support 110 at 166. The upper end of said arm 164 is pivoted to the rear end of the controlling link 138 at 143. The front end of said controlling link 138 is pivoted to the leg-rest 132 at 136.

The sitting position of the movable members of the chair, shown in full lines, is limited by the stop 156 and the extreme reclined position of the movable members of the chair, shown in dash-and-dot lines, is limited by the rear wall 158 of the support 110.

According to the embodiment shown in Fig. 3, again the back-rest 218 is pivoted to the support 210 at 220 and to the seat 222 at 224. Furthermore, the guiding link 226 is pivoted to the seat 222 and to the support 210 at 228 and 230 respectively.

The controlling element 244 swingably mounted on the support 210 at 246 is in the shape of a bell-crank lever. The connecting link 252 is pivoted to the back-rest 218 at 254 at a point below the pivotal connection 224 between the back-rest 218 and the seat 222. The other end of the connecting link 252 is pivoted to the arm 249 of the bell-crank lever 244 at 250. The other arm 247 of the bell-crank lever 244 is pivoted at 268 to the leg-rest 232 swingably mounted on the front portion of the seat 222 at 234. The pivotal connections 220, 246, 230 of the support 210 with the back-rest 218, controlling element 244 and guiding link 226 are arranged on a straight line.

The sitting position of the movable members of the chair, shown in full lines, is limited by the stop 256, while the extreme reclined position of the movable members of the chair, shown in dash-and-dot lines, is limited by the rear wall 258 of the support 210.

According to the embodiment shown in Fig. 4, again the arrangement of the back-rest 318, the seat 322 and the guiding link 326 and their pivotal connections 320, 324, 328, 330 is the same as in the embodiment shown in Figs. 1-3.

The movements of the leg-rest 332 swingably mounted on the front portion of the seat 322 at 334 are controlled by the following mechanism: The connecting link 352 is pivoted to the back-rest 318 and to the arm 349 of the bell-crank controlling element 344 at 354 and 350

respectively. The other arm 347 of the bell-crank 344 swingably mounted on the support 310 at 346 is pivoted to an arm 370 at 372. The upper end of the arm 370 is pivoted to the guiding link 326 at 374. The lower end of said arm 370 is pivoted at 376 to the controlling link 338 which in turn is pivoted to the leg-rest 332 at 336.

The sitting position of the movable members of the chair, shown in full lines, is limited by a stop 356 and the extreme reclined position of the movable members of the chair, shown in dash-and-dot lines, is limited by the rear wall 358 of the support 310.

The embodiment of a reclining chair shown in Fig. 5 is similar to the embodiment of a reclining chair shown in Fig. 1, with the exception that the upper arm 448 of the double-armed lever 444 extends upwardly to a point above the plane of the seat 422 and that, therefore, the connecting link 452 is arranged in a plane above the plane of the seat 422. The front end portion of the connecting link 452 forming an arm-rest, is pivoted at 450 to said upper arm 448 of the controlling element 444 being in the shape of a bell-crank lever and the rear end portion of said connecting link 452 is pivoted to the back-rest 418 at 455 at a point above the pivotal connection 424 between the back-rest 418 and the seat 422. The lower end of the back-rest 418 is again swingably mounted on the support 410 at 420 at a point below the pivotal connection 424 between the back-rest 418 and the seat 422. The controlling element 444 having the shape of a bell-crank lever is swingably mounted on the support 410 at 446. The guiding link 426 is pivoted to the seat 422 and to the support 410 at 428 and 430 respectively.

The lower arm 442 of the controlling element 444 is pivoted to the rear end of the controlling link 438 at 440. The front end of said controlling link 438 is pivoted at 436 to the leg-rest 432 swingably mounted on the front portion of the seat 422 at 434.

The sitting position of the movable members of the chair, shown in full lines, is limited by a stop 456 arranged on the support for abutting cooperation with the seat 422. The extreme reclined position of the movable members of the chair, shown in dash-and-dot lines, is limited by another stop 478 arranged on the support for abutting cooperation with the back-rest 418.

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 for equivalent elements for the arrangements shown and described may be made without departing from the spirit and scope of the invention as set forth in the appended claims.

Each of the embodiments of a reclining chair according to the invention may be equipped with locking means for holding the movable members of the chair in any 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 said back-rest and said support and in a position to translate rearwardly and downwardly in an arc when said back-rest is tilted rearwardly from its extreme upright position, a guiding link disposed below said seat in an inclined position extending forwardly and upwardly from its lower end to its upper end when said back-rest is in its upright sitting position, means pivotally connecting said upper

end of the guiding link to a forward portion of the seat, means pivotally connecting said lower end of said guiding link to said support, said upper end of said guiding link being movable through an upwardly and rearwardly-directed arc into a substantially upright position to elevate said forward portion of the seat in response to rearward tilting movement of the back-rest, a double-armed controlling element swingably mounted on said support, a connecting link respectively pivoted at spaced points thereon to said back-rest and to one arm of said controlling element, a leg-rest swingably mounted below the front portion of said seat, and controlling means interposed between said leg-rest and the other arm of said controlling element for effecting movements of said leg-rest in coordination with movements of said controlling element.

2. An article of repose according to claim 1 in which the leg-rest is pivoted to the other arm of said controlling element.

3. An article of repose according to claim 1 in which a connecting linkage is pivoted at one end to the other arm of said element and is pivoted at the other end to said leg-rest.

4. An article of repose according to claim 1 in which said connecting link is pivoted to said back-rest at a point between the pivotal connection of said seat to said back-rest and the pivotal connection between said back-rest and said support.

5. 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 said back-rest and said support, said pivotal connection between said seat and said back-rest being positioned to move rearwardly and downwardly in an arc when said back-rest is tilted rearwardly from its extreme upright position, means interposed between said seat and said support of the article for controlling the movements of said seat in dependence on movements of said back-rest, a double-armed controlling element swingably mounted on said support, a connecting link respectively pivoted at spaced points thereon to said back-rest and to one arm of said controlling element, a leg-rest swingably mounted below the front portion of said seat, and controlling means interposed between said leg-rest and the other arm of said controlling element for effecting movements of said leg-rest in coordination with movements of said controlling element, said controlling means including an arm swingably mounted on said support, first means interposed between said other arm of the controlling element and said swingable arm for effecting movements of the latter in coordination with movements of said controlling element, and second means interposed between said swingable arm and said leg-rest for effecting movements of the latter in coordination with movements of said swingable arm.

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