May 20, 1947. F. B. HARMAN 2,420,745

POSTURE CHAIR

Filed March 6, 1944

Fig. 2

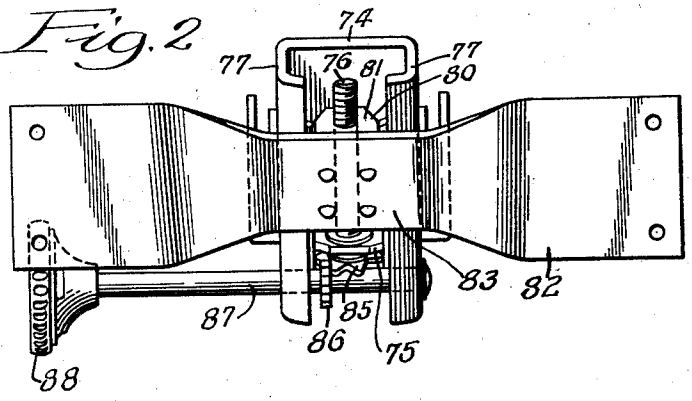


Fig. 3

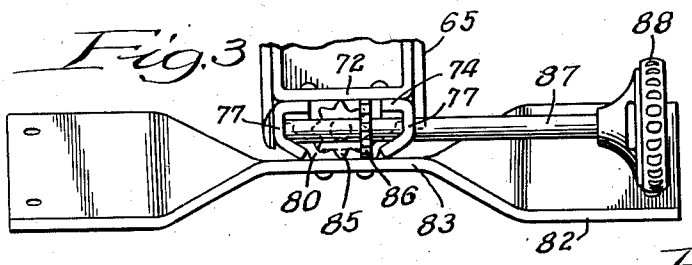


Fig. 1

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POSTURE CHAIR

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1 Claim. (Cl. 155—77)

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My invention relates generally to posture chairs and it has particular reference to posture chairs in which the backs and seats are adjustable relative to each other, for example, such as disclosed in my U. S. Patent #2,310,366, issued February 9, 1943.

It is the purpose of posture chairs of the type described to provide adequate and proper support for the back and legs of a person seated therein. Such support is only adequate and proper when the seat of a chair is of such a length as to provide support for the entire upper part of the legs, and when the height of the back of the chair is sufficient to support the person in the chair at the proper point along the spine. It is known that a tall person requires a greater back height and a greater seat length than does the short person, for the reason that a tall person generally has a longer body trunk and correspondingly longer upper leg portions. In this connection, I have found that the ratio of the difference of back height required for any two normal people of different heights to the difference in seat length required for the same two people is substantially constant.

The object of my invention, generally stated, is the provision of a posture chair of the type described wherein the back height and the seat length of the chair may both be simultaneously increased or decreased by an improved mechanism whereby the chair back alone is adjusted simultaneously, horizontally and vertically relative to the chair seat.

It is still another object of this invention to provide a posture chair of the type described wherein the back height and seat length of the chair may be simultaneously increased or decreased by a single manual control operable by a person seated in the chair.

Other objects of my invention will, in part, be obvious and in part appear hereinafter.

For a more complete understanding of the nature and scope of my invention reference may be had to the following detailed description thereof taken in connection with the accompanying drawing in which:

Fig. 1 is a side elevational view of a posture chair wherein the back is made simultaneously, horizontally and vertically adjustable relative to the chair seat.

Fig. 2 is a rear view in elevation of the back adjusting mechanism, the view being taken from the right-hand side of Fig. 1; and

Fig. 3 is a view on the line 3—3 of Fig. 1.

In Fig. 1 of the drawing, a posture chair designated 10 in its entirety, comprises a base 11, a seat 12, and a back 13. The seat 12 is carried on a screw 14 so as to be vertically adjustable relative to the base 11, and the chair back 13 is carried by an adjustable support mechanism indicated generally at 15 so as to be simultaneously, vertically and horizontally adjustable relative to the seat 12.

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The details of the supporting arrangement for the seat 12 and of the back adjusting mechanism 15 are as follows: a horizontal supporting member 65 is hingedly supported at the lower left-hand end thereof at 66 between the sides of a U-shaped member 67, which is suitably supported on the screw base 14. A heavy coil spring 69 is connected at 70 with a support member 65 so that a person seated on the chair seat carried by the support member 65, may tilt backwards with a rocking motion against the strength of the spring 69. A right-hand or rear end portion 72 of the support member 65 is turned downwardly and inwardly thereunder at an angle of about 45°, and the adjustable back supporting mechanism is secured to said turned-under portion 72. The supporting member 65 is suitably secured to the chair seat 12, which may include one or more bottom braces, such as indicated at 25. The member 65 may be secured directly to the bottom of the seat, or to such brace members 25.

The U-shaped member 67 is also preferably provided with an upwardly extending front wall part 68 against which one end of the spring 69 bears, and against which the spring may be compressed by appropriately adjusting the nut 71 on the screw-threaded forward end of the bolt 64 around which the spring is disposed, and which bolt is provided with a T head, or other suitable means, for effecting the connection at 70 between the spring adjusting mechanism and the depending front leg 63 of the seat support 65.

The back adjusting mechanism 15 comprises a channel member 74 which is disposed with its web portion uppermost and attached by rivets or other suitable means to the said turned-under portion 72 of the chair seat member 65. The channel member 74 thus extends upwardly and rearwardly at an angle of about 45°. A portion of the web of the channel member 74 adjacent the lower end thereof is bent inwardly at substantially right angles to the web so as to provide a screw bearing portion 75 in which a screw 76 is journaled for rotation. The screw 76 extends upwardly between the turned over side flanges 77 of the channel member 74 and is secured against downward longitudinal movement relative to the

channel member and its in-turned lower end portion 75 by means of a collar 78, or equivalent shoulder-forming means, secured to or formed on the screw.

A channel-shaped carriage or slide element 80 is slidably mounted in interlocked relationship with the channel member 74, the carriage member being located inside of the channel member 74. The carriage member 80 has an inwardly turned portion 81 which is provided with a suitably screw-threaded aperture for threadedly receiving the screw 76. Upon rotation of the screw 76, the carriage member 80 will be moved along the axis of the screw 76 in one direction or the other depending upon the direction of rotation of the screw. The back member 13 is rigidly secured to the carriage, or slide member 80 through the agency of suitable side arms, such as indicated at 60, which depend from the chair back and have their lower ends connected together by means of a transversely extending support or bracket plate 82. The bracket plate 82 has a centrally disposed portion 83 twisted to lie flatwise against the outside of the carriage, or slide, member 80 between the edges of the inturned sides 77 of the channel 74, and said bracket or support plate 82 is riveted, or otherwise rigidly secured to said slide member 80, as shown. Thus, it will be apparent that the chair back 13 will simultaneously move vertically and horizontally with the slide member 80 upon rotation of the screw 76.

For facilitating manual rotation of the screw 76, a gear wheel 85 is non-rotatably connected to the lower end of the screw 76 for co-operation with a similar gear 86 which is rigidly secured to an operating shaft 87. The operating shaft 87 is suitably journaled in the opposite side flanges 77 of the channel member 74, and it preferably extends towards the right-hand side of the chair, and has its right-hand end provided with a hand wheel 88. The location of the end of the shaft 87 and its hand wheel 88 is so selected that the hand wheel will be conveniently accessible at the side of the chair seat for manual adjustment of the chair back.

In the arrangement shown, it will be seen that the rotation of the hand wheel 88 will be transmitted through the meshing gears 86 and 85 to the screw 76. Rotation of the screw 76 causes the slide 80 to move upwardly and rearwardly, or downwardly and forwardly of the chair seat, and with it the chair back. Adjustment in either direction is readily effected by appropriately rotating the hand wheel and shaft 87 to correspondingly rotate the screw 76.

Changes may be made in the described construction, and the invention embodied in different constructions without departing from the spirit thereof.

I claim:

In a posture chair of the class described, a supporting base, a seat, means connecting said seat to said base for rocking movement about a horizontal axis, said means comprising a bracket member secured to said seat and having an horizontal pivot connection at its front end with said base structure, said bracket having means at its rear end extending at an angle of about 45° forwardly and downwardly therefrom, a chair back, and means connecting said chair back to said angularly extending bracket means for movement in parallel relation to the angle of said angularly extending means, said connecting means comprising a pair of relatively slidably interconnected members, one of which is rigidly secured to said angularly extending bracket means, and the other of which is rigidly secured to said chair back, a screw rotatably mounted in said fixedly mounted member but held against axial movement relative thereto, said screw having threaded engagement with a portion of the interlocked member to which the back is secured, a shaft journalled in said fixedly mounted member and extending transversely of said screw, gear means interconnecting said shaft and screw for simultaneous rotation, said shaft extending laterally to adjacent one side of the seat, and being provided with a hand wheel for facilitating manual rotation of said shaft and corresponding adjustment of the back.

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