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

(11) **EP 4 399 999 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
17.07.2024 Bulletin 2024/29

(21) Application number: **24151023.9**

(22) Date of filing: **09.01.2024**

(51) International Patent Classification (IPC):
A47B 19/06 *(2006.01)* ***A47B 83/02*** *(2006.01)*

(52) Cooperative Patent Classification (CPC):
A47B 19/06; A47B 83/02; A47B 2200/0023

(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 ME MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
KH MA MD TN

(30) Priority: **10.01.2023 CN 202310032381**
10.01.2023 CN 202320075876 U

(71) Applicant: **Sa, Shuang**
Richmond, BC V6V 1W5 (CA)

(72) Inventor: **Sa, Shuang**
Richmond, BC V6V 1W5 (CA)

(74) Representative: **Appleyard Lees IP LLP**
15 Clare Road
Halifax HX1 2HY (GB)

(54) **TABLE WITH MOVABLE TABLETOP**

(57) Embodiments of the present application provide a table having a tabletop movable horizontally, particularly along its longest length or to a position that puts the table itself in an off balance state. Since the tabletop is movable, a user can conveniently use different areas of the tabletop or reach articles placed in different areas of the tabletop, without having to move the user's body, which is safer and more convenient for the user.

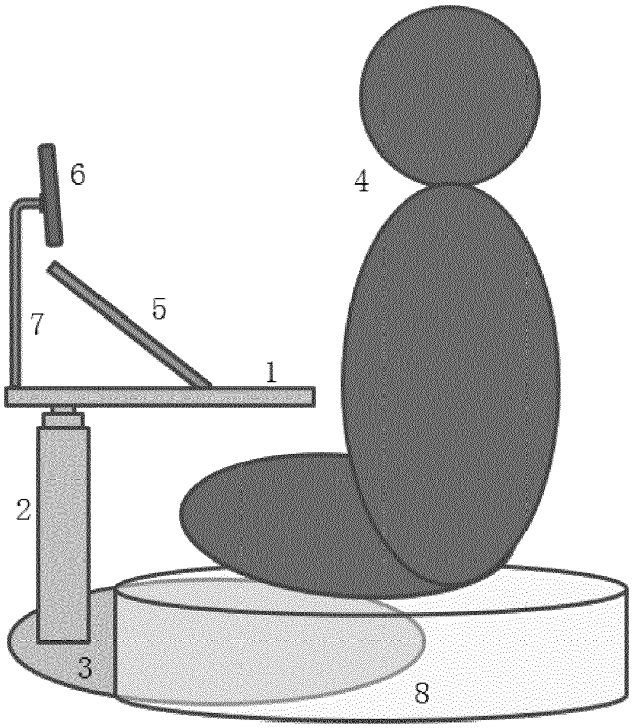

Fig. 1A

EP 4 399 999 A1

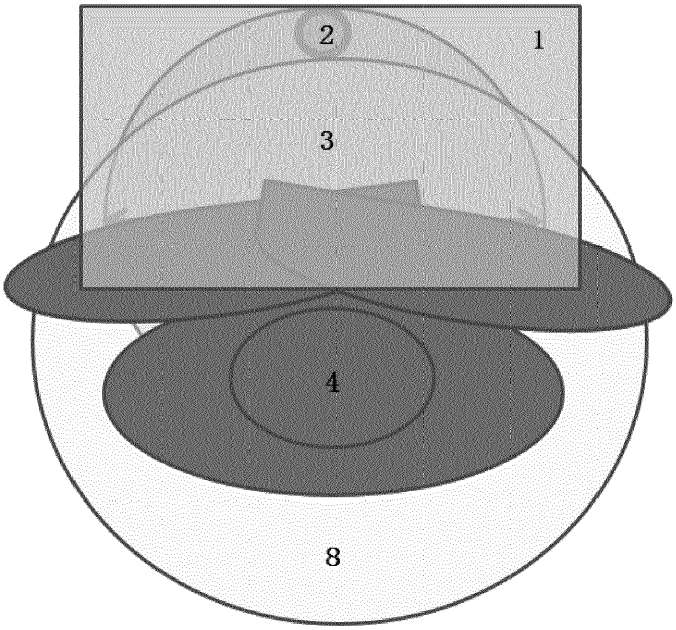

Fig. 1B

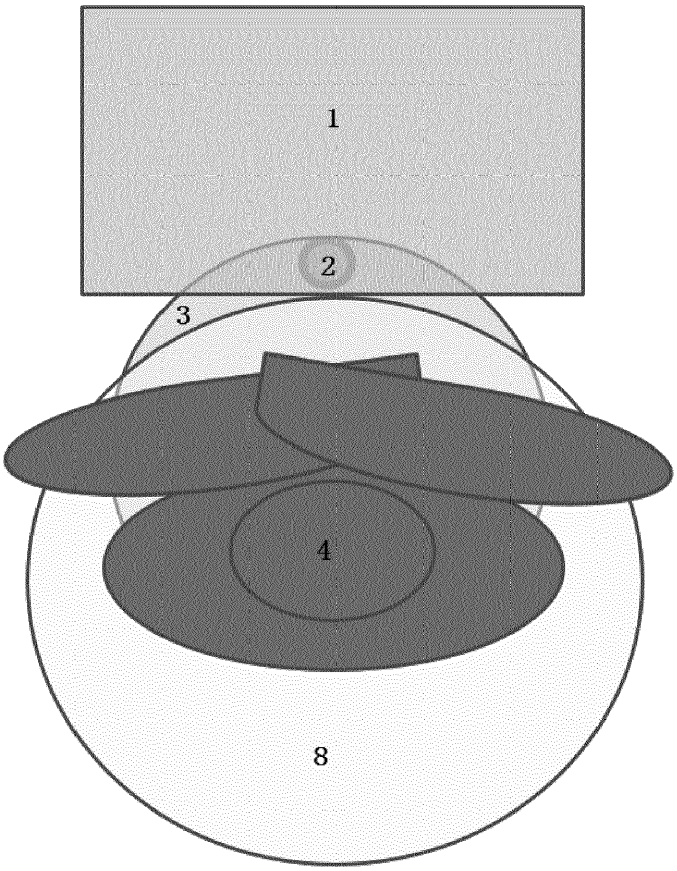

Fig. 1C

Description

FIELD OF INVENTION

[0001] The present application relates generally to tables, and particularly to a table with a movable tabletop.

BACKGROUND OF INVENTION

[0002] Tables are common pieces of furniture that can be used in many occasions. Users can place articles on the upper surface of the tabletop. Typically, tabletops are fixed in relation to the remainder of the table. As such, if the user needs to get closer to an article placed on the tabletop that is far away from the user, the user usually has to move his or her body (for example, by moving the chair the user sits on, or by bending down, or by reaching out). Such movements however can sometimes cause the user unpleasant experience (it can be troublesome) or sometimes become a safety hazard (movable chairs can have potential risks).

SUMMARY OF INVENTION

[0003] The present application provides a table, which can comprise a tabletop, a support member for supporting the tabletop, and a connecting structure for connecting the tabletop and the support member, allowing the tabletop to move in a horizontal direction. Some preferred embodiments of the present application can further comprise a base support, which is connected to the lower part of the support member. Other preferred embodiments of the present application provide a table with a tabletop that is movable along its longitudinal direction. According to the embodiments of the present application, the tabletop of the table is movable, allowing a user to conveniently use different areas of the tabletop or reach articles placed in different areas of the tabletop without having to move the user's body, which is safer and more convenient for the user.

[0004] According to the embodiments of the present invention, a table is provided and can comprise a tabletop, a support member for supporting the tabletop, and a connecting structure for movably connecting the tabletop and the support member. The support member can have a first side and a second side opposite from each other. The tabletop is capable of moving horizontally in relation to the support member. At least part of the tabletop is movable from one of the first and second sides to the other of the first and second sides of the support member.

[0005] In one embodiment, when the tabletop moves horizontally away from the first side of the support member to a furthest position, the center of gravity of the tabletop is located at a second side of the support member opposite to the first side. In another embodiment, the tabletop can be arranged to be movable horizontally in a second direction perpendicular to the first direction.

[0006] In one example, the tabletop is movable horizontally in a direction in which the largest length of the tabletop extends. The connecting structure can comprise a slide rail arranged parallel to the direction in which the longest length of the tabletop extends.

[0007] In another embodiment, the tabletop is movable in a direction perpendicular to the largest length of the tabletop in a horizontal plane. In an example, the connecting structure can comprise a first slide rail and a second slide rail. The first slide rail can be arranged parallel to the largest length to the tabletop. The second slide rail can be arranged transverse to the first slide rail.

[0008] In a further embodiment, the tabletop is adapted to move freely within a predetermined area in the horizontal plane.

[0009] In a still further embodiment, the tabletop is tiltable. In one example, the connecting structure pivotally connects the tabletop to the support member to allow the tabletop to pivot relative to the support member.

[0010] In another embodiment, the support member can be a vertically telescopic pillar, to allow the tabletop be adjusted to various height.

[0011] In a preferred embodiment, at least a portion of the tabletop extends beyond the connecting structure horizontally when the tabletop moves horizontally. In one example, the connecting structure comprises a slide rail, which is arranged under the tabletop and remains thereunder when the tabletop moves.

[0012] According to another embodiment, the table can further comprise a base support connected to the lower part of the support member. In one example, a lower portion of the support member is pivotally connected to the base support. In one embodiment, the center of gravity of the base support is on a first side of the support member. The tabletop is movable away from or toward the first side of the support member in a first direction. In another embodiment, the base support can comprise a force-bearing portion, which is adapted for a user to apply force to the base support and press the base support in the direction of gravity. In one example, the force-bearing portion comprises a plane with an area suitable for a user to stand or sit on. The table can further comprise a seat cushion, which is provided on the force-bearing portion.

[0013] According to a further embodiment, a portable table is provided and can comprise a tabletop, a support member for supporting the tabletop, and a connecting structure for movably connecting the tabletop and the support member. The tabletop is capable of moving horizontally in relation to the support member.

BRIEF DESCRIPTION OF DRAWINGS

[0014] The following description is set forth in connection with the attached drawing figures, which are not necessarily to scale, emphasis instead generally being placed upon illustrating the principles of the invention. In the drawing figures:

Figures 1A to 1C show different states of a table in use according to embodiments of the present application;

Figures 2A and 2B illustrate an exemplary connection mechanism between a tabletop and a support member;

Figure 3 shows an example of a pivotable support member and a tabletop;

Figure 4 shows an example of a telescopic support member;

Figure 5 shows an example of a tabletop movable in two vertical directions; and

Figure 6 shows an example of a tabletop movable in its longitudinal direction.

DETAILED DESCRIPTION OF EMBODIMENTS

[0015] The content of the present application will now be explained with reference to several exemplary embodiments. It should be understood that these embodiments are discussed merely to enable those of ordinary skill in the art to better understand and thereby implement the contents of the present application, and are not intended to imply any limitation on the scope of the present application.

[0016] As used herein, the term "comprise" and its variations thereof are to be read as an open-ended term meaning "comprising, but not limited to." The term "based on" is to be read as "based at least in part on." The terms "one embodiment" and "an embodiment" are to be read as "at least one embodiment." The term "another embodiment" is to be read as "at least one other embodiment."

[0017] Embodiments of the present application relate to a table with a movable tabletop, which can conveniently allow a user to reach distant article placed on the tabletop without having to significantly moving the user's body or a part of the user's body.

[0018] Figure 1A shows a state of a table in use according to an embodiment of the present application. The table can comprise a tabletop 1, a support member 2 and a base support 3. The tabletop 1 is placed on and/or supported by the support member 2. In one embodiment, the user 4 sits cross-legged on a futon 8. A part of the futon 8 can rest on the base support 3 of the table. An object 5 is placed on the tabletop 1 arranged in an inclined manner, such as an inclined book board (on which a book or a tablet computer can be placed). A bracket 7 can also be placed on the tabletop 1 relatively far away from the user 5 to hold a mobile phone 6.

[0019] The support member 2 can be connected to the base support 3, preferably using a relatively reliable connection, but the connection can also be detachable. In an embodiment as shown in Figure 1A, the support member 2 may not be located at the center of the base support 3. The center of gravity of the base support 3 can be on one side of the support member 2.

[0020] Figure 1B is a top view of the table shown in Figure 1A in use. Compared with the state shown in Figure 1A, the user 4 pulls the tabletop 1 closer to himself (but keeps the user's body basically still), for example, to better view the information on the mobile phone 6. In order to better illustrate the movement of tabletop 1, the object 5, the bracket 7 and the mobile phone 6 are not shown in Figure 1B.

[0021] Figure 1C is a top view of the table of Figure 1A in another use state. Compared with the state shown in Figure 1A, the user 4 pushes the tabletop 1 away (but keeps the user's body basically still), for example, to better view the information on the book, the tablet or the object 5 (compared with the information shown on a mobile phone, information shown on the book or tablet may be larger). In order to better illustrate the movement of the tabletop 1, the object 5, the bracket 7 and the mobile phone 6 are not shown in Figure 1C.

[0022] As mentioned above, the center of gravity of the base support 3 may be on one side of the support member 2. Therefore, when the tabletop moves away from or toward the user, the tabletop 1 moves away from or toward this side of the support member 2. It is understood that when the tabletop 1 is moving away from this side of the supporting member 2, the entire table is in an "off balance" state in terms of geometric form: the center of gravity of the base support 3 is on one side of the support member 2, while the center of gravity of the tabletop 1 above is located on the other side of the support member 2. The geometric form that provides this "off balance" state is unexpectedly advantageous, as the user can get a larger space for his or her body movement. In addition, the user can have a tabletop that is further away from the user's body.

[0023] In the embodiments of the present application, various means can be used to ensure the entire table remain stable without tipping over in this use state. For example, the base support 3 can be made of heavier materials, while the support member 2 and tabletop 1 can be made of lighter materials. In another example, additional structures (such as bolts) can be used to mount the base support 3 to the ground or floor. In another embodiment shown in Figure 1A, the user's own weight can be used to maintain the balance of the table (for example, the user holds the base support 3 down, such as through the futon 8). To this end, the shape and size of the base support 3 can be formed to provide a force-bearing part (such as a recessed part suitable for the shape of the futon 8 or part of it), so that the user can exert force on the base support 3 through the force-bearing part, to hold the base support 3 down in the direction of gravity. The base support 3 can have various shapes, for example, a triangle, a square, a rectangle, a circle, an ellipse, etc. In a preferred embodiment, the force-bearing part is a plane with a suitable area for the user to stand or sit on. In another preferred embodiments, a cushion (such as a futon) can be provided on the force-bearing part, so that the user does not need to carry additional items when using the table, thereby providing convenience.

[0024] Although one support member 2 is shown in

Figures 1A to 1C, there can be two or more support members in different embodiments (a greater number of support members may mean more stable support). For example, there can be two pillars arranged side by side, only one of which is visible in Figure 1A due to the viewing angle.

[0025] According to the embodiments of the present application, a connecting structure can be provided between the tabletop 1 and the support member 2, so that tabletop 1 can be placed on the support member 2 and move horizontally. This connecting structure can be implemented using known technologies as needed. Figures 2A and 2B are top views of two exemplary connecting structures, wherein the connecting structures are generally located under the tabletop 1 and above the support member 2. In an example shown in Figure 2A, a cross beam 10 is mounted on the support member 2 (preferably in a relatively firm fixed relationship). The tabletop 1 is supported on the cross beam 10, and the sides of the tabletop 1 are accommodated in the grooves 9 formed at both ends of the cross beam 10. In this way, tabletop 1 can move in the up and down direction shown in Figure 2A. In this embodiment, when the user sits on the base support 3, the tabletop 1 can move closer to or farther away from the user. The grooves 9 can be formed to have sufficient length so that although the tabletop 1 is movable, the grooves 9 can still hold the tabletop 1 relatively firmly. Figure 2A shows that tabletop 1 is pushed to the position almost furthest away from the user, and a part (maybe most) of tabletop 1 extend beyond the connecting structure in the horizontal direction of the table.

[0026] Figure 2B is a top view of another exemplary connecting structure of tabletop 1 and support member 2. In this example, the support member 2 can have various shapes (such as a plate shape) and have slide rail supports formed on both sides of the support member 2. Two slide rails 11 can be provided under tabletop 1 and can slide in the slide rail supports formed on both sides of the support member 2. In Figure 2B, the tabletop 1 is shown to have moved to the position closest to the user sitting on the base support 3. In the embodiment of the present application, the length and position of the slide rails provided under the tabletop 1 can be formed so that the slide rails are located under the tabletop 1 at any sliding position of the tabletop 1. In other words, when viewed from above, the slide rails do not protrude out from tabletop 1 or are otherwise exposed. This formation is more aesthetic and safer.

[0027] While Figures 2A and 2B show two exemplary connecting structures between tabletop 1 and support member 2, one skilled in the art will appreciate that other types of connecting structure can also be used as long as tabletop 1 can be supported on support member 2 and can move in a horizontal direction. All of these types of connecting structures are within the spirit and scope of this application. For example, the connecting structure can also be arranged on the side of tabletop 1.

[0028] In one embodiment of the present application, the lower part of the support member 2 can be pivotally connected to the base support 3. As shown in Figure 3, and as compared with the state in Figure 1A, this connection allows the support member 2 to pivot around the connection point between the two to form an inclined position, thereby providing additional flexibility. In other embodiments, the connecting structure between support member 2 and tabletop 1 can allow tabletop 1 to pivot, in addition to move horizontally, in relation to the support member 2. As is shown in the left side diagram of Figure 3, tabletop 1 is in a horizontal position, while the right side diagram of Figure 3 shows that the tabletop 1 is pivoted and tilted relative to the support member 2. The tilting of the tabletop 1 relative to the support member 2 can provide additional flexibility. The pivot connection between the support member 2 and the base support 3 and between the tabletop 1 and the support member 2 can be implemented using known structures.

[0029] In one embodiment of the present application, the support member can be a vertically telescopic pillar, such as shown in Figure 4. Figure 4 exemplarily shows three telescopic states of the support member 2. The heights of the support member 2 shown are exemplary and can correspond to the user's cross-legged meditation, regular sitting and standing postures, respectively.

[0030] In one embodiment of the present application, tabletop 1 can, in addition to moving in the direction closer to and away from the user, also move in a direction perpendicular to this direction. As is shown in Figure 5, slide rails can be provided under tabletop 1. In one example, two rails 12 are provided in the vertical direction and two rails 13 are provided in the horizontal direction. Although not shown in the figures, support member 2 can be provided with rollers corresponding to the intersection points of the slide rails of tabletop 1. Based on this setting, when the intersection point of the slide rail corresponds to the position of the rollers (initial position), tabletop 1 can slide forward and backward, as well as slide left and right. After tabletop 1 slides forward (or backward) to a position away from the initial position, and needs to slide to the left (or right), the user can just slide the tabletop 1 back to the initial position to achieve a left slide (or a right slide). In a similar way, after the tabletop 1 slides left (or right), the user can also slide the tabletop 1 to back to the initial position, and then slide the tabletop 1 forward or backward. Such a setting can provide users with greater flexibility.

[0031] In daily life, users may use tables having a tabletop 1 particularly long in one dimension relative to other dimensions. Such tables can be long or corner shaped. According to user's habits or thinking, such tabletops are typically divided into different work areas. For example, one of such areas can be used for computers, another area can be for files, another area for conversation, and another area for leisure activities. Users switch from one work area to another by moving their bodies or by using a movable chair.

[0032] One or more embodiments of the present application provide a table that has a tabletop movable along its longest dimension, so that the user does not need to move himself or herself and can switch to different work areas by simply moving the tabletop. Figure 6 is a top view of an exemplary table in accordance with these embodiments. As is shown, the tabletop 1 is rectangular, with its length significantly longer than its width. The tabletop is divided into three work areas A, B, and C from left to right. Slide rails (for example 2 slide rails) can be provided under the tabletop, to allow the tabletop move left and right along the length direction, so that any of the three work areas can be moved directly in front of the user.

[0033] It can be appreciated that the tabletop according to these embodiments can also be in a corner or arc shape. Arc-shaped slide raid or rails can be provided under the tabletop so that the tabletop can slide in a curved manner. In other words, the extending direction of the slide rails of the tables in these embodiments can be parallel to the moving direction of the tabletop (for example, the direction of the longest dimension of the tabletop). In addition, although not shown in Figure 6, the tabletop can be connected to the support member through one or more such slide rails, so that the tabletop is supported by the support member. It is noted that tables according to these embodiments do not necessarily require a base, and the support member can be in direct contact with the ground or floor.

[0034] As a more preferred embodiment, the table shown in Figure 6 can be provided with cross-type slide rails, similar to those shown in Figure 5, to allow the tabletop move not only in the length direction, but also in the width direction perpendicular to the length direction, providing the user with greater flexibility. Although Figure 5 shows four slide rails, two slide rails can be arranged perpendicular to each other, to allow the tabletop to move in both length and width directions. In one exemplary embodiment, the moving direction of the tabletop is parallel to the extending direction of the slide rails.

[0035] In other embodiments, a more complex moving structure can be used, such as using a gimbal bracket to connect the support member and the tabletop, so that the tabletop can move in any direction in the horizontal plane defined by the bracket. In addition, it can be appreciated that in addition to being movable in any direction in the horizontal plane, the gimbal bracket can also allow the tabletop to tilt at different angles (for example, tilting slightly toward the user to provide a better reading angle).

[0036] The tables according to the various embodiments of the present application can be suitable not only for typically being placed at the same position, or even mounted on the ground or floor through fixtures (such as bolts), but also for having smaller sizes and lighter weights for portable uses (such as movable tables).

[0037] Although the present application has been described with reference to the specific embodiments shown in the accompanying drawings, it should be appreciated that, without departing from the spirit and the scope and the background taught by the present application, the containers in the embodiments of the present application can have many variations. Those skilled in the art will recognize that different ways can be used to change the exemplary structures in the embodiments disclosed in this application, all of which fall within the spirit of the application and the scope of the claims.

Claims

1. A table, comprising:

   a tabletop;
   a support member for supporting the tabletop, the support member having a first side and a second side opposite from each other; and
   a connecting structure for movably connecting the tabletop and the support member,
   wherein the tabletop is capable of moving horizontally in relation to the support member, and
   wherein at least part of the tabletop is movable from one of the first and second sides to the other of the first and second sides of the support member.

2. The table according to claim 1, further comprising a base support connected to the lower part of the support member;
   wherein the center of gravity of the base support is on a first side of the support member, and wherein the tabletop is movable away from or toward the first side of the support member in a first direction.

3. The table according to claim 1, further comprising a base support connected to the lower part of the support member;
   wherein the base support comprises a force-bearing portion, which is adapted for a user to apply force to the base support and press the base support in the direction of gravity.

4. The table according to claim 3, further comprising a seat cushion, which is provided on the force-bearing portion.

5. The table of claim 2, wherein, when the tabletop moves horizontally away from the first side of the support member to a furthest position, the center of gravity of the tabletop is located at a second side of the support member opposite to the first side.

6. The table of claim 1, wherein the connecting structure pivotally connects the tabletop to the support member to allow the tabletop to pivot relative to the support member.

7. The table of claim 1, wherein the tabletop is arranged to be movable horizontally in a second direction perpendicular to the first direction.

8. The table of claim 1, wherein the connecting structure comprises a slide rail, which is arranged under the tabletop and remains thereunder when the tabletop moves.

9. The table of claim 1, wherein the tabletop is movable horizontally in a direction in which the largest length of the tabletop extends.

10. The table of claim 9, wherein the connecting structure comprises a slide rail arranged parallel to the direction in which the longest length of the tabletop extends.

11. The table of claim 9, wherein the tabletop is movable in a direction perpendicular to the largest length of the tabletop in a horizontal plane.

12. The table of claim 11, wherein the connecting structure comprises a first slide rail and a second slide rail, the first slide rail being arranged parallel to the largest length to the tabletop, and the second slide rail being arranged transverse to the first slide rail.

13. The table of claim 1, wherein the tabletop is adapted to move freely within a predetermined area in the horizontal plane.

14. The table of claim 1, wherein at least a portion of the tabletop extends beyond the connecting structure horizontally when the tabletop moves horizontally.

15. A table, comprising:

a tabletop;
a support member for supporting the tabletop; and
a connecting structure for movably connecting the tabletop and the support member,
wherein the table is portable.

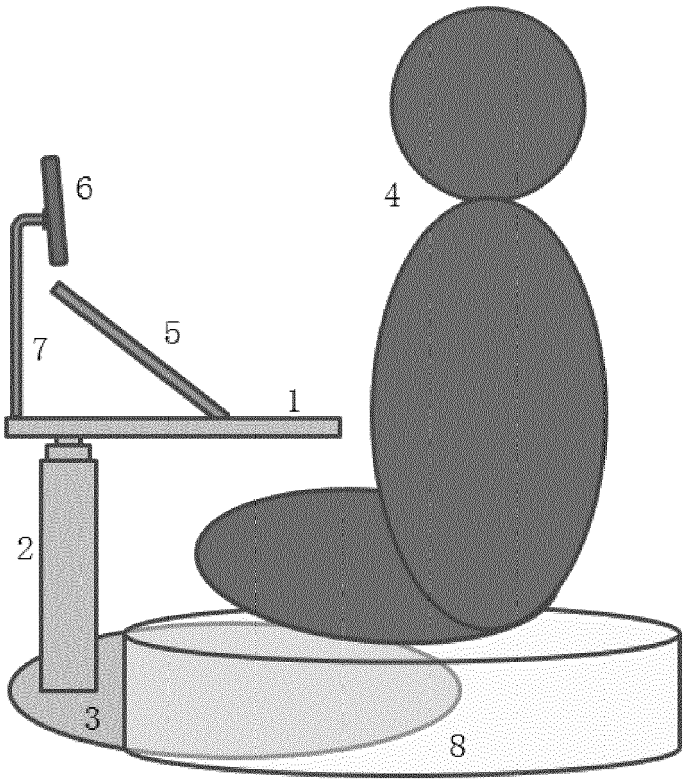

Fig. 1A

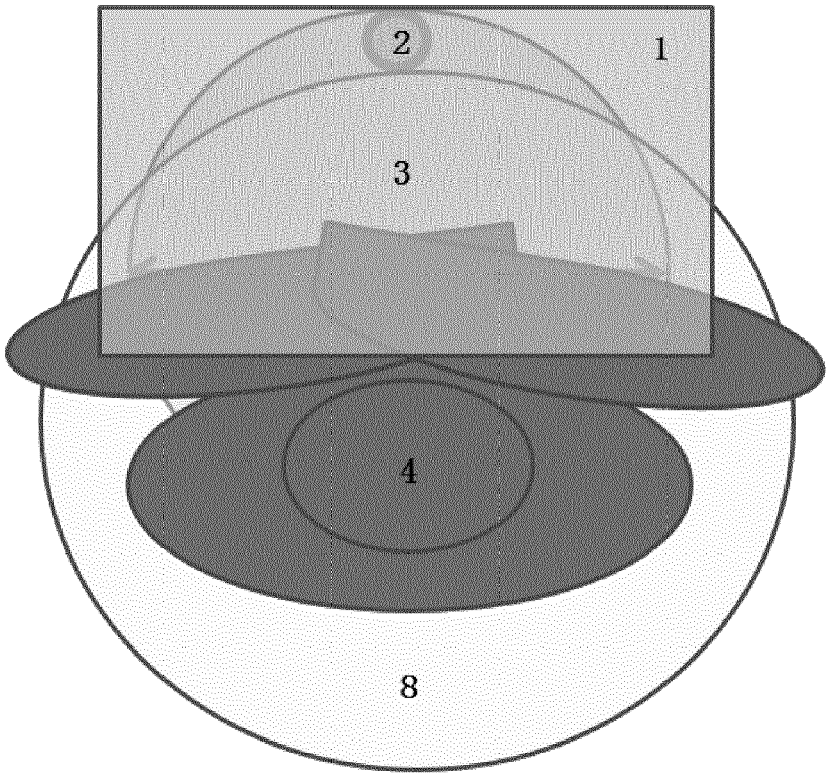

Fig. 1B

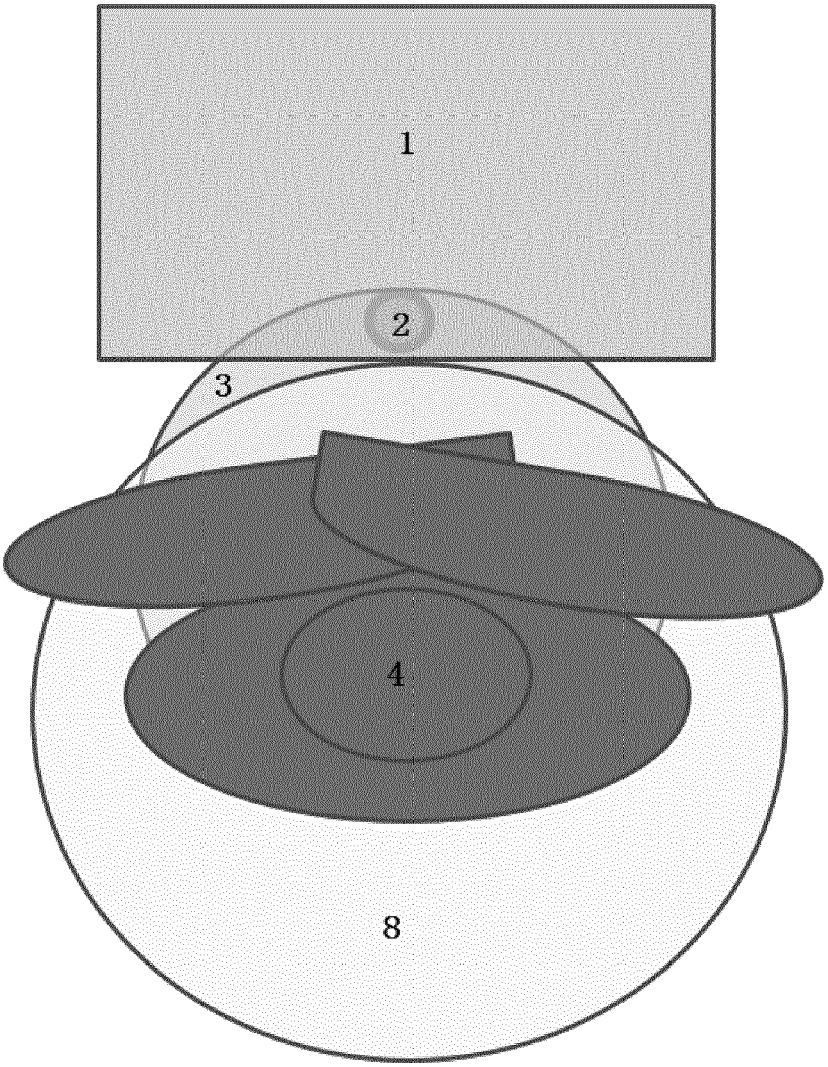

Fig. 1C

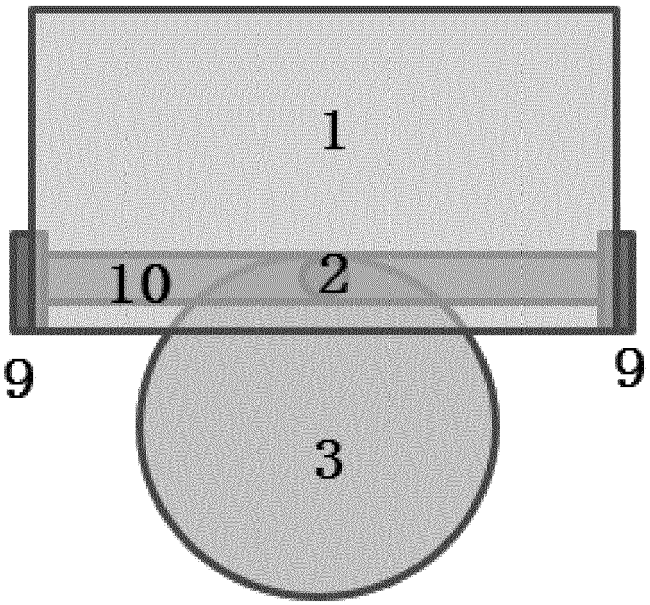

Fig. 2A

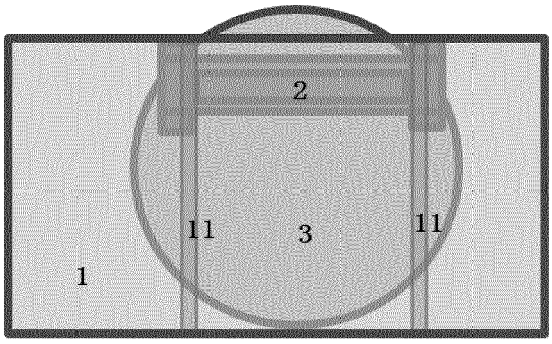

Fig. 2B

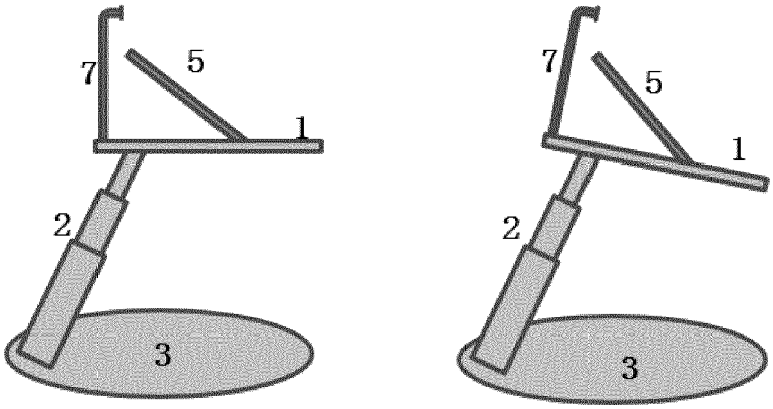

Fig. 3

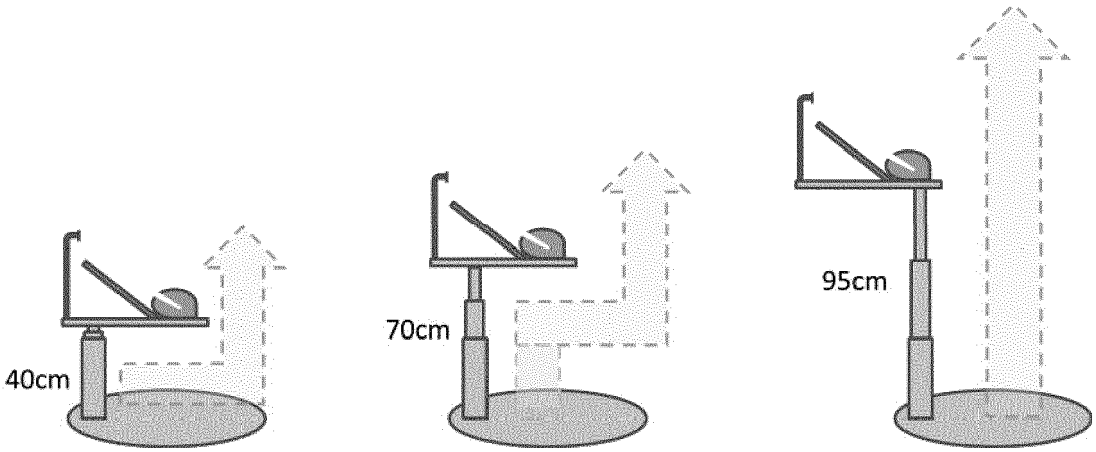

Fig. 4

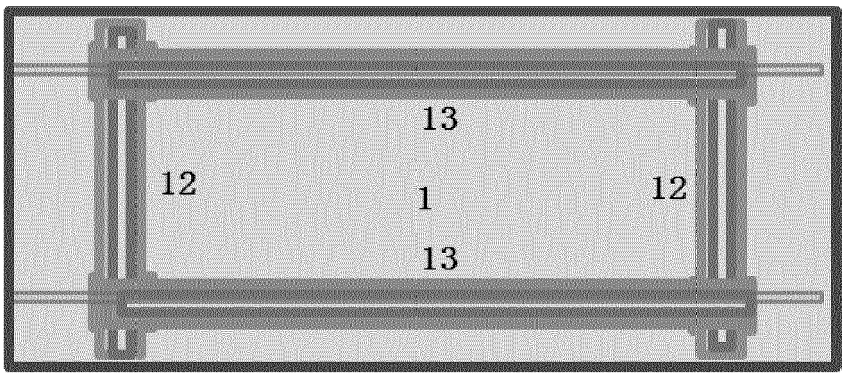
13
12
1
12
13

Fig. 5

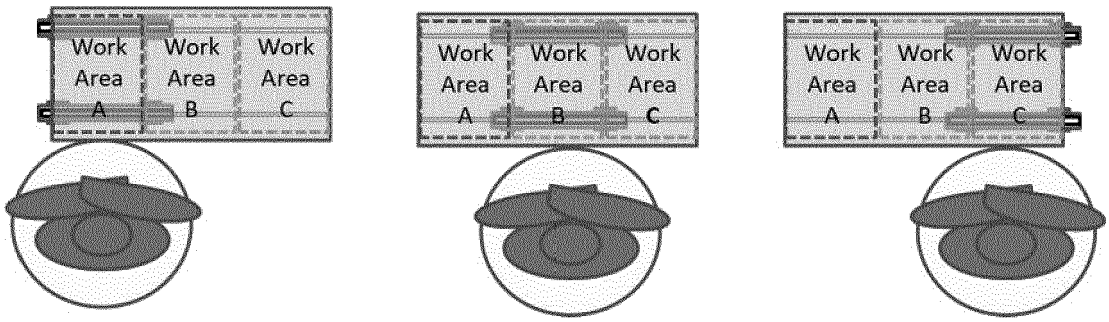
Work Area A
Work Area B
Work Area C
Work Area A
Work Area B
Work Area C
Work Area A
Work Area B
Work Area C

Fig. 6

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 24 15 1023

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	US 2016/302571 A1 (MCBRIDE ROBERT [US] ET AL) 20 October 2016 (2016-10-20)	1-5,7-14	INV. A47B19/06
A	* page 1 - page 19; figures 1-8 *	6,15	A47B83/02
X	CA 3 134 292 A1 (DASSAULT AVIAT [FR]) 15 April 2022 (2022-04-15)	1-3,5,6, 8-10, 13-15	
A	* paragraph [0005] - paragraph [0051]; figures 1-10 *	4,7,11, 12	

TECHNICAL FIELDS SEARCHED (IPC)
A47B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	3 June 2024	Kohler, Pierre

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 24 15 1023

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.

03-06-2024

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2016302571 A1	20-10-2016	NONE	
CA 3134292 A1	15-04-2022	BR 102021020592 A2	26-04-2022
		CA 3134292 A1	15-04-2022
		FR 3115267 A1	22-04-2022
		US 2022119117 A1	21-04-2022

EPO FORM P0459

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