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ADJUSTABLE HEAD RESTS FOR SEATING UNITS

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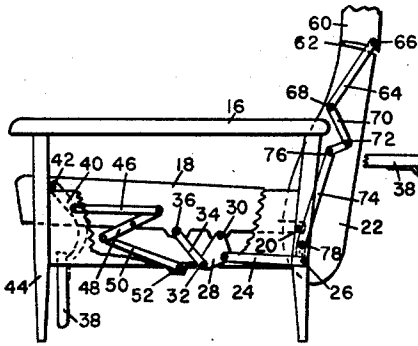


FIG. 1.

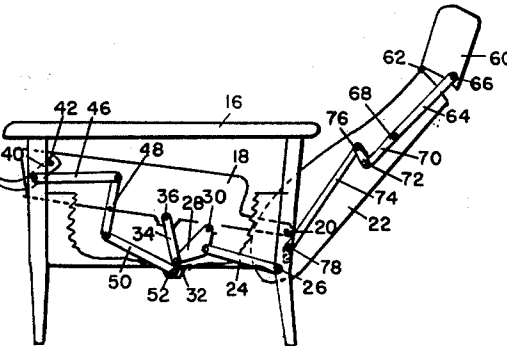


FIG. 2.

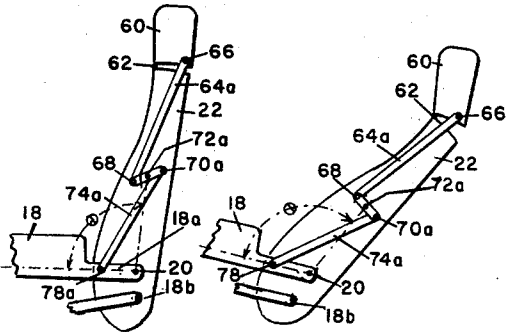


FIG. 3. FIG. 4.

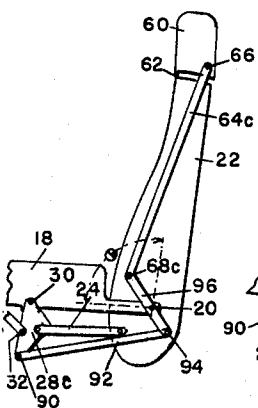


FIG. 5.

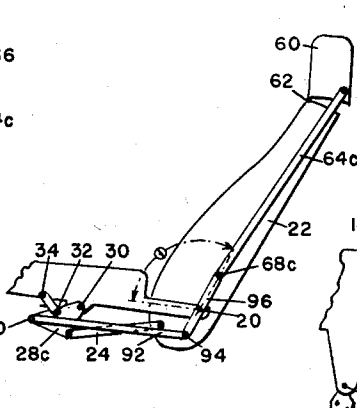


FIG. 6.

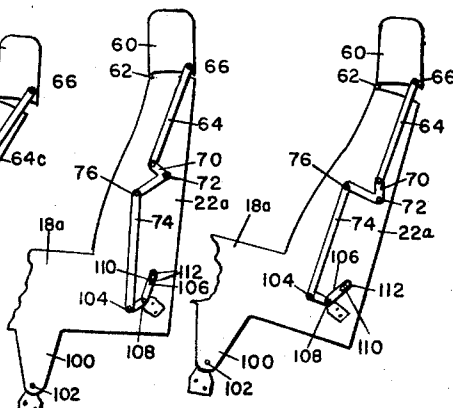


FIG. 7. FIG. 8. INVENTOR.

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ADJUSTABLE HEAD RESTS FOR SEATING UNITS

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1 Claim. (Cl. 155—177)

This invention relates to articles of furniture or seating units adjustable from a regular sitting position to a more or less reclining position. In particular, it relates to such articles in which an adjustable head rest portion is provided which moves when the back is inclined toward the reclining position to support the head of the occupant in the most comfortable posture.

The seating elements comprise a seat portion and a back rest portion mounted in a swingable or tiltable manner on a base resting on the floor. The back rest and seat portions are usually so connected that when the back rest is tilted backward the seat will also be tilted upward at its forward edge. Such seating units are usually provided with an adjustable leg rest which moves up to support the legs of the occupant when assuming a reclining position. The leg rest, however, forms no part of the present invention, nor is the present invention concerned with the particular manner of mounting the back rest and seat, so long as means are provided for securing the proper relative adjustment. The present invention is concerned with the head rest which usually takes the form of the upper part of or a continuation of the back rest and which is pivotally mounted thereon so as to tilt forward as the back rest is tilted. The mechanism of the present invention acts to tilt the head rest concurrently with the tilting of the back rest.

It is an object of the invention to provide a simple and effective means for accomplishing the movements of the head rest at the proper ratio with respect to the movement of the back rest so that it will maintain the head of the occupant always supported in a comfortable position. It is a further object of the invention to provide means for operating the head rest in such manner that the operating links are in alignment with the outline of the back rest so that they do not project in front of the back supporting surface of the back rest where they might cause discomfort by contacting with some part of the body, nor do they project rearward of the back surface of the back rest where they would be unsightly. The operating linkages may be mounted on each side of the back rest or concealed within the same.

In the accompanying drawings which show certain preferred embodiments of the invention as illustrative of the principles thereof:

Fig. 1 is a side elevation of a chair embodying one form of the invention, the parts of the chair being shown in upright or sitting position;

Fig. 2 is a similar view of the chair shown in Fig. 1 in a more or less reclining position;

Fig. 3 is a side elevation of the back part of a chair with the back rest in upright position showing another form of head rest operating mechanism;

Fig. 4 is a view similar to Fig. 3 showing the back rest in a backward tilted position;

Fig. 5 is a side elevation of a chair, the forward part being omitted, illustrating another form of linkage for operating the head rest, the parts being shown in sitting position;

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Fig. 6 is a view of the chair shown in Fig. 5 in a reclining position;

Figs. 7 and 8 are side elevations of part of a chair showing another form of head rest operating mechanism, Fig. 7 showing the sitting position and Fig. 8 the tilted-back or reclining position.

Referring to the drawings in detail, the chair shown in Fig. 1 comprises a fixed base including side members 12, parts of which are shown broken away in Fig. 1, legs 14 and arms 16. 18 is a chair seat which is pivoted at 20 to the frame. 22 is the back rest which is also shown as pivoted to the frame at point 20 although obviously the seat and back rest do not have to be pivoted upon the same axis. Mechanism is provided for tilting the forward edge of the seat 18 upward when the back rest is swung to a rearwardly inclined position. Any suitable mechanism may be used for this purpose, that shown comprising drive links 24 pivoted to the lower part of the back rest at 26 and pivoted at their forward ends to guide plates 28 which are pivoted at points 30 to the side members 12 of the frame. The guide plates 28 are pivoted at 32 to guide links 34 which are pivoted at their other ends to the chair seat at points 36. Also shown by way of illustration is an adjustable leg rest 38 which is mounted on arms 40 pivoted to the chair seat at 42 and arranged to be swung to an outward projecting position as shown in Fig. 2 by suitable linkage such as forward connecting links 46, levers 48 pivoted on the chair seat and rear connecting links 50 pivoted to the levers 48 and to fixed points 52 on the frame members 12.

The particular linkage for connecting the back rest and seat and for actuating the leg rest are no part of the present invention, and may be of any convenient form. In fact, no leg rest need be provided unless desired.

In the construction shown in Figs. 1 and 2 at the upper part of the back rest is a head rest 60 which is pivoted to the back rest at hinge points 62. In the construction shown, the head rest practically conforms in outline with the shape of the back rest and may be considered as a mobile part of the back rest. However, the head rest may be shaped in any desired manner. For tilting the head rest upon its hinges to a better head-supporting position when the back rest is swung backward, a linkage is provided comprising upper connecting links 64 pivoted at 66 to the head rest at points in the rear of the hinge axis 62. The links 64 are pivoted at their lower ends at points 68 with bent levers or plates 70 which are pivoted at 72 to a back rest. Lower links 74 are pivoted at 76 to the angled arms of the levers 70, the lower ends of the links 74 being pivoted at 78 to the stationary frame of the chair. The pivot points 78 are located at points on the frame spaced from the pivotal axis 20 about which the back rest 22 swings. The result is that when the back rest is swung about its pivotal axis the linkage which is pivoted at 72 to the back rest will be displaced and the links 74 will be pushed up with respect to the axis 20 which will swing the angular levers 70 about their pivots 72 and push up on the links 64 which will tilt the head rest as shown in Fig. 2. Upon return of the chair to upright position the head rest will also return to its Fig. 1 position.

Figs. 3 and 4 show a modified construction of linkage for actuating the head rest. In these figures the head rest is again marked 60 and is pivotally mounted at 62 on the back rest 22. The back rest and seat 18 are mounted for pivotal movement about the axis 20. As previously described the seat and back rest axes do not necessarily coincide. The linkage for actuating the head rest comprises upper links 64a pivoted at 66 to the head rest and at 68 to a lever or plate 70a which is pivoted at 72a to the back rest. The lower links 74a are pivoted at 78a to the hinge arms 18a carrying the seat 18. When the

back rest is tilted to the rear as shown in Fig. 4, the seat 18 is tilted upward but through a smaller angle than the back rest. Accordingly, the angle between the longitudinal axes of the back rest and seat (indicated by dot and dash lines) will be enlarged and a pull will be exerted on the links 74a, thus tilting the head rest forward.

Figs. 5 and 6 show another modified form of head rest operating linkage. In this construction the back rest 22 and seat 18 are pivoted to the chair frame as before, the common pivotal axis being shown at 20. The linkage for tilting the seat when the back rest is moved back comprises links 24 pivoted to guide plates 28c which are pivoted at 30 to the chair frame members 12. The plates 28c are pivoted at 32 to links which are pivoted to the chair seat at 34. The action of the linkage in tilting the seat is the same as that shown in Figs. 1 and 2, but the guide plates 28c are of a different shape from the guide plates 28 and have forward pivot points 90 thereon to which are pivoted the forward ends of connecting links 92, the rear ends of which are connected at 94 to levers 96 pivoted on the axis 20 at which the back rest 22 is pivoted. The upper ends of the levers 96 are pivoted at 68c to links 64c which are pivoted at 66 to the head rest 60 which is pivoted at 62 to the back rest 22. This linkage will also act to tilt the head rest forward as the back rest is tilted toward a reclining position.

Figs. 7 and 8 show another modified form of the invention, this form also illustrating the application of the invention to a chair in which the back rest and seat are not separately pivoted to the chair base but are formed as a rigid unit pivoted to the chair base. 18a is the chair seat to which the back rest 22a is rigidly attached. The chair seat is provided with brackets 100 which are pivoted to the side frames of the chair at points 102. The head rest 60 is pivoted at 62 to the back rest and is actuated by upper links 64 pivoted to angled levers or plates 70 which are pivoted to the back rest at points 72. Lower links 74 are pivoted to the plates 70 at points 76. At their lower ends links 74 are pivoted at 104 to levers or plates 106 which are pivoted between their ends to the stationary chair frame at points 108. The free ends of the levers 106 have slots 110 in their ends in which work pins 112 mounted in the seating unit. When the seating unit is tilted backward the levers 106 are tipped from the position shown in Fig. 9 to the position shown in Fig. 10. This causes the shorter ends of the levers to push up on links 74 and 64 and thereby tilt the head rest forward as shown in Fig. 10.

It will be seen that various mechanisms have been provided for actuating a tilting head rest, and the constructions shown in Figs. 1 and 2 are done by anchoring a part of the linkage to the stationary chair frame. According to Figs. 3 and 4 the linkage is connected to a part of the chair seat. Figs. 5 and 6 show the head rest linkage actuated through a connection with the linkage by which the seat is tilted when the back rest is moved back. Figs. 7 and 8 show a linkage actuated by the backward tilting of a unitary seat and back rest construction, action being secured by the relative movement between

the tilting unit and an anchorage point on the fixed chair frame. These various linkages provide means by which flexibility in ratio of movement between the head rest and back rest may be secured by proper proportioning of the parts so that the most desired relationship may be obtained. All the constructions shown are characterized by a linkage of compact form which is contained within the outlines of the back rest and seat. Nothing projects where it will interfere with the occupant, and nothing projects in a manner to be unsightly or to interfere with anyone moving back of the chair. The linkage is also well above the floor level so that a chair design may be used in which the frame is supported on legs, thus providing an article of furniture of light and airy appearance and one which permits the passage of a broom or vacuum cleaner thereunder.

It is understood that certain parts, elements or mechanisms shown in a certain figure may be substituted for corresponding parts, elements or mechanisms of the embodiments shown in other figures of the drawings.

I have described preferred embodiments of my invention, but it is understood that this disclosure is for the purpose of illustration, and that various omissions or changes in shape, proportion and arrangement 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 claim.

I claim:

In a reclining article of furniture, a stationary frame, seating elements movably mounted on said frame for movement into more or less reclining positions, said seating elements including a seat and a back rest both of which are tiltable with respect to the frame, said seat being pivoted to the frame, a head rest pivotally mounted on top of the back rest for forward tilting movement about an axis fixed with respect to the back rest, a head rest drive lever having a fulcrum point on the stationary frame and pivoted at a point spaced from said fulcrum point to the seat at a point eccentric to the point at which the seat is pivoted to the frame, for turning said lever about its fulcrum point when the seating elements are tilted, and linkage connected to the head rest and to a part of the drive lever eccentric to the fulcrum point of the lever on the frame for tilting the head rest when the seating elements are tilted, said linkage including a thrust link pivoted to a part of the head rest in rear of its pivot axis.

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