(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 111 910 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
04.01.2023 Bulletin 2023/01

(21) Application number: **22176463.2**

(22) Date of filing: **31.05.2022**

(51) International Patent Classification (IPC):
A47C 7/74 *(2006.01)*

(52) Cooperative Patent Classification (CPC):
A47C 7/748; A47C 7/744

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(30) Priority: **29.06.2021 DE 102021206754**

(71) Applicant: **MAHLE International GmbH**
70376 Stuttgart (DE)

(72) Inventors:
- **ERHARDT, Franziska**
  70180 Stuttgart (DE)
- **GANZ, Matthias**
  70499 Stuttgart (DE)
- **WALLISCH, Dr. Mario**
  72631 Aichtal (DE)

(74) Representative: **BRP Renaud & Partner mbB**
Rechtsanwälte Patentanwälte
Steuerberater
Königstraße 28
70173 Stuttgart (DE)

(54) SEATING OR RECLINING FURNITURE

(57) The invention relates to a seating or reclining furniture (2), in particular a gaming chair, comprising at least one ventilatable surface region (1).

To attain a space-saving and nonetheless optimized ventilation, it is proposed

- that the ventilatable surface region (1) has a shaping foam layer (3), an air-distributing knitted spacer fabric (4), an air-conveying knitted spacer fabric (5), as well as an air-permeable cover layer (6),
- that a radial blower (7) is provided, which is connected in an air-transferring manner to the air-distributing knitted spacer fabric (4), wherein the radial blower (7) is arranged on the edge side of the air-distributing knitted spacer fabric (4) in such a way that a blowing of air into the air-distributing knitted spacer fabric (4) or an extraction of air from the air-distributing knitted spacer fabric (4), takes place essentially parallel to a surface plane of the air-distributing knitted spacer fabric (4).

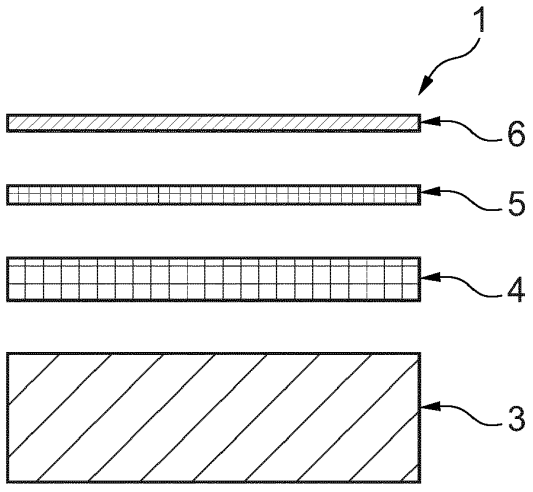

Fig. 1

EP 4 111 910 A1

Description

[0001] The present invention relates to a seating or reclining furniture comprising at least one ventilatable surface region.

[0002] A generic seating furniture in the manner of a climatized chair is known from DE 10 2015 008 461 A1, which is formed in a heatable or coolable manner. At least one ventilation duct, which is supplied with an air flow by means of at least one ventilator, is thereby arranged in at least one seat shell or a back shell. It is to be possible thereby to provide a climatized chair, which is optimized with regard to its installation space requirement and the operation of which is very quiet.

[0003] A seat insert comprising a lattice structure is known from WO 2020/163212 A1, which comprises one or several layers of a support lattice as well as one or several layers of a conditioned lattice, which has a permeability, which is greater than or equal to a permeability of the one or several layers of the support lattice, so that the one or several layers of the support lattice form a thermal insulation between a vehicle component and a trim layer. An improved integration of a fluiddistributing structure in a seat is to be made possible thereby.

[0004] To attain an increasing seating or reclining comfort in the case of seating or reclining furniture, in particular in the case of so-called gaming chairs, blowers are used to an increasing extent, because the available spaces in particular when gaming at home, are often not climatized. Due to a gaming PC or a game console, respectively, as well as a tense gaming behavior of a gamer, a room can furthermore heat up more quickly, whereby a thermal discomfort can also result comparatively quickly.

[0005] However, disadvantages are known in the case of the ventilated chairs known from the prior art, such as, for example, a complex production method comprising an air distribution system and a separate seat foam with a perceivable transition between air inlet and upper material or cover, respectively, a draft behavior, which may be perceived negatively due to a directed air flow, as well as possibly loud or non-encapsulated fans/blowers. Furthermore, the solid materials surrounding the known blowers additionally prompt a vibration and furthermore a noise generation.

[0006] The present invention thus deals with the problem of specifying an improved or at least an alternative embodiment for a seating or reclining furniture of the generic type, which in particular overcomes the disadvantages known from the prior art.

[0007] This problem is solved according to the invention by means of the subject matter of independent claim 1. Advantageous embodiments are subject matter of the dependent claims.

[0008] The present invention is based on the general idea of equipping a ventilatable surface region of a seating or reclining furniture, in particular of a so-called gaming chairs, with a two-layer, three-dimensional air distribution and air conveying layer, and to simultaneously use a radial blower for the ventilation, which is essentially arranged in the plane of the air-distributing layer. A low-noise, installation space-optimized, and simultaneously even and draft-free ventilation or purging, which thus offers a high ventilation comfort, can be attained thereby. The seating or reclining furniture according to the invention thereby has the above-mentioned at least one ventilatable surface region, which has a shaping foam layer, an air-distributing knitted spacer fabric, an air-conveying knitted spacer fabric, as well as an air-permeable cover layer or a cover, respectively. The cover layer or the cover, respectively, is additionally permeable for water vapor, so that with respect to the cover layer or the cover, respectively, this can generally be referred to as a heat and mass transferring layer. The air-distributing knitted spacer fabric as well as the air-conveying knitted spacer fabric thereby form the above-mentioned air-distributing or air-conveying layer, respectively. Three-dimensional fabrics, which still provide for a sufficient air distribution or air conveyance even in the case of a compression caused by sitting on it, are possible as air-distributing or air-conveying knitted spacer fabric, respectively. What is likewise provided is a radial blower, which is connected in an air-transferring manner to the air-distributing knitted spacer fabric and which is simultaneously arranged on the edge side of the air-distributing knitted spacer fabric in such a way that a blowing of air into the air-distributing knitted spacer fabric or an extraction of air therefrom takes place essentially parallel to a surface plane of the air-distributing knitted spacer fabric. A ventilation, in particular a pressurization, thus takes place by means of an intake of air from the surrounding area and a blow-in via the fan into the air-distributing knitted spacer fabric, in which the blown-in air is distributed essentially parallel to the surface plane of the air-distributing knitted spacer fabric, in order to subsequently be blown out orthogonally thereto into the air-conveying knitted spacer fabric, which is arranged adjacent thereto. An even distribution of the air via the air-conveying layer and thus also an even blow-out of the air via the cover layer can take place, wherein a quantity of blown-out air is measured so that on the one hand, a ventilation, for example cooling, which is perceived to be comfortable is made possible for a person sitting on the seating or reclining furniture, but an uncomfortable air draft can be avoided, on the other hand. A further large advantage of the seating or reclining furniture according to the invention lies in that no rigid air ducts or soft structures, respectively, have to be provided, for example in the shaping foam layer, for the homogenous ventilation, whereby in particular a haptically perceivable transition between ventilatable surface regions and non-ventilatable surface regions can be avoided. Due to the air-distributing or air-conveying knitted spacer fabric, respectively, an even and thus comfortable air distribution can furthermore be attained, without requiring a separate air distribution system or a processing of the shaping foam layer being required for this purpose. Further advantages lie in particular in a reduction of a number

of parts, for example air ducts (folding) bellows, as well as in a simplified assembly.

[0009] In the case of an advantageous further development of the solution according to the invention, the air-conveying knitted spacer fabric and/or the air-distributing knitted spacer fabric has a compression hardness of between 5 kPa and 35 kPa. The compression hardness thereby describes a pressure in kPa, which is necessary to compress, for example, a foam or, in this case, the knitted spacer fabric, respectively, by 40%. In the case of the seating or reclining furniture according to the invention, preferably only 20% compression are to be permitted at a nominal weight (approx. 80kg). It goes without saying that it is conceivable thereby that the air-conveying knitted spacer fabric and/or the air-distributing knitted spacer fabric have/has locally different compression hardnesses, for example at an edge region to the transition to a non-ventilated surface region, a higher compression hardness, whereby a comfortable and in particular haptically non-perceivable or hardly perceivable transition can be attained. A compression hardness of, for example, 5 kPa thereby describes a very soft seat, while a compression hardness of 35 kPa provides for an increased seating comfort and a better support when sitting.

[0010] In the case of a further advantageous embodiment of the heating or reclining furniture according to the invention, a lattice is arranged between the radial blower and the air-distributing knitted spacer fabric. A lattice of this type prevents a contact between a, for example, rotating fan blade of the radial blower and a fiber of the air-distributing knitted spacer fabric, whereby both a damage to the fan or the air-distributing knitted spacer fabric, respectively, can be avoided, and an increased noise development associated therewith. In addition or in the alternative, it is also conceivable that the radial blower and the air-distributing knitted spacer fabric are arranged spaced apart from one another, whereby the risk of a contact between a fiber of the air-distributing knitted spacer fabric and a fan blade can likewise at least be minimized.

[0011] In the case of a further advantageous embodiment of the solution according to the invention, a suction duct or blow-out duct is provided, which is connected to the radial blower and which is held via the shaping foam layer as a function of the conveying direction of the radial blower. A suction duct of this type can thus be inserted, for example, into a recess, which is formed in a complementary manner thereto, on the shaping foam layer and can, for example, be glued in or can be held by means of positive connection. A suction duct or blow-out duct of this type, respectively, can thereby have different orientations with regard to the direction thereof, wherein in the case of a radial blower, in particular an orientation is conceivable, which is aligned orthogonally to the ventilatable surface region.

[0012] Advantageously, the ventilatable surface region is a seating surface, a backrest, a lumbar region, or an armrest. This non-exhaustive enumeration already suggests, which diverse possible applications for the ventilatable surface region according to the invention are conceivable on the seating or reclining furniture according to the invention.

[0013] Advantageously, the seating or reclining furniture is formed as gaming chair. "Gaming" represents an increasingly popular leisure activity, whereby an increasing number of people spend increasingly more time with computer games, in particular in the private living environment. Due to the fact that the spaces used for this purpose in particular in the private living environment are usually not climatized and there is also high physical and mental tension when gaming, situations, which are perceived to be uncomfortable with respect to climate, can appear quickly, which can at least be mitigated, for example by means of the gaming chair, which, according to the invention, is equipped with at least one ventilatable surface region. A computer game can thus also be played long-term and with high concentration via a ventilated gaming chair of this type.

[0014] In the case of a further advantageous embodiment of the solution according to the invention, a surface of the air-distributing knitted spacer fabric is smaller than a surface of the air-conveying knitted spacer fabric. The air blown in via the radial blower is distributed via the air-distributing knitted spacer fabric in terms of area and is deflected and is blown out via said radial blower into the air-conveying knitted spacer fabric. A distribution within the surface plane of the air-conveying knitted spacer fabric and an even pressure build-up can, in turn, take place in this air-conveying knitted spacer fabric, whereupon the air is blown out via the air-permeable cover layer or, conversely, is sucked in, respectively. Ventilations, which are locally of different strengths, of the ventilatable surface region can furthermore be attained via a corresponding locally adapted air permeability of the cover layer. For example, a locally adapted moisture discharge is also possible thereby, whereby a seating comfort can be increased further.

[0015] In the case of an advantageous further development, the air-distributing knitted spacer fabric is arranged at least partially in a positive manner and so as to be flush with the surface in a recess of the shaping foam layer, wherein additionally or alternatively, the radial blower can also be arranged in a positive manner in a recess of the shaping foam layer. Due to a design of this type, an integration of the radial blower as well as of the air-distributing knitted spacer fabric into the shaping foam layer is possible, whereby a fixation of the air-distributing knitted spacer fabric is simultaneously also possible via the positive insertion of the latter into the foam-side recess.

[0016] In the case of an advantageous further development, the air-conveying knitted spacer fabric can also be arranged at least partially in a positive manner and so as to be flush with the surface in a recess of the shaping foam layer. It is possible thereby to provide only subre-

gions of the seat for a climatization. For example, a one-step recess can be integrated into a seating surface, thus a large recess for the air-conveying knitted spacer fabric, in which a smaller recess for the air-distributing knitted spacer fabric and the radial blower is introduced in turn. In particular in the case of a use in a backrest, not the entire backrest is preferably ventilated, but rather just a lower region, for example in the region of the lumbar spine and/or lordosis. In the case of use in a seating surface, the latter can be provided completely with air-conveying knitted spacer fabric (buttocks and thighs).

[0017] An energy storage for the power supply of the radial blower is advantageously arranged in the shaping foam layer. An energy storage of this type can be, for example, a rechargeable accumulator or a battery, wherein a comparatively simple fixation and assembly of the energy storage in the seating or reclining furniture is likewise made possible in particular by means of a corresponding recess in the shaping foam. A so-called power bank can in particular be used thereby. The energy storage can be accommodated in the shaping foam layer or, in the alternative, also in an additional textile pocket or an elastic band on a bottom side of the seating or reclining furniture. In addition or in the alternative, the seating or reclining furniture can also be connected to external sources, such as, for example, computer, mobile phone charging plug, console, anything with USB type A, or a power grid.

[0018] A suitable electronic control system or a switch can be provided to control the radial blower (e.g. on/off, speed, or direction of rotation), in particular installed into the seating or reclining furniture.

[0019] The air-distributing knitted spacer fabric and the air-conveying knitted spacer fabric are advantageously sewn, weaved, laminated, or adhered to one another. This non-exhaustive enumeration already represents a selection of connection possibilities, which provide for both a reliable connection and simultaneously also for an air-permeability. An adhesion can thereby in particular take place in a point-wise manner, whereby an air-permeability is not or only marginally impacted.

[0020] Further important features and advantages of the invention follow from the subclaims, from the drawings, and from the corresponding figure description on the basis of the drawings.

[0021] It goes without saying that the above-mentioned features and the features, which will be described below, cannot only be used in the respective specified combination, but also in other combinations, or alone, without leaving the scope of the present invention.

[0022] Preferred exemplary embodiments of the invention are illustrated in the drawings and will be described in more detail in the following description, whereby identical reference numerals refer to identical or similar or functionally identical components.

[0023] In each case schematically,

Fig. 1 shows a layer structure in an exploded illustration of a ventilatable surface region of a seating or reclining furniture according to the invention,

Fig. 2 shows a seating furniture formed as gaming chair according to the invention,

Fig. 3 shows an illustration as in Fig. 2, but in the case of a frontal view,

Fig. 4 shows an exploded illustration of a further embodiment of the seating furniture according to the invention in the region of a ventilatable surface region on a seating surface,

Fig. 5 shows the seating surface from Fig. 4 in the assembled state,

Fig. 6 shows an illustration as in Fig. 4, but in the case of a backrest,

Fig. 7 shows an illustration as in Fig. 6, but in the assembled state,

Fig. 8 shows a view obliquely from the top onto an air-distributing or air-conveying knitted spacer fabric, respectively,

Fig. 9 shows a side view onto the air-distributing or air-conveying knitted spacer fabric, respectively,

Fig. 10 shows an exploded illustration of a further embodiment of the seating furniture according to the invention in the region of a ventilatable surface region on a seating surface,

Fig. 11 shows the seating surface from Fig. 10 in the assembled state.

[0024] According to Figs. 1 as well as 4 to 7, 10, 11, a ventilatable surface region 1 of a seating or reclining furniture 2 according to the invention (see Fig. 2 and 3) has a shaping foam layer 3, an air-distributing knitted spacer fabric 4, an air-conveying knitted spacer fabric 5, as well as an air-permeable cover layer 6. The cover layer 6 is additionally permeable for water vapor and thus provides for a heat and mass transfer. The shaping foam layer 3 thereby serves for the shaping and simultaneously for the support of a person positioned on the seating or reclining furniture. To ventilate the ventilatable surface region 1, the seating or reclining furniture 2 according to the invention also has a radial blower 7, which is connected in an air-transferring manner to the air-distributing knitted spacer fabric 4, wherein the radial blower 7 is arranged on the edge side of the air-distributing knitted spacer fabric 4 in such a way that a blowing of air into the air-distributing knitted spacer fabric 4 (see Fig. 1 to

9) or an extraction of air therefrom (see Fig. 10 and 11) takes place essentially parallel to a surface plane of the air-distributing knitted spacer fabric 4. This provides for the large advantage that the radial blower 7 can be arranged in the plane of the air-distributing knitted spacer fabric 4 and thus in a particularly space-saving and installation space-optimized manner with respect to a required installation space height. Due to the air-distributing knitted spacer fabric 4 and the air-conveying knitted spacer fabric 5, which is connected thereto, for example sewn, adhered, or weaved, a non-directed flow of the can be guided via the radial blower 7 to a non-illustrated person sitting on the seating or reclining furniture 2 according to the invention. This provides in particular for an optimized ventilation or purging, but without creating the feeling of a draught.

[0025] It goes without saying that the air-distributing knitted spacer fabric 4 and the air-conveying knitted spacer fabric 5 can also be placed loosely one on top of the other or can be thermally laminated together. A positive connection by means of the cover layer 6 and the shaping foam layer 3 as well as optionally support cushions are conceivable.

[0026] The air-conveying knitted spacer fabric 5 and/or the air-distributing knitted spacer fabric 4 can thereby have a compression hardness between of between 5 kPa and 35 kPa, preferably greater than 10 kPa and less than 30 kPa, particularly preferably greater than or equal to 15 kPa and less than or equal to 25 kPa, wherein in particular the shaping foam layer 3 can have the same compression hardness as the air-conveying knitted spacer fabric 5 in the transition to the air-conveying knitted spacer fabric 5. A haptically perceivable transition due to, for example, a perceivable hardness difference between the shaping foam layer 3 and the air-conveying knitted spacer fabric 5 can be reliably avoided thereby.

[0027] A lattice, which is not described in more detail, via which in particular an unintentional engagement of fibers of the air-distributing knitted spacer fabric 4 with a rotating fan blade of the radial blower 7 can be reliably avoided, is preferably arranged between the radial blower 7 and the air-distributing knitted spacer fabric 4. In addition or in the alternative, the radial blower 7 and the air-distributing knitted spacer fabric 4 can also be arranged spaced apart from one another, whereby the risk of a contact of a fiber of the air-distributing knitted spacer fabric 4 with a rotating fan blade of the radial blower 7 can at least be minimized.

[0028] According to Figs. 1 as well as 4 to 7 and 10, 11, the air-distributing knitted spacer fabric 4 is thereby thicker than the air-conveying knitted spacer fabric 5, whereby it goes without saying that this is purely exemplary and can also be different. Purely theoretically, it is also conceivable that the knitted spacer fabrics 4, 5 have different compression hardnesses.

[0029] When looking at Figs. 2 to 7, it can be seen that the air-distributing knitted spacer fabric 4 is at least partially arranged in a positive manner and so as to be flush with the surface in a recess 8 of the shaping foam layer 3, in the same way as the radial blower 7. Via the recess 8 in the shaping foam layer 3, the radial blower 7 as well as the air-distributing knitted spacer fabric 4 can be arranged so that, together with the surrounding shaping foam layer 3, they form a continuous surface, on top of which the air-conveying knitted spacer fabric 5 can be placed continuously and without a crease.

[0030] According to the illustrations in Figs. 2 and 3, the seating or reclining furniture 2 is formed as so-called gaming chair, whereby gaming taking place in particular in private spaces can be designed to be significantly more comfortable, because private spaces of this type are usually not climatized and are heated up by means of waste heat from a computer as well as due to a tense gaming behavior. A thermal discomfort can result comparatively quickly thereby.

[0031] The air-permeable cover layer 6 can have, for example, fabric, perforated leather or synthetic leather and/or a woven fabric. Due to an individually and locally different air-permeability or water vapor permeability, respectively, local and individually heatable zones can additionally be created. For example regions, in which more moisture is created, can thereby be ventilated more strongly, whereby an optimized ventilation comfort is created as a whole. The ventilatable surface region 1 can thereby be, for example, a seating surface 9, a backrest 10, or a lordosis support 11, or can be arranged in an armrest 12 (see Fig. 2 and 3).

[0032] It goes without saying that other attachment locations, such as, for example, in the region of a headrest, are also conceivable.

[0033] When looking at Figs. 4 to 7, it can be seen that a suction duct 13 is provided, which is connected to the radial blower 7 and which is held via the shaping foam layer 3. For example, a recess 8', which is formed in a complementary manner to the outer dimensions of the suction duct 13, is provided for this purpose in the shaping foam layer 3. By means of a fixed connection of the suction duct 13 to the radial blower 7 and an assembly of this assembly group into recesses 8' or 8, respectively, of the shaping foam layer 3, which are formed in a complementary manner thereto, an unambiguous and simple fixation of the radial blower 7 and of the suction duct 13 to the shaping foam layer 3 can be attained. The same applies for the embodiment shown in Figs. 10 and 11, in the case of which a blow-out duct 13' is provided, which is connected to the radial blower 7 and which is held via the shaping foam layer 3.

[0034] A surface of the air-distributing knitted spacer fabric 4 can thereby be smaller than a surface of the air-distributing knitted spacer fabric 5, wherein the air-distributing knitted spacer fabric 4 deflects the air ejected by the radial blower 7 during the pressure operation and transfers it into the air-conveying knitted spacer fabric 5. There, it is then distributed in a flat manner and can be blown out via the air-permeable cover layer 6. It goes without saying that, during a reverse operation of the ra-

dial blower 7, an intake of air via is take place as well via the air-permeable cover layer 6 and an ejection via the blow-out duct 13'. The suction duct 13 or blow-out duct 13' can thereby be formed, for example, from plastic and can form an assembly group with the radial blower 7.

[0035] An energy storage 14 can likewise be provided, which is likewise accommodated in a positive manner, for example in a corresponding recess 8" of the shaping foam layer 3, and which is fixed thereby. A reinforcing effect can additionally be provided to the shaping layer 3 via a frame 15, for example a metal frame.

[0036] Unhindered gaming fun can be attained by means of the ventilatable surface region 1 according to the invention and the seating or reclining furniture 2 according to the invention, which has said ventilatable surface region, by means of an optimal ventilation of a gamer. A radial blower 7 used in this way is arranged in a noise-optimized manner in the shaping foam layer 3 and is covered by means of the air-distributing knitted spacer fabric 4, the air-conveying knitted spacer fabric 5, and the air-permeable cover layer 6, so that fan noises are virtually not perceivable. Due to the arrangement of the radial blower 7 in the dampening shaping foam 3, a vibration transfer to solid materials also does not take place, which likewise contributes to a low-noise operation. A heat and moisture accumulation can be avoided by means of the ventilatable surface regions 1. The air-distributing knitted spacer fabric 4 and the air-conveying knitted spacer fabric 5 furthermore provide for a comparatively simple manufacturing process and a simple production of the shaping seating foam 3 with simultaneously consistently good feel.

[0037] The surface of the air-distributing knitted spacer fabric 4 is thereby smaller than the surface of the air-conveying knitted spacer fabric 5, wherein in addition or in the alternative, a surface of the air-conveying knitted spacer fabric 5 can also be smaller than a surface of the cover layer 6. The advantage lies in particular in the two-layered construction because a large surface is already supplied by means of the air-distributing knitted spacer fabric 4, and the air can be distributed even further in a flat manner in the air-conveying knitted spacer fabric 5, and an air flow can be homogenized. In addition, the air-distributing knitted spacer fabric 4 is flexible and cannot be felt in an uncomfortable manner and can simultaneously distribute the air escaping in a jet-like manner from the radial blower 7 into the air-conveying knitted spacer fabric 5. The air distribution thus becomes more even compared to a direct flow-out from the blower into the knitted spacer fabric 5.

[0038] A construction of the air-distributing knitted spacer fabric 4 and of the air-distributing knitted spacer fabric 5 can thereby be identical. There may be differences in one of the layers or in an air resistance, e.g. due to the fine-mesh characteristic, a thickness of spacer threads, and thus also the compression hardness of the respective knitted spacer fabric 4, 5. The air-distributing knitted spacer fabric 4 and/or the air-conveying knitted spacer fabric 5 can be woven from synthetic (threads) or from natural threads.

Claims

1. A seating or reclining furniture (2), comprising at least one ventilatable surface region (1),
characterized in

   - **that** the ventilatable surface region (1) has a shaping foam layer (3), an air-distributing knitted spacer fabric (4), an air-conveying knitted spacer fabric (5), as well as an air-permeable cover layer (6),
   - **that** a radial blower (7) is provided, which is connected in an air-transferring manner to the air-distributing knitted spacer fabric (4), wherein the radial blower (7) is arranged on the edge side of the air-distributing knitted spacer fabric (4) in such a way that a blowing of air into the air-distributing knitted spacer fabric (4) or an extraction of air from the air-distributing knitted spacer fabric (4) takes place essentially parallel to a surface plane of the air-distributing knitted spacer fabric (4).

2. The seating or reclining furniture according to claim 1,
characterized in
that a lattice is arranged between the radial blower (7) and the air-distributing knitted spacer fabric (4).

3. The seating or reclining furniture according to claim 1 or 2,
characterized in
that the radial blower (7) and the air-distributing knitted spacer fabric (4) are arranged spaced apart from one another.

4. The seating or reclining furniture according to one of the preceding claims, **characterized in**
that a suction duct (13) or blow-out duct (13') is provided, which is connected to the radial blower (7) and which is held via the shaping foam layer (3), in particular in a recess (8'),

5. The seating or reclining furniture according to one of the preceding claims, **characterized in**
that the ventilatable surface region (1) is arranged in the region of a seating surface (9), of a backrest (10), of a lordosis support (11), or of an armrest (12).

6. The seating or reclining furniture according to one of the preceding claims, **characterized in**
that the cover layer (6) has fabric, perforated leather or synthetic leather and/or a woven fabric.

7. The seating or reclining furniture according to one of the preceding claims, **characterized in that** the seating or reclining furniture (2) is formed as gaming chair.

8. The seating or reclining furniture according to one of the preceding claims, **characterized in that** a surface of the air-distributing knitted spacer fabric (4) is smaller than a surface of the air-distributing knitted spacer fabric (5).

9. The seating or reclining furniture according to one of the preceding claims, **characterized in that** a surface of the air-conveying knitted spacer fabric (5) is smaller than a surface of the cover layer (6).

10. The seating or reclining furniture according to one of the preceding claims, **characterized in**

- **that** the air-distributing knitted spacer fabric (4) and/or the air-conveying knitted spacer fabric (5) are arranged at least partially in a positive manner and so as to be flush with the surface in a recess (8) of the shaping foam layer (3), and/or
- **that** the radial blower (7) is arranged in a positive manner in a recess (8) of the shaping foam layer (3).

11. The seating or reclining furniture according to one of the preceding claims, **characterized in that** an energy storage (14) for the power supply of the radial blower (7) is arranged in the shaping foam layer (3).

12. The seating or reclining furniture according to one of the preceding claims, **characterized in that** the air-conveying knitted spacer fabric (5) and/or the air-distributing knitted spacer fabric (4) has a compression hardness of between 5 kPa and 35 kPa.

13. The seating or reclining furniture according to one of the preceding claims, **characterized in that** the air-distributing knitted spacer fabric (4) and the air-conveying knitted spacer fabric (5) are sewn, weaved, thermally laminated, or adhered to one another.

14. The seating or reclining furniture according to one of the preceding claims, **characterized in that** a frame (15) is provided, which is integrated into the shaping foam layer (3) or to which the shaping foam layer (3) is secured.

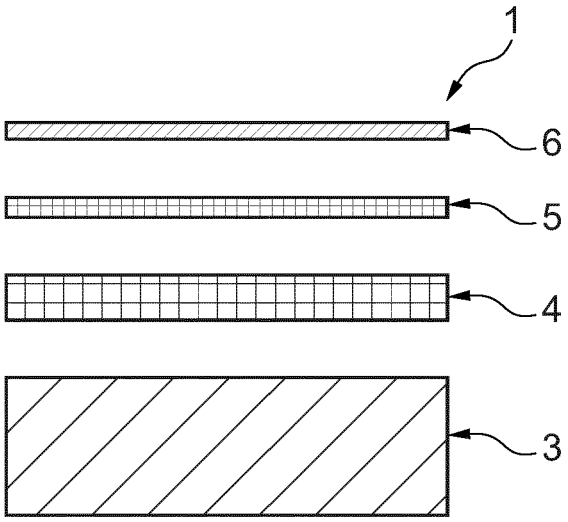

Fig. 1

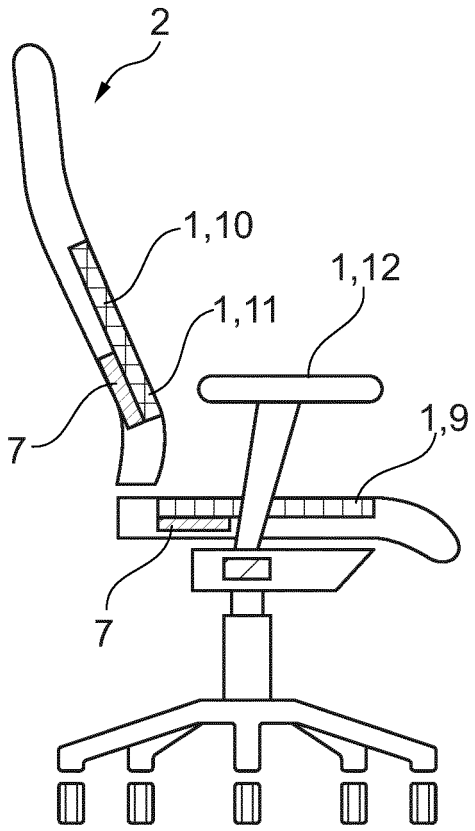

Fig. 2

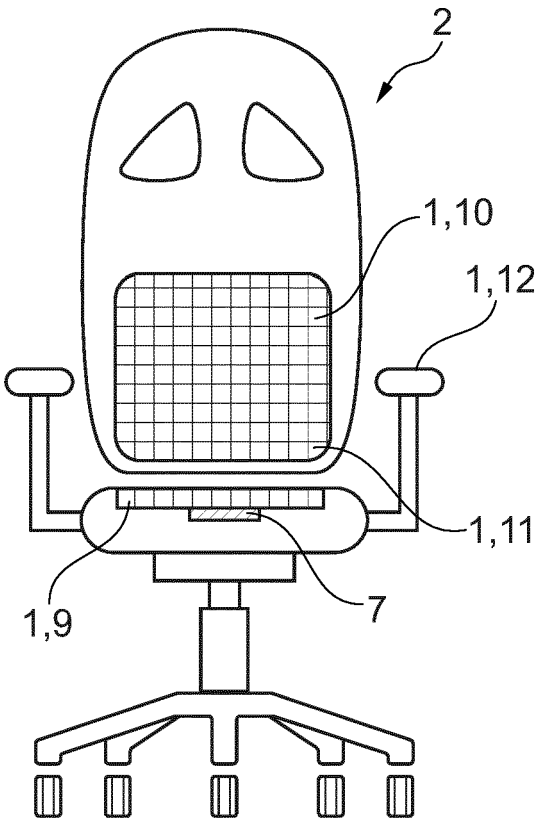

Fig. 3

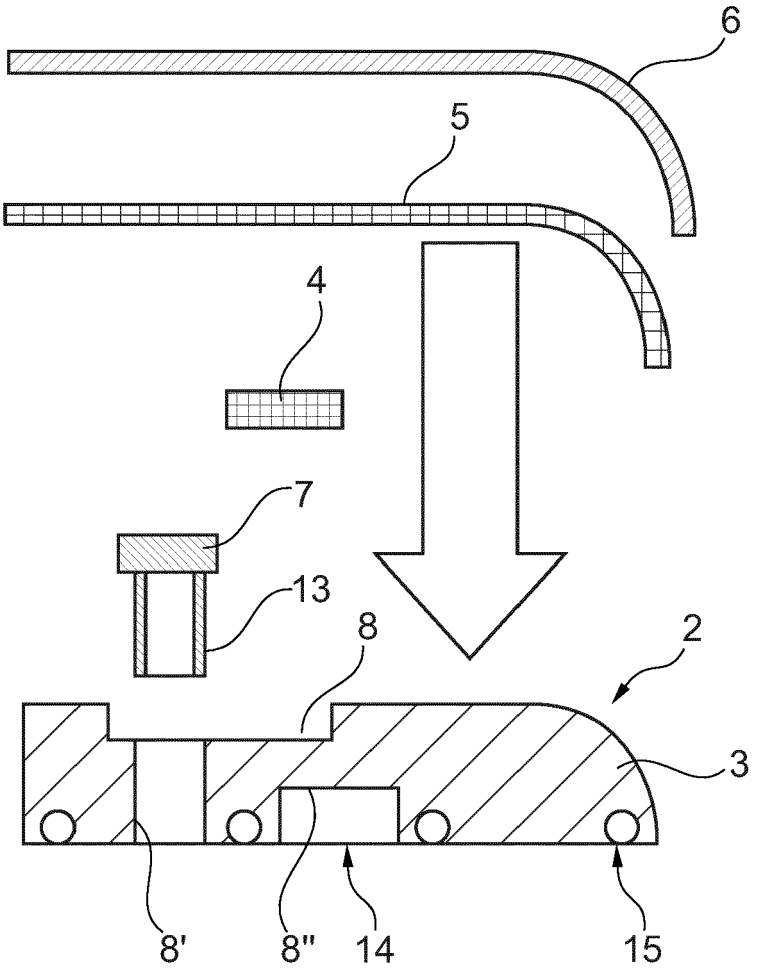

Fig. 4

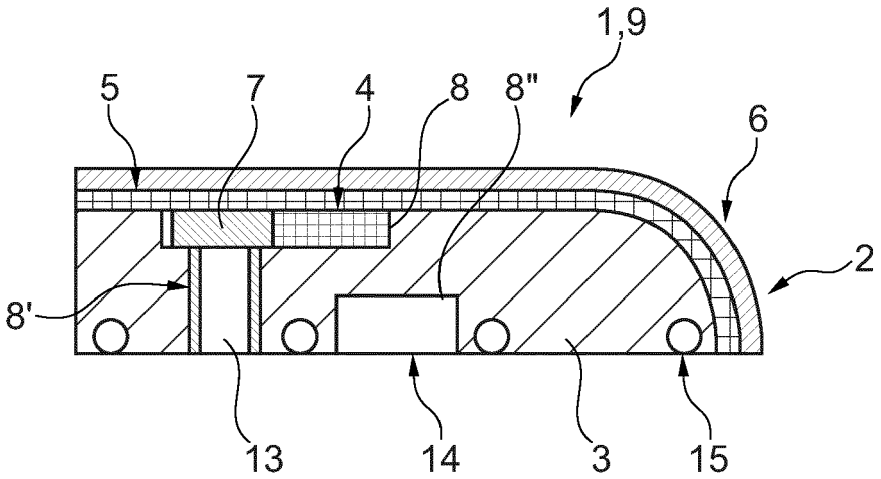

Fig. 5

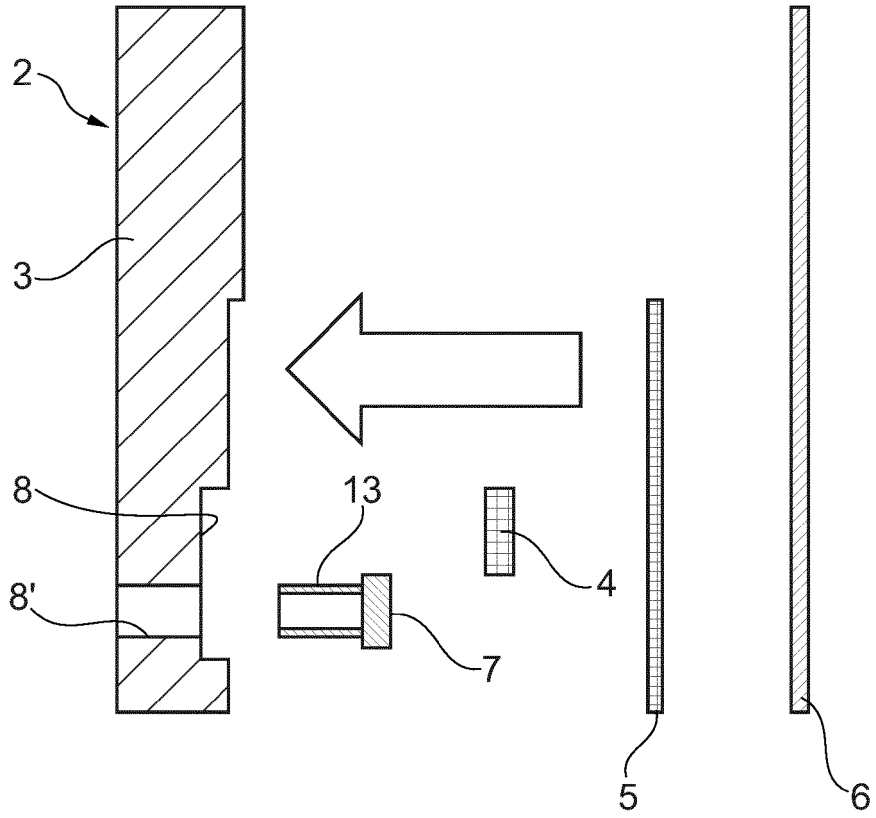

Fig. 6

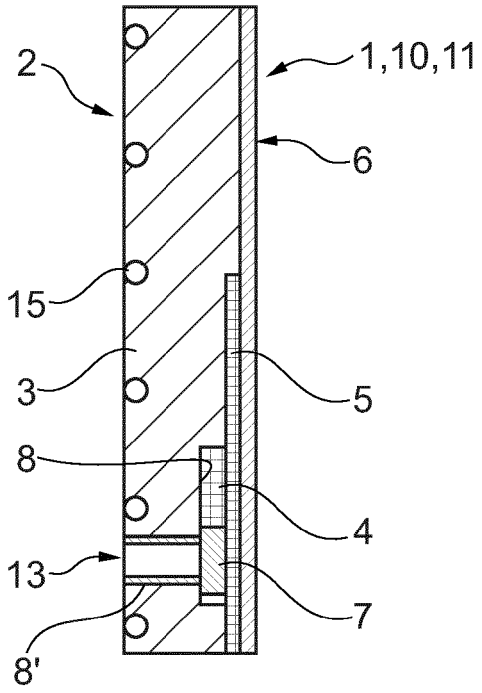

Fig. 7

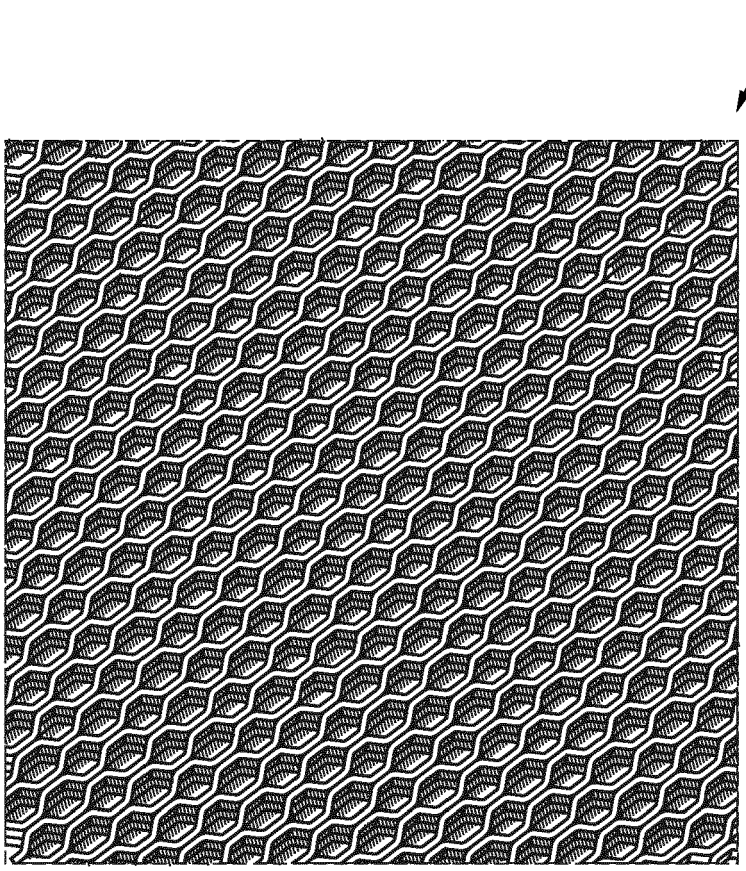

Fig. 8

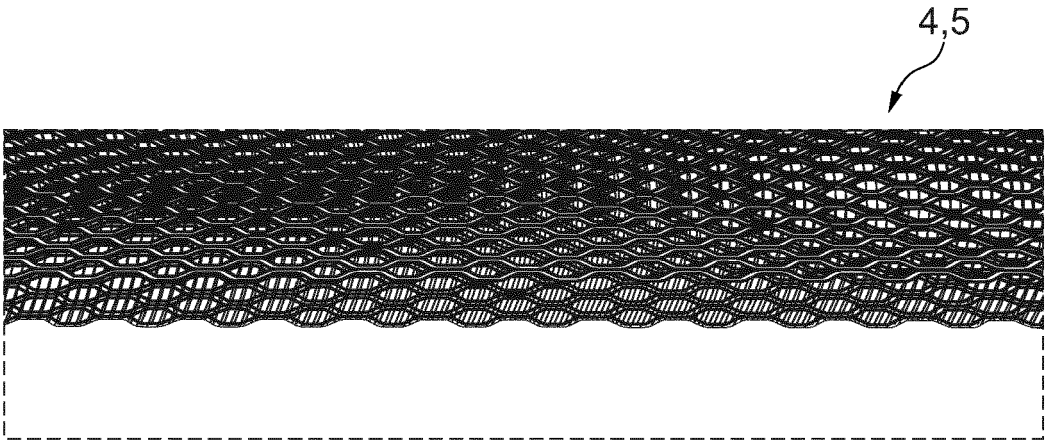

Fig. 9

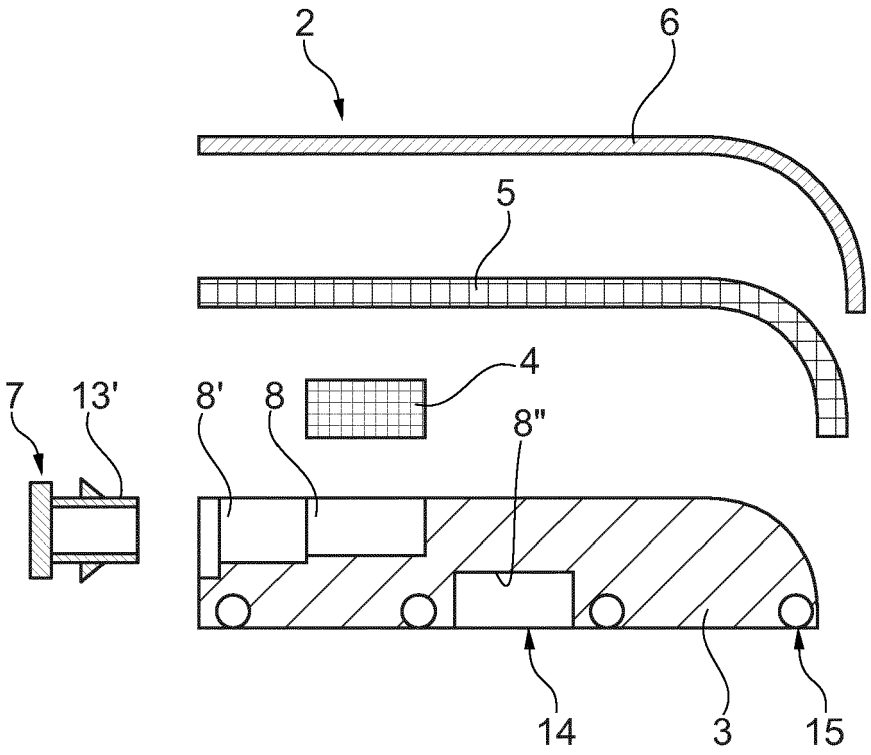

Fig. 10

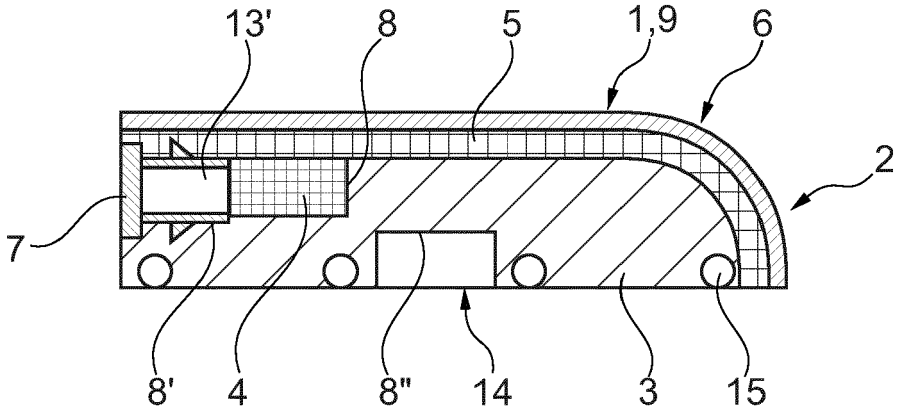

Fig. 11

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 22 17 6463

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	CZ 306 465 B6 (TECHNICKÁ UNIVERZITA V LIBERCI [CZ]) 1 February 2017 (2017-02-01) * paragraphs [0014], [0016]; figures 1-2 * -----	1-3,7, 11-13	INV. A47C7/74
X	US 6 196 627 B1 (FAUST EBERHARD [DE] ET AL) 6 March 2001 (2001-03-06) * column 3, lines 12-39; figures 1, 1A * -----	1,4-6, 8-10,14	
A	US 2002/067058 A1 (PFAHLER KARL [DE]) 6 June 2002 (2002-06-06) * figures 1-2 * -----	1-14	
			TECHNICAL FIELDS SEARCHED (IPC)
			A47C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	8 November 2022	Melo Sousa, Filipe

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons
.....
& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 22 17 6463

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

08-11-2022

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
CZ 306465 B6	01-02-2017	NONE	
US 6196627 B1	06-03-2001	DE 19805173 C1	02-06-1999
		EP 0936106 A1	18-08-1999
		ES 2262259 T3	16-11-2006
		JP H11313730 A	16-11-1999
		US 6196627 B1	06-03-2001
US 2002067058 A1	06-06-2002	DE 10049458 A1	18-04-2002
		EP 1195290 A1	10-04-2002
		US 2002067058 A1	06-06-2002

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- DE 102015008461 A1 **[0002]**
- WO 2020163212 A1 **[0003]**