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(54) TILTING MECHANISM FOR A CHAIR

NEIGUNGSVERSTELLMECHANISMUS FÜR EINEN STUHL

MECANISME D'INCLINAISON POUR CHAISE

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Description

The present invention is related to a tilting mechanism for a chair, according to the preamble of claim 1. Such a tilting mechanism is known from US 4,979,778. US 2,471,024 discloses a chair with a tilting back, where a shaft runs in guide channels under the seat to enable displacement thereof.

Tilting mechanism for chairs, especially for office chairs, are available in a number of different varieties, partly for tilting only of the back portion of the chair, partly for tilting of the seat and the back portion together. Synchronous tilting of seat and back portion partly is achieved by a spring for the seat and a spring for the back portion whereas recently developments are found where seat and back portion are tilted synchronously with only one spring. Even if the tilting of the seat and the back portion is performed synchronously, the seat does not necessarily maintain its position in relation to the back portion during the movement, but the angle between the seat and the back portion to the contrary is changed in dependency of the tilting angle of the back portion. It is, however, substantial for the comfort of a chair to provide a desired angle relationship between the seat and the back portion in all different positions of the back portion.

To achieve such a tilting movement both of the back portion and the seat, seat and back portion both are journaled on their own horizontal tilting axis. The geometrical relationships, such as the arrangement of these two axis in relation to each other, horizontally as well as vertically, and the arrangement and the shape of the connection between the seat and the back portion, are crucial for the relative tilting movements of the seat and the back portion.

With the tilting mechanism according to the present invention, relative movements between seat and back portion are achieved which ensures that the so called stripping effect is avoided, this means that the rear portion of the seat is moved so much downwards in relation to the back portion when this is tilted backwards, that shirts are pulled up from trousers. This effect is achieved additionally to the fact that the front edge of the seat is maintained substantially in the same position and that there is provided a possibility of adjustment of the arrangement of the seat towards the front and towards the rear of the chair.

In the above-mentioned US 4,979,778, the seat is connected to a support arm of the back support by means of a pivotal structure, whereas in the present invention a connection piece of flexible material is provided.

The only Figure of the drawing discloses schematically a side view of a tilting mechanism according to the present invention where one tilting position of the mechanism is disclosed with dotted lines.

The frame 1 of the mechanism is secured to a chair base (not disclosed) and rotatable around the axis 12.

In the frame is arranged a spring 2 between the frame 1 and an arm 3 protruding outwards and backwards, on which a back support 5 is secured, such as by a nut 10. The arm 3 is moved against the force of the spring when a user leans backwards and thereby presses the back support backwards and downwards, turning around the axis 2.

The seat 4 is journaled around a shaft 6 in the front portion of the frame 1. The shaft 6 may be connected with the frame 1, may be biased in relation to the frame or may be adjustable in relation to the frame. The seat 4 is connected with the shaft 6 in such a way that the seat may be displaced forwards and backwards as the shaft 6 is sliding in guidings 11.

Correspondingly the rear portion of the frame also is journaled along the shaft 7 in a guiding 8, whereby the shaft 7 may be locked to the guiding 8, such as by a nut. The shaft 7 is connected with the seat 4 by a middle piece 9. The middle piece 9 may be fixedly secured to the seat 4 and flexible such that it can be turned around the shaft 7. By means of the middle piece 9, the back portion 5 and the seat 4 may be tilted around the axis of the spring 2 and the axis of the shaft 6 respectively as the displacement between the seat and the arm 3 will be adjusted by the flexibility of the flexible middle piece 9.

Claims

1. Mechanism for a chair, especially an office chair, comprising a biased back support (5) and a seat (4) being synchronously movable with the back support (5), the spring (2) for the seat (4) as well as for the back support (5) is arranged in the journaled axis (2) for the back support (5) in the frame (1) of the mechanism, the seat (4) being journaled near the front edge, to the frame (1) with a shaft (6) being arranged horizontally and vertically at a distance from the journalling axis (2) of the back support, the seat (4) being journally connected with a shaft (7) on a support arm (3) to which the back support (5) is connected by means of a connection piece (9) by which the difference between the rotation radii of the shaft (7) around the journaled axis (2) and around the shaft (6), respectively, is compensated, **characterized** in that the seat (4) being displaceable in and out in relation to the frame (1), that the shaft (6) connected with the front portion of the frame (1) is displaceable in a guiding (11) secured to the front portion of the seat (4) and the shaft (7) being displaceable in a guiding (8) secured to the support arm (3), and that the connection piece (9) is made of flexible material.
2. Mechanism according to preceding claim, **characterized** in that the front shaft (6) on the frame (1) being vertically adjustable for adjusting the height of the seat.

3. Mechanism according to preceding claims, **characterized** in that the front shaft (6) of the frame (3) being vertically biased.

Patentansprüche

1. Mechanismus für einen Stuhl, insbesondere einen Bürostuhl, mit einer vorgespannten Rückenstütze (5) und einem Sitz (4), der gleichzeitig mit der Rückenstütze (5) beweglich ist, wobei die Feder (2) für den Sitz (4) sowie für die Rückenstütze (5) in der Gelenkachse (2) für die Rückenstütze (5) im Rahmen (1) des Mechanismus angeordnet ist, der Sitz (4) in der Nähe des vorderen Randes am Rahmen (1) mit einem Zapfen (6) angelenkt ist, der horizontal und vertikal in einem Abstand von der Gelenkachse (2) der Rückenstütze angeordnet ist, der Sitz (4) schwenkbar mit einem Zapfen (7) an einem Tragarm (3) verbunden ist, mit dem die Rückenstütze (5) mittels eines Verbindungsstückes (9) verbunden ist, durch das der Unterschied zwischen den Drehradien des Zapfens (7) um die Gelenkachse (2) bzw. um den Zapfen (6) kompensiert wird, dadurch gekennzeichnet, daß der Sitz (4) einwärts und auswärts relativ zum Rahmen (1) verschiebbar ist, daß der Zapfen (6), der mit dem vorderen Teil des Rahmens (1) verbunden ist, in einer Führung (11) verschiebbar ist, die an dem vorderen Teil des Sitzes (4) befestigt ist, daß der Zapfen (7) in einer Führung (8) verschiebbar ist, die am Tragarm (3) befestigt ist, und daß das Verbindungsstück (9) aus einem flexiblen Werkstoff hergestellt ist.
2. Mechanismus gemäß dem vorausgehenden Anspruch, dadurch gekennzeichnet, daß der vordere Zapfen (6) am Rahmen (1) vertikal verstellbar ist, um die Höhe des Sitzes einzustellen.
3. Mechanismus gemäß den vorausgehenden Ansprüchen, dadurch gekennzeichnet, daß der vordere Zapfen (6) des Rahmens (1) vertikal vorgespannt ist.

Revendications

1. Mécanisme destiné à une chaise, en particulier une chaise de bureau, comprenant un dossier (5) sollicité et un siège (4) susceptible d'être déplacé de façon synchrone avec le dossier (5), le ressort (2) destiné au siège (4), ainsi qu'au dossier (5) étant monté dans l'axe (2) de rotation du dossier (5), dans le cadre (1) du mécanisme, le siège (4) étant monté rotatif à proximité du bord avant, par rapport au cadre (1), un arbre (6) étant placé horizontalement et verticalement à distance de l'axe (2) de rotation du dossier, le siège (4) étant relié de façon rotative à un arbre (7), sur un bras de support (3)

sur lequel le dossier (5) est relié au moyen d'un élément de connexion (9) grâce auquel la différence entre les rayons de rotation de l'arbre (7) autour de l'axe (2) de rotation et autour de l'arbre (6), respectivement, est compensée, caractérisé en ce que le siège (4) peut être déplacé pour rentrer et sortir du cadre (1), en ce que l'arbre (6) relié à la partie avant du cadre (1) est susceptible d'être déplacé dans un élément de guidage (11) fixé sur la partie avant du siège (4) et l'arbre (7) est susceptible d'être déplacé dans un élément de guidage (8) fixé sur le bras de support (3), et en ce que l'élément de connexion (9) est constitué en matériau flexible.

2. Mécanisme selon la revendication précédente, caractérisé en ce que l'arbre avant (6) présent sur le cadre (1) est réglable verticalement, afin de régler la hauteur du siège.
3. Mécanisme selon les revendications précédentes, caractérisé en ce que l'arbre avant (6) du cadre (3) est sollicité verticalement.

