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(54) **Office-chair**

(57) Office chair (1) having a seat (2) and a chair-post (3) attached thereto, and the seat (2) is provided by an adjustable seat surface (4a,4b), and said adjustable seat surface (4a,4b) is hinged to the seat (2) to be movable about an axis (T1,T2), and an acute angle is provided between said axis (T1,T2) and a centreline (K) of the seat (2), and a section (5a,5b) of a resilient hose (5) to be filled by a medium is arranged between the seat (2) and the seat surface (4a,4b).

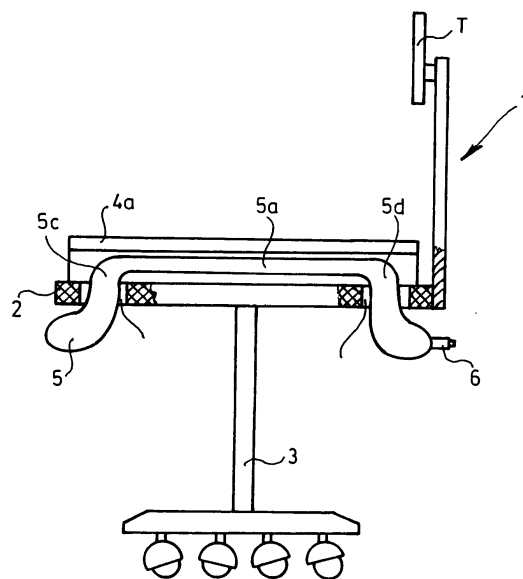


Fig. 1

Description

[0001] This invention relates to an office chair having a seat and a chair-post attached thereto, and the seat is provided by an adjustable seat surface.

[0002] One of the most important essentials for the sedentary occupations is the office chair, the seat surface form of which affects work conditions in a great extent. Office chairs having a static, planar and unitary seat surface exert a very harmful influence on the testicles and strain the muscles of the ischium and thighs unequally escalating the risk of formation of piles. These uncomfortable and harmful effects have been tried to eliminate by several solutions, first of all by cushions to be placed on the planar seat surface of the chair, having thicker portions beneath the ischium and thighs. These protruding areas of the cushion heighten the body above the seat surface, while contacting the rear side of the thighs. Consequently, the weight of the body bears exclusively on the rear side of the thighs while seated.

[0003] Published patent document WO 2011/120219 discloses a seat cushion having bulges situated in areas corresponding to the ischium and bearing the weight of the body of the person seated. Thus, other parts of the body do not contact the seat surface and absolved from holding the weight of the body. Nevertheless, a disadvantage of this solution is that such a cushion must be formed according to individual body sizes of the users in order to attend perfectly to its task, and in the other hand - emerging from this fact - the cushion must take away by the user doing sedentary occupation, if his/her work requires more seats to be used. A similar solution is also taught by published patent documents IE 20030508 and EP 1393658.

[0004] GB 694431 discloses a chair having spring actuated supporting surfaces for supporting thighs arcuated in the direction thereof. A gap is formed between supporting surfaces making impossible any contact between the testicles and the seat surface. A drawback of this solution is that the distance between supporting surfaces cannot be adjustable, and ischium contacts a continuous seat surface.

[0005] Patent application KR 20020044032 (A) discloses an office chair having a seating surface formed by two seating panels situated beneath the thighs. A drawback of this solution is that the seat surfaces meet between the thighs and do not leave any clearance to obviate occurrence of contacts of other body parts and the seat surfaces.

[0006] Therefore, the object of the present invention is to provide an office chair for eliminating the drawbacks of the prior art solutions, that is a chair suitable for supporting the ischium and the thighs, independently on the body sizes in such a way that other body parts do not contact the seat surface, and users working in sitting position do not have to bring it to the working place, and the distance between the supporting surfaces is adjustable, the ischium does not contact a unitary surface, and

the seat surfaces do not adjoin between the thighs but do not permit a contact with other body parts.

[0007] Above object of the invention is achieved by providing an office chair according to the invention having a seat and a chair-post attached thereto, and the seat is provided by an adjustable seat surface, and said adjustable seat surface is hinged to the seat to be movable about an axis, and an acute angle is provided between said axis and a centreline of the seat, and a section of a resilient hose to be filled by a medium is arranged between the seat and the seat surface.

[0008] Resilient hose is preferably an endless hose having further sections between said sections, which are arranged beneath the lower side of the seat opposite the side provided by seat surfaces, and subsequent sections of the hose are joined by arcuate sections received by slots formed in the seat.

[0009] Sections of the hose are wider than sections arranged on the lower side of the seat opposite the side provided by seat surfaces.

[0010] An acute angle between said axis and said centreline of the seat is between 0° - 40° , preferably between 5° - 25° , and more preferably between 15° - 20° .

[0011] Seat surfaces are connected to the seat by means of a detachable joint along said axis.

[0012] A detachable joint advantageously comprises a Velcroed joint, and the hose is filled by gas, or filled by a liquid material.

[0013] The present invention will be disclosed in details by exemplary embodiments referring to the drawings as attached. In the drawings

Fig. 1 is a side elevational view of an office chair according to the invention provided by adjustable seat surfaces,

Fig. 2 shows the seat of the office chair according to the invention in top side view,

Fig. 3 shows the seat of the office chair according to the invention, provided by a hose in top side view, but without seat surfaces, and

Fig. 4 shows the seat of the office chair according to the invention in front view, provided by a hose and seat surfaces.

[0014] In Fig. 1 side elevational view of an office chair 1 according to the invention provided by adjustable seat surfaces is shown. In this embodiment the office chair 1 has a seat 2 connected to at least one chair-post 3. Chair-post 3 is supported on the ground e.g. by means of wheels or rollers. The office chair 1 can have more than one chair-post 3 and it can contact the ground without rollers, indeed.

[0015] Two seat surfaces 4a,4b are arranged on the seat 2, only one of them is shown in Fig. 1. Between each seat surface 4a,4b and the seat 2 a section 5a,5b of a resilient hose 5 to be filled by a medium through a valve 6 is arranged. The configuration of the resilient hose 5 is similar to that of a cycle tube being an endless hose 5,

sections 5c,5d of which connecting the sections 5a,5b are arranged beneath the lower side of the seat 2 opposite the side having seat surfaces 4a,4b, so that arcuated sections 5e,5f,5g,5h connecting the sections 5a,5b and sections 5c,5d, respectively, are received in slots 2a,2b, 2c,2d formed in the seat 2.

[0016] In Fig. 2 shows the seat 2 of the office chair according to the invention in top side view, without seat surfaces 4a,4b and hose 5. It is clearly shown in the drawing that slots 2a,2b,2c,2d arranged for guiding the arcuated sections 5e,5f,5g,5h of the hose 5 are placed in the seat 2 to allow the sections 5a,5b of the hose 5 to be extended substantially parallelly to each other. The term 'substantially parallelly' in this description means that sections 5a,5b do not cross each other, but delimit an angle therebetween, which is preferably between 0° and 40°. (Fig. 3)

[0017] Fig. 3 shows the seat 2 of the office chair 1 according to the invention, provided by a hose 5 in top side view, but without seat surfaces 4a,4b. It is shown in Fig. 3 that the sections 5a,5b of the hose 5 are preferably broadened in the direction of the centreline K of the seat 2, that is these sections 5a,5b are wider. Thus, the seat surfaces 4a,4b contact the respective sections 5a,5b of the hose 5 by greater surfaces in order to give a better support to the thighs.

[0018] Fig. 4 shows the seat 2 of the office chair 1 according to the invention in front view, provided by a hose 5 and seat surfaces 4a,4b. Seat surfaces 4a,4b are hinged to the seat 2. Hinged connection can be achieved e.g. along axes T1,T2, that is the seat surfaces (4a,4b) can rotate thereabout. Consequently, the tilt angle of the seat surfaces (4a,4b) can be adjusted by a quantity of gas or liquid to be injected into the hose 5. In the other hand, the position of the axes T1,T2 in relation to the centreline K can be adjusted advantageously so that the axes T1,T2 are connected to the seat 2 by a releasable joint. With this case, the distance of the seat surfaces 4a, 4b and the width of a gap A extending therebetween can easily be adjusted or altered. According to our tests the forces affecting to this joints are so small, that a connection between the axes T1,T2 of the seat surfaces 4a,4b and the seat may be achieved by a simple Velcroed joint. This joint can be formed by other solutions known in itself, or adjustability can also be omitted, if required, by using a fixed connection.

[0019] By using the office chair 1 according to the invention the planar seat surface of prior art chairs can be replaced by a resilient pair of wings, that is the seat surfaces 4a,4b bearing the load of the moving human body at two sides and the risks mentioned above are omitted by providing the middle positioned gap A. Continuously adjustable axes T1,T2 enhances a control according to personal body sizes, thus the individual comfort preferences are tolerated in a large scale by the office chair 1. Seating comfort is further improved by air-cushioning.

[0020] The office chair 1 according to the invention forms two, left and right seat surfaces 4a,4b by each limb

for supporting thighs instead of a single unitary seat surface as conventionally used. A wing like, independent up and down motion of these two seat surfaces 4a,4b is enabled by pneumatic/hydraulic support of the seat surfaces 4a,4b achieved by means of the hose 5. The continuous air-cushion arranged beneath the seat surfaces 4a,4b movable around respective axes T1,T2, that is the unitary inner chamber of the hose 5 provides a dynamic mobile support, so that loads can be transmitted to the body parts doing motions of different directions by a damped and balanced way, improving the seat comfort extremely.

[0021] Air pressure in the hose 5 can be adjusted in a known way by entering a medium by means of e.g. a pump or an inflator through the valve 6, so that the value of a force damping the motions as well as the tilt angle between the seat surfaces 4a,4b and the seat 2 can be adjusted.

[0022] By adjusting the position of the axes T1,T2 in relation to the centreline K the gap A extending between the seat surfaces 4a,4b eliminates above health risks, since the soft body parts are absolved from the load.

[0023] Seat surface 4a,4b of the office chair 1 according to the invention is completed by a further layer compared to the prior art chairs, that is two seat surfaces 4a, 4b are arranged above the seat 2 conventionally provided by a cushion and upholstery, which surfaces 4a,4b can be provided by sponge stuffing and upholstery and connected to the seat 2 along axes T1,T2. The hinged connection of the axes T1,T2 to the seat 2 can be formed even by elastic strips having medium thickness (3-4 mm), around which the seat surface 4a,4b can be swivelled. The medium e.g. a gas or a liquid inside the hose 5 moves freely between the sections 5a,5b of the hose 5 arranged between the seat 2 and the seat surfaces 4a,4b. When the pressure in the hose 5 is equal to the environmental pressure, seat surfaces 4a,4b tend to be laid on the seat 2. A pressure of the medium entering the hose 5 results in rising of the seat surfaces 4a,4b and creating a trough like surface having higher portions at its edges and lower portions at its centre, that results in an ergonomic and stable seating. Further, the hardness of the 'air cushioned seat' as well as the tilt of the seat surfaces 4a,4b can be adjusted by means of the pressure of the medium.

[0024] The advantage of the office chair according to the invention compared to the prior art office chairs is that it is suitable for supporting the ischium and the thighs, independently on the body sizes in such a way that other body parts do not contact the seat surface, and the distance between the seat surfaces 4a,4b and their position, their tilt around the axes T1,T2 are adjustable, the ischium does not contact a unitary surface, and the seat surfaces 4a,4b do not adjoin between the thighs and do not permit a contact with other body parts.

Claims

1. Office chair (1) having a seat (2) and a chair-post (3) attached thereto, and the seat (2) is provided by an adjustable seat surface (4a,4b), **characterized in that** said adjustable seat surface (4a,4b) is hinged to the seat (2) to be movable about an axis (T1,T2), and an acute angle is provided between said axis (T1,T2) and a centreline (K) of the seat (2), and a section (5a,5b) of a resilient hose (5) to be filled by a medium is arranged between the seat (2) and the seat surface (4a,4b). 5 10
2. Office chair (1) according to claim 1, **characterized in that** said resilient hose (5) is an endless hose (5) having further sections (5c,5d) between said sections (5a,5b), which are arranged beneath the lower side of the seat (2) opposite the side provided by seat surfaces (4a,4b), and subsequent sections (5a, 5b,5c,5d) of the hose (5) are joined by arcuate sections (5e,5f,5g,5h) received by slots (2a,2b,2c,2d) formed in the seat (2). 15 20
3. Office chair (1) according to claim 2, **characterized in that** said sections (5a,5b) of the hose (5) are wider than sections (5c,5d) arranged on the lower side of the seat (2) opposite the side provided by seat surfaces (4a,4b). 25
4. Office chair (1) according to claim 3, **characterized in that** said acute angle (α) between said axis (T1, T2) and said centreline (K) of the seat (2) is between 0° - 40°, preferably between 5° - 25°, and more preferably between 15° - 20°. 30 35
5. Office chair (1) according to claim 4, **characterized in that** said seat surfaces (4a,4b) are connected to the seat (2) by means of a detachable joint along said axis (T1,T2). 40
6. Office chair (1) according to claim 5, **characterized in that** said detachable joint comprises a Velcroed joint. 45
7. Office chair (1) according to claim 6, **characterized in that** said hose (5) is filled by gas. 50
8. Office chair (1) according to claim 4, **characterized in that** said hose (5) is filled by liquid. 55

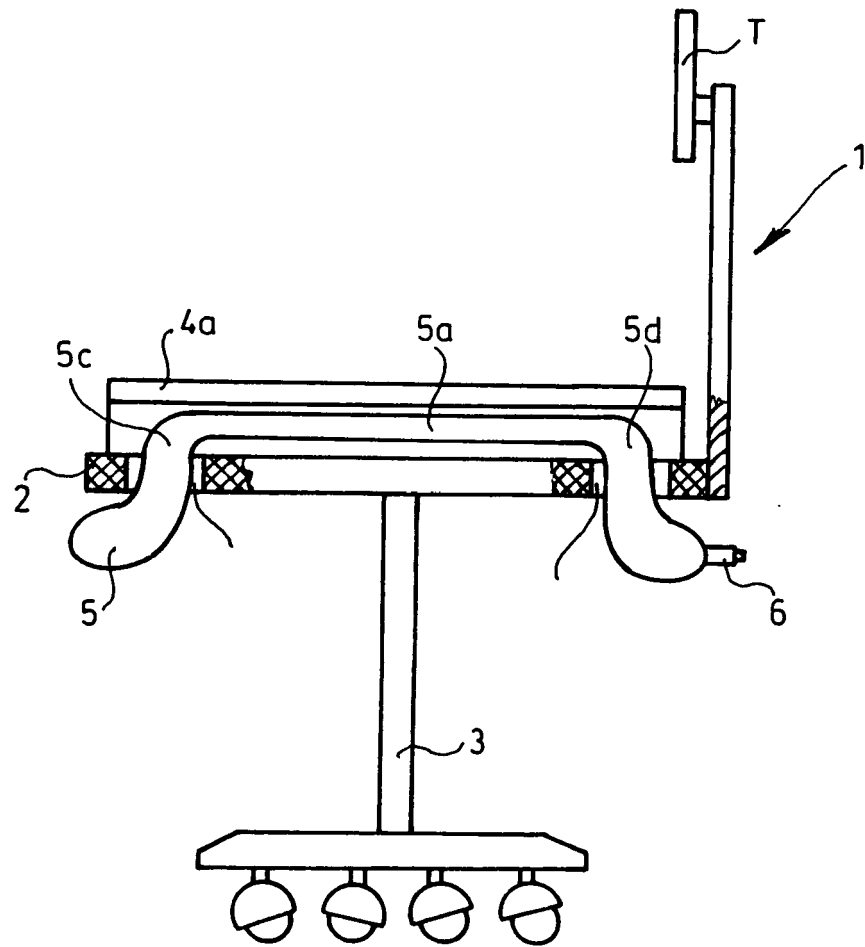


Fig. 1

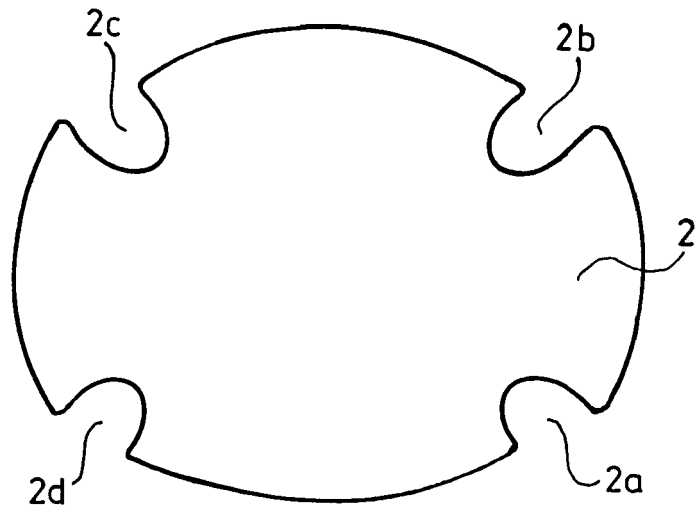


Fig. 2

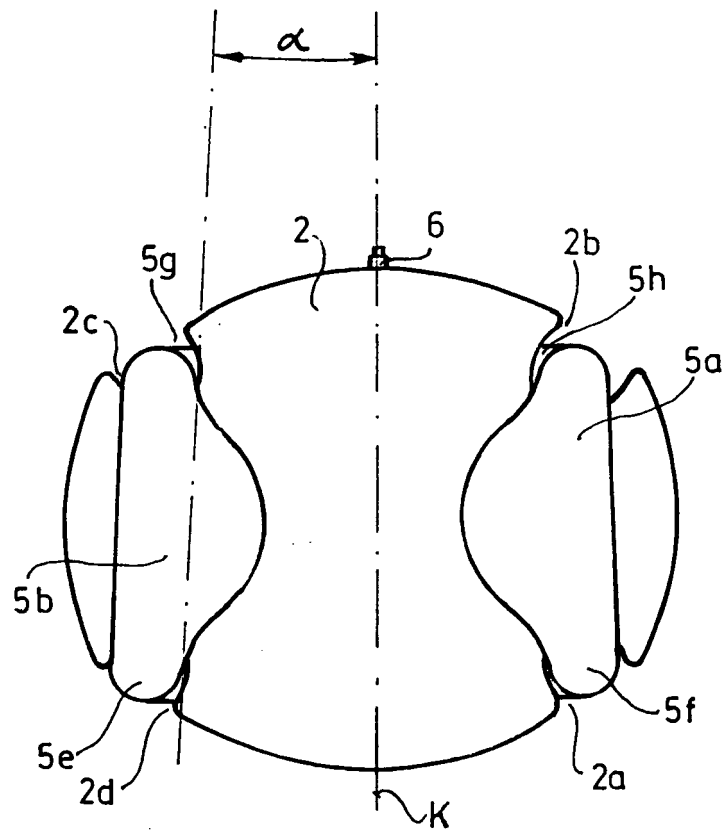


Fig. 3

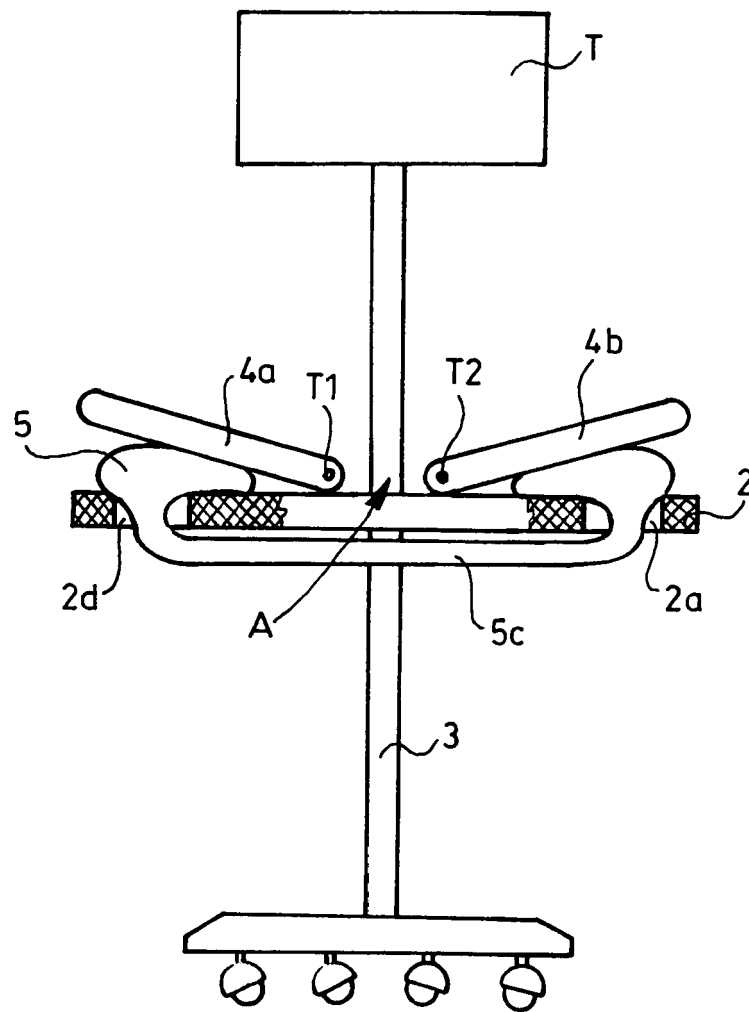


Fig. 4



EUROPEAN SEARCH REPORT

Application Number
EP 12 46 2014

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 10 2005 033052 A1 (TOPSTAR GMBH) 1 February 2007 (2007-02-01) * paragraph [0023]; claims; figures *	1	INV. A47C7/02
X	US 2010/181815 A1 (HIGHLANDER ET AL) 22 July 2010 (2010-07-22) * figures *	1	
X	WO 2007/043825 A1 (KIM) 19 April 2007 (2007-04-19) * page 8, line 9 - page 9, line 4; figures *	1	
A	US 2 156 629 A (HUTCHISON) 2 May 1939 (1939-05-02) * figures *	1	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			A47C B62J
1	Place of search The Hague	Date of completion of the search 9 April 2013	Examiner Kis, Pál
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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 12 46 2014

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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09-04-2013

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