CHAIR WITH AN AUTOMATICALLY ADJUSTABLE LUMBAR SUPPORT

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ABSTRACT
The invention relates to a chair (1), in particular an office chair, with a backrest (3) which is connected in an articulated manner to a mount (33) by means of a backrest mount (2) and has an adjustable lumbar support (4) and also a seat surface (12) which is attached to the mount (33), so that the inclination position of the backrest (3) and the adjustment position of the lumbar support (4) are coupled to one another by means of a coupling element (10) in such a way that a tilting movement of the backrest (3) towards the rear causes the adjustment position of the lumbar support (4) to change, in particular causes the lumbar support (4) to relax, and a tilting movement of the backrest (3) towards the front likewise causes the adjustment position of the lumbar support (4) to change, in particular causes the lumbar support (4) to tense.
CHAIR WITH AN AUTOMATICALLY ADJUSTABLE LUMBAR SUPPORT

[0001] The invention relates to a chair, in particular an office chair, with a backrest which is articulated on a carrier via a backrest carrier and has an adjustable lumbar support, and with a seat surface which is attached to the carrier.

[0002] The invention is based on the object of providing a chair which provides a particularly convenient, automatic adjustment option.

[0003] This object is achieved by a chair with the features of patent claim 1. Advantageous embodiments of the chair are described in the dependent claims.

[0004] The chair according to the invention provides coupling of the inclination of the backrest and of the adjustment position of the lumbar support via a coupling element in such a manner that a rearwardly directed tilting movement of the backrest causes a change in the adjustment position of the lumbar support, in particular relaxation of the lumbar support, and a forwardly directed tilting movement of the backrest likewise causes a change in the adjustment position of the lumbar support, in particular tensioning of the lumbar support.

[0005] The invention therefore provides a lumbar support which is tensioned or relaxed as a function of the inclination position of the backrest and thus permits optimized shaping of the backrest.

[0006] The lumbar support which is integrated in the backrest is automatically adjusted as a function of the backrest inclination brought about by the chair user, and therefore, in particular if the user leans back, the lumbar support is relaxed and the user is therefore ergonomically advantageously supported in the lumbar region.

[0007] If the user leans forward, the lumbar support is tensioned, and therefore an ergonomically desirable adjustment of the lumbar support automatically takes place in this situation too.

[0008] According to the invention, depending on the user's choice of inclination position of the backrest, an ergonomically desirable adjustment of the lumbar support, the adjustment being advantageous in terms of health, therefore takes place automatically without any help from the user.

[0009] According to an advantageous embodiment of the invention, the coupling element is designed as a cable pull (Bowden cable).

[0010] Upon a change in the inclination position of the backrest in relation to the seat surface, the coupling element is tensioned or relaxed. When a cable pull is used, the cable pull, which is attached by its one end to the lumbar support and by its other end to or in the region of the seat surface of the chair, is relaxed when the backrest is inclined to the rear, and therefore, by easing the tensioning on the cable pull, the lumbar support is transferred from the tensioned (i.e. more or less curved) position into a relaxed (i.e. slightly curved or completely flat) position.

[0011] According to a further advantageous embodiment, the coupling element is integrated in the backrest carrier of the backrest such that actuation of the coupling element, which actuation is transmitted from the region of the seat surface, is transferred by the coupling element running in the backrest carrier of the backrest into the lumbar support integrated in the backrest.

[0012] According to a further advantageous embodiment, the backrest carrier of the backrest also has an integrated adjustment element for adjusting the height of the backrest in relation to the backrest carrier.

[0013] Further details of the invention emerge from the exemplary embodiments in the figures of the drawing, in which:

[0014] FIG. 1 shows a rear view of the chair construction,
[0015] FIG. 2 shows a side view B of the chair construction from FIG. 1,
[0016] FIG. 3 shows a view C from above from FIG. 1,
[0017] FIG. 4 shows a front view of the chair construction from FIG. 1, and
[0018] FIG. 5 shows a section A-A from FIG. 4.

[0019] FIG. 1 shows the chair construction of a chair (without additional parts which are known per se, such as armrests, rotary column, foot frame, etc.), with a carrier 33 and a backrest 33 which is articulated on a backrest carrier 2 and has a lumbar support 4 integrated in the backrest 3, and with a seat surface 12 which can be attached to the carrier 33 in the region 5 (cf. FIG. 5).

[0020] In general, identical reference numbers in the individual figures of the drawing also denote identically denoted and explained components.

[0021] The lumbar support 4 comprises individual supporting regions 6, 7, 8 and 9 which can be actuated by a coupling element 10, in particular a cable pull 11, to the effect that, when the lumbar support 4 is tensioned, the individual supporting regions 6, 7, 8 and 9 are curved with respect to one another and, when said lumbar support is relaxed, the individual supporting regions are arranged substantially flat and relaxed with respect to one another.

[0022] In this case, the lumbar support 4 is attached at a lower edge region, for example at the supporting region 9, to the backrest 3, with, by application of tension by the coupling element 10, the uppermost supporting region 6 being pulled up in relation to the lower supporting regions 7, 8 and 9 such that the distances 14 between the supporting regions 6, 7, 8 and 9 are reduced when the lumbar support 4 is tensioned.

[0023] In this case, the cable pull 11 is integrated in the backrest carrier 2 and is held in a recess 15. The cable pull 11 is guided by the recess 15 (cf. FIG. 5) into the region below the seat surface 12 which is indicated schematically in FIG. 5 by a line.

[0024] When the backrest 3 is inclined, the angular position of the backrest 3 in relation to the seat surface 12 is changed.

[0025] The cable pull 11 here has a first end region (not visible) which is connected to the supporting region 6, and a further end region 13 which is connected indirectly or directly to the seat surface 12.

[0026] In the embodiment according to FIG. 5, the further end region 13 is articulated on a holder 14 of the seat surface 12.

[0027] When the inclination position of the backrest 3 is changed in the forward direction 16 by pivoting in relation to the seat surface 12, the sheathing 17 of the cable pull 11 is spaced apart from the locking element 18, and the distance 19 increases. The cable pull 11 is therefore tensioned and the lumbar support 4 is also tensioned, and the distances 14 between the supporting regions 6, 7, 8 and 9 are reduced.

[0028] If the backrest 3 is inclined again to the rear counter to the direction 16, the sheathing 17 is moved again toward the locking element 18, the distance 19 is reduced and the lumbar
support 4 is relaxed, and the distances 14 between the supporting regions 6, 7, 8 and 9 are increased.

According to a further embodiment, the chair according to FIG. 1 has, as an alternative or in addition, a lateral adjustment element 20 which is of self-locking design and wherein a separate (supplementary) adjustment of the lumbar support 4 can be undertaken by a separate cable pull 21.

The adjustment element 21 has a lever 22 which can be displaced in the direction 23 and, depending on the position of adjustment, actuates the cable pull 21 in such a manner that the lumbar support 4 is tensioned to a greater or lesser extent (curved or not curved).

According to a further advantageous embodiment, the chair has an adjustment element 24 which is integrated in the backrest carrier 2 and permits a height adjustment of the backrest 3 in relation to the backrest carrier 2.

The adjustment element 24 here has in particular a horizontal strip 25 which permits locking of the height position of the backrest 3 on the backrest carrier 2 by means of latching.

By means of the levers 26 and/or 27, the particular user (left-handed or right-handed person) by actuating the levers 26 and 27 in the direction 28, can displace the horizontal strip 25 by displacing the recess 29 in the direction 30, as a result of which the spring 31 is tensioned.

If the levers 26 and/or 27 are no longer actuated, the spring force of the spring 31 is in action and the horizontal strip 25 is moved back counter to the direction 30 such that the backrest 3 can again be locked to the backrest carrier 2 in the new height position.

The chair 1 according to the invention therefore has a backrest carrier 2 in which, in one particular embodiment, an integrated recess 15 for receiving a coupling element 10, in particular a cable pull 11, is provided, and furthermore an integrated receiving of an adjustment element 24 for adjusting the height of the backrest 3 in relation to the backrest carrier 2 is made possible.

In this case, in particular the cable pull 12 is first of all guided upward parallel to the longitudinal extent of the backrest carrier 2 (cf. FIG. 1) and then is guided downward again in an arc 32 to the supporting regions 9-6 with a length sufficient for different height settings of the backrest 3 on the backrest carrier 2.

According to the invention, a coupling element 10 (in particular cable pull 11) is therefore provided, said coupling element being connected to the seat surface 12 and at the same time being realized with a height adjustment of the backrest 3 (by means of the adjustment element 24), which height adjustment is integrated in the backrest 13. An automatic adjustment of the lumbar support 4 with adjustability of the height of the backrest 3 is therefore realized.

REFERENCE NUMBERS

1 Chair
2 Backrest carrier
3 Backrest
4 Lumbar support
5 Region
6 Supporting region
7 Supporting region
8 Supporting region
9 Supporting region
10 Coupling element
11 Cable pull
12 Seat surface
13 End region
14 Distance
15 Recess
16 Direction
17 Sheathing
18 Locking element
19 Distance
20 Adjustment element
21 Cable pull
22 Lever
23 Direction
24 Adjustment element
25 Horizontal strip
26 Lever
27 Lever
28 Direction
29 Recess
30 Direction
31 Spring
32 Arc
33 Carrier

1. A chair (1), in particular office chair, with a backrest (3) which is articulated on a carrier (33) via a backrest carrier (2) and has an adjustable lumbar support (4), and with a seat surface (12) which is attached to the carrier (33) such that the inclination position of the backrest (3) and the adjustment position of the lumbar support (4) are coupled to each other via a coupling element (10) in such a manner that a rearwardly directed tilting movement of the backrest (3) causes a change in the adjustment position of the lumbar support (4), in particular relaxation of the lumbar support (4), and a forwardly directed tilting movement of the backrest (3) likewise causes a change in the adjustment position of the lumbar support (4), in particular tensioning of the lumbar support (4).

2. The chair as claimed in claim 1, wherein the coupling element is attached by a first end region to the lumbar support and by a further end region to the seat surface of the chair.

3. The chair as claimed in claim 1, wherein that end region of the coupling element which is attached to the seat surface is attached to a fastening element of the seat surface.

4. The chair as claimed in claim 1, wherein the coupling element is a cable pull.

5. The chair as claimed in claim 4, wherein the cable pull has at least one locking element for setting the lumbar support in the relaxed position.

6. The chair as claimed in claim 1, wherein the lumbar support comprises supporting regions.

7. The chair as claimed in claim 1, wherein the lumbar support can be transferred by actuation of the coupling element from a substantially curved, tensioned position into a substantially rectilinear, relaxed position.

8. The chair as claimed in claim 1, wherein the coupling element is integrated in the backrest carrier of the backrest.

9. The chair as claimed in claim 8, wherein the backrest carrier of the backrest has a recess for receiving the coupling element.

10. The chair as claimed in claim 1, wherein the backrest carrier of the backrest has an integrated adjustment element for adjusting the height of the backrest in relation to the backrest carrier.

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