A chair adjusting device includes a seat support board, a base, a backrest linking base, two elastic sets, and a backrest. The two elastic sets may provide an auxiliary elastic force to the backrest linking base. The seat support board has a rear side slidably mounted on the two side plates of the backrest linking base by two pivot knobs, so that the seat support board may be moved in concert with the backrest linking base. A primary urging spring is mounted on the support rod, and has a top edge urged on a bottom face of the seat support board.
CHAIR ADJUSTING DEVICE

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to a chair adjusting device, and more particularly to a chair adjusting device that may entirely satisfy the ergonomic requirements and may adjust the inclined angle between the seat and the backrest automatically and synchronously, such that the user may obtain comfortable sensation.

[0003] 2. Description of the Related Art

[0004] A conventional chair comprises a seat and a backrest. When the backrest is adjusted to have an inclined angle so as to fit the user’s requirement, the seat is also moved with the backrest to have an inclined angle, so that the front side of the seat is lifted synchronously. However, the inner side of the user’s leg is compressed by the inclined front side of the seat, thereby easily causing uncomfortable sensation to the user during long-term utilization, and thereby easily poorly affecting the blood circulation of the user.

[0005] The closest prior art of which the applicant is aware is disclosed in the Taiwanese Patent Publication No. 239946, entitled by “Base Structure of Chair”.

[0006] In the Taiwanese Patent Publication No. 239946, the two springs function as the primary springs, and are the only source of the elastic force. In addition, when the backrest is inclined backward, the seat is not inclined backward with the backrest. Further, the elastic force of the two primary springs cannot be adjusted. Further, all of the elastic force of the two primary springs is concentrated on the backrest linking base, thereby easily producing a stress concentration point.

SUMMARY OF THE INVENTION

[0007] The primary objective of the present invention is to provide a chair adjusting device that may entirely satisfy the ergonomic requirements, and may adjust the inclined angle between the seat and the backrest automatically and synchronously, so that the user may have a comfortable sensation.

[0008] Another objective of the present invention is to provide a chair adjusting device, wherein the elastic force of the primary urging spring and the two auxiliary springs of the two elastic sets may be evenly distributed on the seat support board, the backrest linking base, and the L-shaped backrest, thereby preventing from producing a stress concentration point.

[0009] In accordance with the present invention, there is provided a chair adjusting device, comprising: a seat support board, a base, a backrest linking base, two elastic sets, and a backrest, wherein:

[0010] the seat support board has a front side provided with two oblique support racks, the front side of the seat support board is formed with a shaft hole, and a first shaft is extended through the shaft hole, so that the front side of the seat support board is pivotally mounted on the base, the seat support board has a rear side slidably mounted on two side plates of the backrest linking base by two pivot knobs, so that the seat support board may be moved in concert with the backrest linking base;

[0011] the base has two side plates for passage of a second shaft, so that the backrest linking base may be pivotally mounted on the two side plates of the base by the second shaft, a support rod is screwed and positioned between the two side plates of the base, a primary urging spring is mounted on the support rod, and has a top edge urged on a bottom face of the seat support board;

[0012] the backrest linking base is pivotally mounted on the base by the second shaft, and front ends of the two side plates of the backrest linking base are symmetrically pivoted with two elastic sets respectively; and

[0013] each of the two elastic sets includes two pivot bases, a slide rod, and an auxiliary spring, a first one of the two pivot bases of each of the two elastic sets is positioned between the two side plates of the base by a third shaft, and a second one of the two pivot bases of each of the two elastic sets is pivotally mounted on the front end of each of the two side plates of the backrest linking base, so that the backrest linking base is constantly subjected to an auxiliary elastic force by the two elastic sets.

[0014] Further benefits and advantages of the present invention will become apparent after a careful reading of the detailed description with appropriate reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] FIG. 1 is a perspective assembly view of a chair adjusting device in accordance with a preferred embodiment of the present invention;

[0016] FIG. 2 is an exploded perspective view of the chair adjusting device as shown in FIG. 1;

[0017] FIG. 3 is a partially exploded perspective view of the chair adjusting device as shown in FIG. 1;

[0018] FIG. 4 is a side plan cross-sectional view of the chair adjusting device as shown in FIG. 1; and

[0019] FIG. 5 is a schematic operational view of the chair adjusting device as shown in FIG. 4.

DETAILED DESCRIPTION OF THE INVENTION

[0020] Referring to the drawings and initially to FIGS. 1-3, a chair adjusting device in accordance with a preferred embodiment of the present invention comprises a seat support board 10, a base 20, a backrest linking base 30, two elastic sets 40, and a backrest 50.

[0021] The seat support board 10 has a front side provided with two oblique support racks 11, so that a seat (not shown) may be threaded securely on the two support racks 11. The front side of the seat support board 10 is formed with a shaft hole 15, and a shaft 25 is extended through the shaft hole 15, whereby the front side of the seat support board 10 is pivotally mounted on the base 20, so that the shaft 25 may function as the rotation shaft of the seat support board 10.
The seat support board 10 has a rear side formed with two opposite slide slots 16 for passage of two pivot knobs 36, whereby the rear side of the seat support board 10 may be slidably mounted on the two side plates of the backrest linking base 30 by the two pivot knobs 36, so that the seat support board 10 may be moved in concert with the backrest linking base 30.

The base 20 is secured on a foot post 28, and has two side plates for passage of a shaft 26, so that the backrest linking base 30 may be pivotally mounted on the two side plates of the base 20.

A support rod 21 is screwed and positioned on the two side plates of the base 20. A primary urging spring 22 is mounted on the support rod 21, and has a top edge urged on a bottom face of the seat support board 10.

A hook rod 23 is extended through a bottom face of the base 20, and has a top end hooked on a side edge of the primary urging spring 22, and a bottom end screwed into a locking sleeve 29. The locking sleeve 29 may be rotated to move the hook rod 23, thereby adjusting the upward urging force of the primary urging spring 22, so as to fit the requirements of different users.

The backrest linking base 30 is pivotally mounted on the two side plates of the base 20 by the shaft 26, so that the shaft 26 may function as a rotation shaft of the backrest linking base 30.

An L-shaped backrest 50 is threadedly secured on a rear side of the backrest linking base 30, and a backrest cushion (not shown) may be mounted on the backrest 50.

The rear side of the seat support board 10 is slidably mounted on the two side plates of the backrest linking base 30 by the two pivot knobs 36, so that the seat support board 10 may be moved in concert with the backrest linking base 30. The front ends of the two side plates of the backrest linking base 30 are symmetrically pivoted with two elastic sets 40 respectively.

Each of the two elastic sets 40 includes two pivot bases 41, a slide rod 42, and an auxiliary spring 43. A first one of the two pivot bases 41 of each of the two elastic sets 40 is positioned between the two side plates of the base 20 by a shaft 24. The auxiliary spring 43 is mounted on the slide rod 42 which is slidably pivoted between the two pivot bases 41. A second one of the two pivot bases 41 of each of the two elastic sets 40 is pivoted and positioned on the front end of each of the two side plates of the backrest linking base 30 by two shaft pins 39, so that the backrest linking base 30 and the L-shaped backrest 50 are constantly subjected to a clockwise auxiliary elastic force by the two elastic sets 40 as shown in FIG. 4.

Referring to FIGS. 1-5, in the chair adjusting device in accordance with a preferred embodiment of the present invention, the two slightly inclined elastic sets 40 may provide an auxiliary elastic force to the backrest linking base 30 and the L-shaped backrest 50, and the rear side of the seat support board 10 is slidably mounted on the two side plates of the backrest linking base 30 by the two pivot knobs 36, so that the seat support board 10 may be moved in concert with the backrest linking base 30. The primary urging spring 22 is urged on the bottom face of the seat support board 10.

Thus, the elastic force of the primary urging spring 22 and the two auxiliary springs 43 of the two elastic sets 40 may be evenly distributed on the seat support board 10, the backrest linking base 30, and the L-shaped backrest 50, thereby preventing from producing a stress concentration point.

In addition, the elastic force of the primary urging spring 22 and the two auxiliary springs 43 may be applied on the seat support board 10, the backrest linking base 30, and the L-shaped backrest 50 synchronously.

Further, the locking sleeve 29 may be rotated to move the hook rod 23, thereby adjusting the upward urging force of the primary urging spring 22 on the seat support board 10.

Accordingly, the primary urging spring 22 and the two auxiliary springs 43 of the two elastic sets 40 may apply an auxiliary elastic force to the seat support board 10 and the backrest linking base 30, so that the seat support board 10 and the backrest linking base 30 may be rotated relative to the base 20 synchronously. Thus, the chair adjusting device of the present invention may entirely satisfy the ergonomic requirements, and may adjust the inclined angle between the seat and the backrest automatically and synchronously, so that the user may have a comfortable sensation.

In comparison, in the Taiwanese Patent Publication No. 239946, the two springs function as the primary springs, and are the only source of the elastic force. In addition, when the backrest is inclined backward, the seat is not inclined backward with the backrest. Further, the elastic force of the two primary springs cannot be adjusted. Further, all of the elastic force of the two primary springs is concentrated on the backrest linking base, thereby easily producing a stress concentration point.

In the present invention, the primary urging spring 22 functions as the primary spring, and the two auxiliary springs 43 of the two elastic sets 40 only provide an auxiliary elastic force. In addition, when the backrest 50 is inclined backward, the seat support board 10 and the backrest linking base 30 are also inclined backward with the backrest 50. Further, the locking sleeve 29 may be rotated to move the hook rod 23, thereby adjusting the upward urging force of the primary urging spring 22, so as to fit the requirements of different users. Further, the elastic force of the primary urging spring 22 and the two auxiliary springs 43 of the two elastic sets 40 may be evenly distributed on the seat support board 10, the backrest linking base 30, and the L-shaped backrest 50, thereby preventing from producing a stress concentration point.

Although the invention has been explained in relation to its preferred embodiment as mentioned above, it is to be understood that many other possible modifications and variations can be made without departing from the scope of the present invention. It is, therefore, contemplated that the appended claim or claims will cover such modifications and variations that fall within the true scope of the invention.

What is claimed is:

1. A chair adjusting device, comprising: a seat support board, a base, a backrest linking base, two elastic sets, and a backrest, wherein:
the seat support board has a front side provided with two oblique support racks, the front side of the seat support board is formed with a shaft hole, and a first shaft is extended through the shaft hole, so that the front side of the seat support board is pivotally mounted on the base, the seat support board has a rear side slidably mounted on two side plates of the backrest linking base by two pivot knobs, so that the seat support board may be moved in concert with the backrest linking base;

the base has two side plates for passage of a second shaft, so that the backrest linking base may be pivotally mounted on the two side plates of the base by the second shaft, a support rod is screwed and positioned between the two side plates of the base, a primary urging spring is mounted on the support rod, and has a top edge urged on a bottom face of the seat support board;

the backrest linking base is pivotally mounted on the base by the second shaft, and front ends of the two side plates of the backrest linking base are symmetrically pivoted with two elastic sets respectively; and

each of the two elastic sets includes two pivot bases, a slide rod, and an auxiliary spring, a first one of the two pivot bases of each of the two elastic sets is positioned between the two side plates of the base by a third shaft, and a second one of the two pivot bases of each of the two elastic sets is pivoted and positioned on the front end of each of the two side plates of the backrest linking base, so that the backrest linking base is constantly subjected to an auxiliary elastic force by the two elastic sets.

2. The chair adjusting device in accordance with claim 1, wherein the base is secured on a foot post.

3. The chair adjusting device in accordance with claim 1, further comprising a hook rod extended through a bottom face of the base, wherein the hook rod has a top end hooked on a side edge of the primary urging spring, and a bottom end screwed into a locking sleeve.

4. The chair adjusting device in accordance with claim 1, wherein the backrest is L-shaped, and is threadedly secured on a rear side of the backrest linking base.

5. The chair adjusting device in accordance with claim 1, wherein the auxiliary spring is mounted on the slide rod which is slidably pivoted between the two pivot bases.

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