

A rotation assembly and a furniture comprising a rotation assembly**Field of disclosure**

The invention relates to the field of swivelable furniture.

5 Background

Several types of swivelable furniture exists on the market today, including swivelable furniture with a return function. Swivelable furniture with a return function automatically return a part of the furniture to a predetermined position relative to another part after an initial rotation of the first part.

- 10 One of the most common type of swivelable furniture is the swivel chair. A swivel chair with a return function is often provided with a rotation assembly that causes the seat of the swivel chair to rotate back to a default position after having been rotated to a rotated position relative to the base of the swivel chair. Known rotation assemblies used with swivel chairs commonly comprise one or more thrust bearings
- 15 that is configured to apply a force to the seat of the swivel chair to its default position from a rotated position. A problem with existing rotation assemblies is that they are complex, prone to wear and expensive to manufacture. Accordingly, it is an object of the present invention to provide a rotation assembly that addresses some of the issues with the prior art.

20 Summary

- A first aspect of the present invention provides a rotation assembly for swivelling the seat of a chair to a default position, the rotation assembly comprising a first connection element comprising a spindle, and a knob, where the knob is arranged on the spindle at a non-zero distance from the central axis of the spindle, and a
- 25 second connection element, comprising an engagement element, where the second connection element is rotatably engaged with the spindle, and where the engagement element is configured to contact the knob and to apply a non-zero force to the knob in a direction at least in part perpendicular to the central axis of the spindle. In an embodiment of the invention the second connection element
- 30 further comprises a retaining element, and a first manual activation mechanism, where the first manual activation mechanism is configured to move the retaining element between a retaining element first position and a retaining element second position, where the retaining element is configured to engage with the knob and to retain the knob in a fixed position when the retaining element is in the retaining
- 35 element second position, and where the retaining element is configured to be

disengaged with the knob when the retaining element is in the retaining element first position.

In another embodiment of the invention the second connection element further comprises an elastic member configured to force the engagement element towards
5 the knob.

In yet another embodiment of the invention the second connection element further comprises a second manual activation mechanism, where the second manual activation mechanism is configured to move the engagement element between an engagement element first position and an engagement element second position,
10 where the engagement element is configured to abut the knob when the engagement element is in the engagement element second position, and where the engagement element is configured to be disengaged from the knob when the engagement element is in the engagement element first position.

In yet another embodiment of the invention the knob is detachably connected to
15 the spindle.

In yet another embodiment of the invention the position of the knob is adjustable along the radial direction of the spindle.

In yet an embodiment of the invention the knob has a cylindrical shape.

In yet another embodiment of the invention the knob comprises a sleeve that is
20 configured to rotate around the central axis of the knob.

In yet another embodiment of the invention the engagement element comprises an engagement portion configured to abut the knob where the engagement portion comprises an elastic material.

In yet another embodiment of the invention the engagement element comprises an
25 engagement portion configured to abut the knob where the engagement portion has a non-planar surface facing the knob, and optionally where the engagement portion comprises an elastic material.

In yet another embodiment of the invention the engagement portion has a curved surface facing the knob.

In yet another embodiment of the invention the engagement portion is provided with a recess configured to receive the knob.

In yet another embodiment of the invention at least part of the surface of the knob is covered by a low-friction material or an elastic material.

- 5 In yet another embodiment of the invention the engagement element comprises a first elastic element connected to the knob and configured to apply the non-zero force to the knob.

In yet another embodiment of the invention the second connection element further comprises an additional engagement element configured to contact the knob and to
10 apply an additional non-zero force to the knob in an additional direction at least in part perpendicular to the central axis of the spindle, where the additional engagement element comprises a second elastic element connected to the knob configured to apply the additional non-zero force to the knob, and where the direction and the additional direction are non-parallel to one another.

- 15 Another aspect of the present invention provides a furniture comprising the rotation assembly.

Brief description of the drawings

Figure 1a is a schematic illustration of a swivel chair comprising a base, a seat and a rotation assembly,

- 20 Figure 1b is a schematic illustration of a swivel chair comprising a base, a seat and a rotation assembly,

Figure 1c is an exploded schematic illustration of a swivel chair comprising a base, a seat and a rotation assembly,

- Figure 2 is a schematic illustration of a rotation assembly comprising a first
25 connection element and a second connection element,

Figure 3 is a schematic illustration of a rotation assembly comprising a first connection element and a second connection element,

Figure 4a is a schematic illustration of a rotation assembly where the second connection element is in a default position relative to the first connection element,

- 30 Figure 4b is a schematic illustration of a rotation assembly where the second connection element is in a rotated position relative to the first connection element,
Figure 5 is a schematic illustration of a first connection element comprising a spindle and a knob,

Figure 6a is a schematic illustration of a rotation assembly comprising a first connection element and a second connection element, where the second connection element comprises an engagement element abutting a knob of the first connection element,

5 Figure 6b is a schematic illustration of a rotation assembly comprising a first connection element and a second connection element, where the second connection element comprises a retaining element engaging a knob of the first connection element,

Figure 6c is a schematic illustration of a rotation assembly comprising a first
10 connection element and a second connection element, where the second connection element comprises an elastic member configured to force the engagement element towards the knob,

Figure 7 is a schematic illustration of a rotation assembly comprising a first connection element and a second connection element, where the second connection
15 element comprises an engagement element with an engagement portion comprising a recess, and

Figure 8 is a schematic illustration of a rotation assembly comprising a first connection element and a second connection element, where the second connection element comprises an engagement element and an additional engagement
20 element.

Detailed description of the disclosure

In the following, general embodiments as well as particular exemplary embodiments of the invention will be described. References will be made to the
25 accompanying drawings. It shall be noted, however, that the drawings are exemplary embodiments only, and that other features and embodiments may well be within the scope of the invention as claimed. Further, the mentioning of references such as "a" or "an" etc. should not be construed as excluding a plurality. The term "invention" may herein be used interchangeably with the term
30 "disclosure".

Unless otherwise defined, all terms of art, notations and other scientific terms or terminology used herein are intended to have the meanings commonly understood by those of skill in the art to which this invention pertains. Certain terms of art, notations, and other scientific terms or terminology may, however, be defined
35 specifically as indicated below.

The present invention provides a rotation assembly for swivelling the seat of a chair to a default position, and a furniture comprising the rotation assembly. The rotation assembly will from hereon be described as being employed with a chair, but as will be appreciated by a person skilled in the art with knowledge of the present invention, the rotation assembly may be employed with other types of rotatable furniture, such as for example tables or stools.

The rotation assembly 100 may as schematically illustrated in figures 1a, 1b and 1c be connected between the base 410 and the seat 420 of a swivel chair 400, and may generally be configured to automatically move the seat 420 of the swivel chair from a rotated position to a default position relative to the base of the swivel chair. The rotation assembly 100 may alternatively to being connected between the base and the seat 420 of a swivel chair 400, be integrated in a swivel chair 400.

A swivel chair 400 may as schematically illustrated in figures 1a, 1b and 1c comprise a seat 420 and a base 410, where the seat 420 may be rotated between 0 and 360 degrees from a default position to a rotated position relative to the base 410. The rotation may for example be caused by a user applying a rotational force to the seat 420, either while occupying the swivel chair 400, or when standing next to the swivel chair 400. If the swivel chair 400 is provided with a rotation assembly 100, the rotation assembly 100 according to the present invention may cause a force to be applied to the seat 420 such that the seat 420 returns from the rotated position to the default position when the user ceases to apply the rotational force to the seat 420. The seat 420 may either return to the default position in the same or opposite rotational direction compared to the initial rotational direction applied by the user.

The rotation assembly 100 comprises, as schematically illustrated in figure 2, a first connection element 200 and a second connection element 300. The first connection element 200 is here rotatably engaged with the second connection element, *i.e.*, such that the second connection element 300 is connected to and may rotate relative to the first connection element 200. A connection element may herein generally be a mechanical element configured to be connected to the seat or the base of a swivel chair or another type of furniture. A connection element may for example be a mechanical connector.

The rotation assembly may generally according to the present invention be configured such that the second connection element may automatically be returned

to a default position, *i.e.* to a default rotational position, from a position where the second connection element 300 is rotated to a rotated position relative to the first connection element. The default position of the second connection element relative to the first connection element may here be defined by a 0 degree rotation, 5 whereas a rotated position of the second connection element relative to the first connection element may be defined by a non-zero degrees rotation, *i.e.* ± 180 degrees.

As illustrated in figures 1a, 1b and 1c, the first connection element 200 and the second connection element 300 may form part of or be connected to a swivel chair 10 400. The first connection element 200 may be connected to, or be part of, a base 410 of the swivel chair 400, and the second connection element 300 may be connected to, or be part of, a seat 420 of the swivel chair 400. Alternatively, the first connection element 200 may be connected to, or be part of, the seat 420 of the swivel chair 400, and the second connection element 300 may be connected to, 15 or be part of, the base 410 of the swivel chair 400. The first connection element 200 and the second connection element 300 may be rotatably connected to one another, such that the seat 420 may rotate relative to the base 410 of the swivel chair 400. Figures 1a, 1b and 1c schematically illustrate an example of a swivel chair 400 where the first connection element 200 is a part of the base 410 of the 20 swivel chair 400, and where the second connection element 300 is a part of the seat 420 of the swivel chair 400. The seat 420 of the swivel chair 400 may here rotate relative to the base 410 of the swivel chair 400 by means of the rotation assembly 100. As will be appreciated by a person skilled in the art with knowledge of the present invention, the first connection element 200 and the second 25 connection element 300 may alternatively be connected to or be a part of other types of furniture in order to facilitate that one part of the furniture rotates relative to another part of the furniture.

The first connection element 200 comprises, as schematically illustrated in figures 2 and 3, a spindle 220 to which the second connection element 300 is rotatably 30 engaged. A spindle 220 may according to the present invention be understood as a rod or pin serving as an axis 221 on which the second connection element 300 may be rotatably connected or engaged. The spindle 220 may thus for example be a rod, a pin, or a circular cylinder. As schematically illustrated in figure 3, the second connection element 300 may engage the spindle 220 by means of a bearing 230, 35 *e.g.* a ball bearing. However, as will be understood by a person skilled in the art

with knowledge of the present invention, the second connection element 300 may engage the spindle 220 by other suitable means.

The first connection element 200 may, as schematically illustrated in figures 2 and 3, further comprise a knob 240, where the knob 240 is arranged on the spindle 220 at a non-zero distance from the central axis 221 of the spindle 220. Further, as
5 schematically illustrated in figures 2, 3, 4a and 4b, the second connection element 300 comprises an engagement element 310, where the engagement element 310 is configured to contact the knob 240 and configured to apply a non-zero force to the knob 240 in a direction at least in part perpendicular to the central axis 221 of the
10 spindle 220. Based on the rotational position between the first connection element 200 and the second connection element 300, the force on the knob 240 from the engagement element 310 may give rise to a torque between the first connection element 200 and the second connection element 300. Said torque may further cause the second connection element 300 to rotate relative to the first connection
15 element 200, which may cause the second connection element 300 to rotate from a rotated position to a default position relative to the first connection element 200. Figure 4a schematically illustrates a rotation assembly 100 where the second connection element 300 is in a default position relative to the first connection element 200, whereas figure 4b schematically illustrates a rotation assembly 100
20 where the second connection element 300 is in a rotated position relative to the first connection element 200. When the rotation assembly 100 is arranged in a swivel chair 400 or as a part of a swivel chair 400, said torque may cause the seat 420 of the swivel chair 400 to move from a rotated position to a default position relative to the seat 410 of the swivel chair 400. The knob 240 may have various
25 shapes, such as a cylindrical shape, a polygonal shape or an oval shape. The employment of a spindle 220, knob 240 and engagement element 310 as described herein is preferred in that the rotation assembly allows both a complete revolution of the second connection element 300 relative to the first connection element 200, and that the second connection element 300 may be automatically rotated from a
30 rotated position to a default position relative to the first connection element 200.

The knob 240 may, as schematically illustrated in figures 4a, 4b and 5, be connected to the top end of the spindle 220, e.g. a flat ended cylindrical spindle 220. The off-centre positioning of the knob 240 relative to the centre of the spindle 220 thus allows the force applied by the engagement element 310 to be transferred
35 as a torque between the first connection element 200 and the second connection element 300. The further off-centre the knob 240 is positioned, the higher the

torque may be. The position of the knob 240 may further be adjustable along the radial direction of the spindle 220. An adjustable knob 240 may generally be configured to be fixed at a certain position along the radial direction of the spindle 220. The distance between the knob 240 and the centre of the spindle 220 may in other words be adjusted in order to decrease or increase the force applied to the knob 240 by the engagement element 310.

The position of the knob 240 relative to the rotation of the second connection element 300 is schematically illustrated in figures 4a and 4b. When the second connection element 300 is in the default position relative to the first connection element 200, the knob 240 may as schematically illustrated in figure 4a be in a first knob position relative to the second connection element 300. When the second connection element 300 is in a rotated position relative to the first connection element 200, the knob 240 may as schematically illustrated in figure 4b be in a second knob position relative to the second connection element. The engagement element 310 may thus generally be configured to apply a force onto the knob 240 such that the second connection element 300 rotates back to the default position, and such that the position of the knob 240 relative to the second connection element shifts from the second knob position to the first knob position. The first knob position may in other words thus be a position farthest away from the engagement element 310. The rotation assembly 100 may generally be configured such that rotation of the second connection element 300 relative to the first connection element may be inhibited on demand. Figures 6a and 6b schematically illustrates a rotation assembly 100 where the second connection element 300 comprises a retaining element 330 and a first manual activation mechanism 340. The retaining element 330 may generally be configured to engage the knob 240 and to retain the knob 240 in a fixed position relative to the second connection element 300. The first manual activation mechanism 340 may be configured to engage the retaining element 330 with the knob 240, and be configured to disengage the retaining element 330 from the knob 240. When the retaining element is engaged with the knob 240, the retaining of the knob 240 in the fixed position may inhibit a rotation of the second connection element 300 relative to the first connection element 200. On the other hand, when the retaining element 330 is disengaged from the knob 240, the second connection element 300 may rotate relative to the first connection element 200. The retaining element 330 may generally be arranged on the opposite side of the knob 240 relative to the engagement element 310. The retaining element 330 may thus engage the knob

240 on the opposite side of the knob to where the engagement element 310 may abut the knob 240.

The first manual activation mechanism 340 may, as schematically illustrated in figures 6a and 6b, generally be configured to move the retaining element 330
5 between a retaining element first position and a retaining element second position. The retaining element 330 may generally be configured to engage with the knob 240 and to retain the knob 240 in a fixed position relative to the second connection element 300 when the retaining element 330 is in the retaining element second position, and to be disengaged from the knob 240 when the retaining element 330
10 is in the retaining element first position. The first manual activation mechanism 340 may generally according to the present invention be a mechanical mechanism manually activatable by a user, or alternatively be a motorized mechanism. The first manual activation mechanism 340 may for example comprise a screw coupling, configured to screw the retaining element 330 between the retaining element first
15 position and the retaining element second position. The first manual activation mechanism 340 may alternatively be a quick release coupling, configured to move the retaining element 330 between the retaining element first position and the retaining element second position. A quick release coupling or screw coupling has been found to be preferable, as such couplings have been found to be durable and
20 easy to operate by a user.

As schematically illustrated in figures 6a and 6b, the retaining element 330 may comprise a recess 336 configured to receive the knob 240 when the retaining element 330 is in the retaining element second position. The recess 336 may more specifically have a U-shape, optionally with a contour that matches that of the knob
25 240. Said U-shape may further have a diverging opening, *i.e.*, such as to facilitate engagement between the retaining element 330 and the knob 240 irrespective of the position of the knob 240. Alternatively, the retaining element 330 may be a clamp or a magnet.

The second connection element 300 may further, according to the present
30 invention, comprise a second manual activation mechanism 350. The second manual activation mechanism 350 may as schematically illustrated in figures 6a and 6b be configured to move the engagement element 310 between an engagement element second position and an engagement element first position, respectively. The engagement element 310 may as illustrated in figure 6a be
35 configured to abut the knob 240 when the engagement element 310 is in the

engagement element second position, and as illustrated in figure 6b to be disengaged from the knob 240 when the engagement element 310 is in the engagement element first position. The second manual activation mechanism 350 may generally according to the present invention be a mechanical mechanism
5 manually activatable by a user, or alternatively be a motorized mechanism. The second manual activation mechanism 350 may for example comprise a screw coupling, configured to screw the engagement element 310 between the engagement element first position and the engagement element second position. The second manual activation mechanism 350 may alternatively be a quick release
10 coupling, configured to move the engagement element 310 between the engagement element first position and the engagement element second position. A quick release coupling or screw coupling has been found to be preferable, as such couplings have been found to be durable and easy to operate by a user.

The second connection element 300 may, as schematically illustrated in figure 6c ,
15 further comprise an elastic member 315 configured to force the engagement element 310 towards the knob 240. The latter may thus cause the engagement element 310 to apply a non-zero force to the knob 240 in a direction at least in part perpendicular to the central axis 221 of the spindle 220. As schematically illustrated in figure 6c the elastic member 315 may be arranged on the distal end of the
20 engagement element 310 relative to the knob 240, for example such that the elastic member 315 pushes the engagement element 310 towards the knob 240. Alternatively, the elastic member 315 may be arranged at the side of or in front of the engagement element 310, and be connected between the engagement element 310 and for example a housing 500 structure, as illustrated in figure 2, or similar of
25 the second connection element 300. The elastic member 315 may, depending on where the elastic member 315 is arranged, be configured to either push or pull the engagement element 310 towards the knob 240. The elastic member 315 may, according to the present invention, be a spring or a piece of elastic material. As will be appreciated by a person skilled in the art with knowledge of the present
30 invention, the second connection element 300 may comprise a plurality of elastic members 315 at the same or different positions.

The engagement element 310 may generally comprise an engagement portion 316 that is configured to abut the knob 240. The engagement portion 316 may thus be a part of the engagement element 310 that is arranged closest to the knob 240. As
35 illustrated in figure 6a, the engagement portion 316 may thus for example abut the knob 240 when the engagement element 310 is in the engagement element second

position. The engagement portion 316 may comprise or consist of an elastic material, and may thus itself be elastic. The elastic material may for example be a plastic, polyurethane, rubber, silicone, gum, etc. The engagement portion 316 may for example be interchangeable, thereby for example facilitating for low cost
5 maintenance of the rotation assembly.

The engagement portion 316 may as schematically illustrated in figures 4a and 4b be arranged such as to enable a continuous contact between the engagement element 310 and the knob 240 during rotation of the second connection element 300 relative to the first connection element 200. As the second connection element
10 300 rotates relative to the first connection element 200, the knob 240 may push against and optionally compress the engagement portion 316, which consequently may cause a force to be applied to the knob 240 in a direction at least in part perpendicular to the central axis 221 of the spindle 220. The engagement portion 316 may thus in other words be configured to apply a non-zero force to the knob
15 240 in a direction at least in part perpendicular to the central axis 221 of the spindle 220. The engagement portion may thus cause the second connection element 300 to rotate from a rotated position to a default position. The central axis 221 of the spindle 220 is illustrated in figure 3.

The engagement portion 316 may generally have various shapes, for example a
20 planar or a non-planar surface facing the knob 240. The engagement portion 316 may for example have a shape that enables a continuous contact between the engagement portion 316 and the knob 240 during rotation of the second connection element 300 relative to the first connection element 200. The engagement portion 316 may, as schematically illustrated in figures 4a and 4b, for example have a
25 curved surface facing the knob 240. A curved surface of the engagement portion 316 is preferred as a curved surface may cause the non-zero force applied to the knob 240 to vary based on the degree of rotation between the second connection element 300 and the first connection element 200. A curved surface of the engagement portion 316 may further allow for a small rotation from the default
30 position, between the second connection element 300 and the first connection element 200, to require less force applied by a user to a larger rotation.

As schematically illustrated in figures 4a and 4b, the engagement portion 316 may in a particular example be curved and be elastic. During rotation of the second connection element 300 relative to the first connection element 200, the resulting
35 force applied to the knob 240 by the engagement element 310 may cause the knob

240 to compress the engagement portion 316. The degree of compression of the engagement portion 316 may here vary based on the degree of rotation of the second connection element 300 relative to the first connection element 200, where the force may be highest at a 180 degrees rotation. As will be appreciated by a person skilled in the art, the rotation between the second connection element 300 and the first connection element 200 from the default position occur in both directions, *i.e.*, be ± 180 degrees. A complete revolution of the second connection element 300 relative to the first connection element 200 may here be possible.

Figure 7 schematically illustrates a rotation assembly 100 according to the present invention where the engagement portion 316 is provided with a recess 317 configured to receive the knob 240. As schematically illustrated in figure 7 the recess 317 of the engagement portion 316 may generally be configured to engage the knob 240 and to retain the knob 240. The recess 317 may for example have a U-shape, optionally with a contour that matches that of the knob 240. The provision of a recess 317 in the engagement portion 316 is preferable in that a threshold force is required in order to move the second connection element 300 from the default rotational position. The latter may thus stop the second connection element 300 from unintentionally being rotated to a rotated position relative to the first connection element 200, and also enables the second connection element 300 to stop rotating when reaching the default position relative to the first connection element 200.

The knob 240 may in a particular example be detachably connected to the spindle 220. A detachable knob 240 may be preferable as the knob 240 thus may be replaced if worn out due to prolonged contact between the knob 240 and the engagement element. The knob 240 may as schematically illustrated in figure 5, for example be connected to the spindle 220 by means of a rod-shaped element such as a screw or a pin. As will be understood by a person skilled in the art with knowledge of the present invention, the knob 240 may be connected to the spindle 220 by other suitable means.

The knob 240 may as schematically illustrated in figure 5 comprise a sleeve 242 that is configured to rotate around the central axis of the knob 240. The sleeve 242 is generally configured to engage with the engagement element during rotation of the second connection element relative to the first connection element 200. The employment of a sleeve 242 may be beneficial in order to reduce friction between the engagement element 310 and the knob 240 when the engagement element 310

is abutting the knob 240. The sleeve 242 may for example be made from metal, rubber, plastic, etc. The sleeve 242 may also comprise one or more suitable bearings in order to enable it to rotate.

At least part of the surface of the knob may consist of a low-friction material, such as for example any one or more of polytetrafluoroethylene, polyimide, polyphenylene sulphide, polyetheretherketone, polyoxymethylene, polyketone, polyamide and polyphthalamide. A low-friction material may here cause a limited friction between the engagement element and the knob.

As schematically illustrated in figure 8, the engagement element 310 may comprise or consist of a first elastic element 318 that is connected to the knob 240 and configured to apply a non-zero force to the knob 240 in a direction at least in part perpendicular to the central axis 221 of the spindle 220. The first elastic element 318 may for example be a spring, elastic rubber string, elastic rope or similar that is connected between the second connection element and the knob. When the second connection element 300 is in a rotated position relative to the first connection element 200, the first elastic element 318 may be elastically stretched, thereby causing a force to be applied to the knob that acts to return the second connection element 300 from a rotated position to a default position relative to the first connection element 200.

As is illustrated in figure 8, the second connection element 300 may further comprise an additional engagement element 320 configured to contact the knob 240 and to apply an additional non-zero force to the knob 240 in an additional direction at least in part perpendicular to the central axis 221 of the spindle 220. The additional engagement element 320 may here comprise a second elastic element 322 connected to the knob 240 and be configured to apply the additional non-zero force to the knob 240. The direction of the force of the engagement element and the direction of the force from the additional engagement element, *i.e.*, in the additional direction, may generally be non-parallel to one another and may be arranged to rotate the second connection element 300 from a rotated position to a default position relative to the first connection element 200. The second elastic element 322 may here for example be a spring, elastic rubber string or elastic rope.

The rotation assembly 100 may, as schematically illustrated in figure 2, be surrounded at least in part by a housing 500. The housing 500 may function to

secure a part or several parts of the first and/or second connection element 300 and to rotatably engage the second connection element 300 to the first connection element 200. The housing 500 may be of various shapes, sizes and materials. The housing 500 may be connected to the rotation assembly 100 by bolts or other
5 means.

Claims

1. A rotation assembly (100) for swivelling the seat of a chair to a default position,
the rotation assembly (100) comprising:
 - 5 a first connection element (200) comprising a spindle (220), and a knob (240), where the knob (240) is arranged on the spindle (220) at a nonzero distance from the central axis (221) of the spindle (220), and
a second connection element (300), comprising an engagement element (310),
 - 10 where the second connection element (300) is rotatably engaged with the spindle (220), and where the engagement element (310) is configured to contact the knob (240) and to apply a non-zero force to the knob (240) in a direction at least in part perpendicular to the central axis (221) of the spindle (220).
- 15 2. The rotation assembly (100) according to claim 1, where the second connection element (300) further comprises
a retaining element (330), and
a first manual activation mechanism (340),
where the first manual activation mechanism (340) is configured to move the
20 retaining element (330) between a retaining element first position and a retaining element second position, where the retaining element (330) is configured to engage with the knob (240) and to retain the knob (240) in a fixed position when the retaining element (330) is in the retaining element second position, and where the retaining element (330) is configured to be disengaged with the knob (240) when
25 the retaining element (330) is in the retaining element first position.
3. The rotation assembly (100) according to any one of the preceding claims, where the second connection element (300) further comprises an elastic member (315) configured to force the engagement element (310) towards the knob (240).
- 30 4. The rotation assembly (100) according to any one of the preceding claims, where the second connection element (300) further comprises
a second manual activation mechanism (350),
where the second manual activation mechanism (350) is configured to move the engagement element (310) between an engagement element first position and an
35 engagement element second position, where the engagement element (310) is configured to abut the knob (240) when the engagement element (310) is in the

engagement element second position, and where the engagement element (310) is configured to be disengaged from the knob (240) when the engagement element (310) is in the engagement element first position.

5 5. The rotation assembly (100) according to any one of the preceding claims, where the knob (240) is detachably connected to the spindle (220).

6. The rotation assembly (100) according to any one of the preceding claims, where the position of the knob (240) is adjustable along the radial direction of the spindle (220).

10 7. The rotation assembly (100) according to any one of the preceding claims, wherein the knob (240) has a cylindrical shape.

8. The rotation assembly (100) according to claim 7, where the knob (240) comprises a sleeve (242) that is configured to rotate around the central axis of the knob (240).

15 9. The rotation assembly (100) according to any one of the preceding claims, where the engagement element (310) comprises an engagement portion (316) configured to abut the knob (240) where the engagement portion (316) comprises an elastic material.

20 10. The rotation assembly (100) according to any one of the claims 1 – 8, where the engagement element (310) comprises an engagement portion (316) configured to abut the knob (240) where the engagement portion (316) has a non-planar surface facing the knob (240), and optionally where the engagement portion (316) comprises an elastic material.

25 11. The rotation assembly (100) according to claims 9 or 10, where the engagement portion (316) has a curved surface facing the knob (240).

12. The rotation assembly (100) according to any one of the claims 9 - 11, where the engagement portion (316) is provided with a recess (317) configured to receive the knob (240).

13. The rotation assembly (100) according to any one of the preceding claims, where at least part of the surface of the knob (240) is covered by a low-friction material or an elastic material.
14. The rotation assembly (100) according to claim 1, where the engagement
5 element (310) comprises a first elastic element (318) connected to the knob (240) and configured to apply the non-zero force to the knob (240).
15. The rotation assembly (100) according to claim 14, where the second connection element (300) further comprises
- an additional engagement element (320) configured to contact the knob (240) and
10 to apply an additional non-zero force to the knob (240) in an additional direction at least in part perpendicular to the central axis (221) of the spindle (220),
- where the additional engagement element (320) comprises a second elastic element (322) connected to the knob (240) and configured to apply the additional non-zero force to the knob (240), and where the direction and the additional
15 direction are non-parallel to one another.
16. A furniture comprising the rotation assembly (100) according to any one of the claims 1-15.