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(54) **TENSION ADJUSTMENT SYSTEM**

(57) The invention provides a tension adjustment mechanism for an adjustable chair is disclosed. The mechanism includes a spring (4) supported at one end (2) and a movable support means (5) at the other end, which interacts with a restrictor surface (8) inclined relative to the spring's longitudinal axis (L). The spring (4) is

rotatable at one end and can move longitudinally at the other end. The mechanism also includes a rotatable cam (6) with a cam surface and a cam follower (7) that adjusts the position of the support means (5) relative to the restrictor surface (8), thereby varying the effective length of the spring (4) to adjust tension.

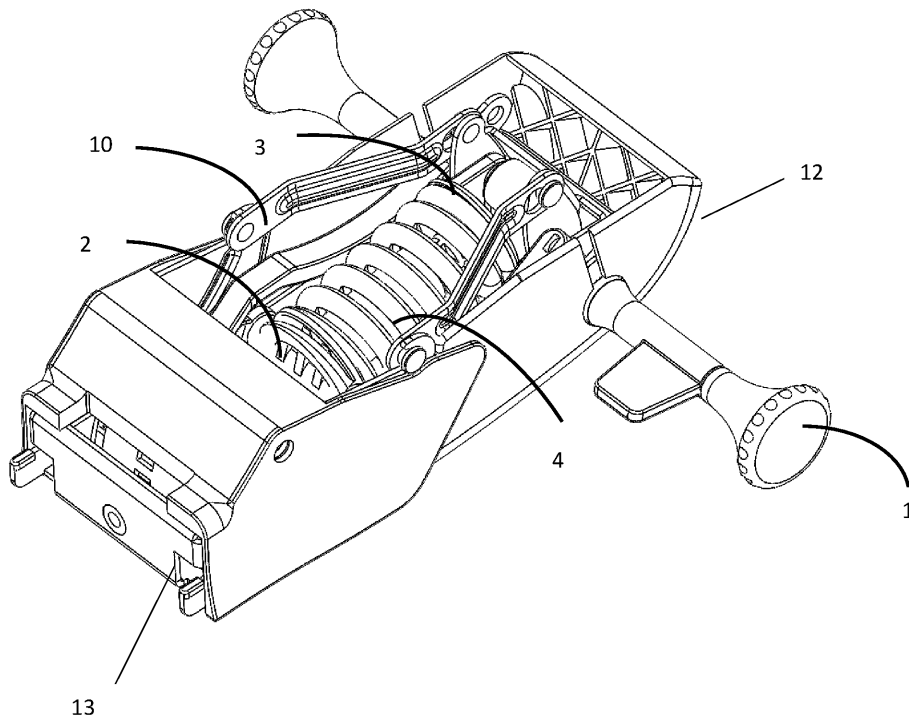


FIG.1.

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Description

Field of the invention:

[0001] The invention is related to chair, such as an office chair, equipped which base mechanism to synchronized movement between seat and back. More specifically, it relates to a tension adjustemt mechanism and an adjustable seat mechanism.

Background of the invention:

[0002] Many chairs, in particular office chairs, are to some extent adjustable to fit users of different size and with different seating preferences. For example, it may be possible to adjust inclination of the seat and/or back, lumbar support and neck support. In cases when an office chair is equipped with armrests, they may be foldable or adjustable.

[0003] Tension adjustment is known in office chairs using such mechanisms for synchronized movement between them, however, known solutions lacks the range to accommodate different user, either it being comfort performances, or needs derived from different weight groups. The most common types for adjusting the tension in office chairs is a screw type knob situated underneath the seat. This knob is hard to reach and hard to rotate. This is time consuming and cumbersome. In modern and flexible work places a particular chair may used by several different persons over a day or week. Cumbersome adjustments may then be necessary quite frequently.

[0004] It is thus a need to easily and quickly be able to adjust the tension of the backrest support within a greater range than what has previously been possible.

[0005] Embodiments herein aim to provide an adjustable tension adjustment mechanism a chair eliminating or at least reducing the problems and/or drawbacks associated with prior art solutions.

Summary

[0006] It is an object of the present disclosure to mitigate, alleviate or eliminate one or more of the above-identified deficiencies and disadvantages in the prior art and solve at least the above mentioned problem. According to a first aspect there is provided a tension adjustment mechanism for an adjustable chair, the tension adjustment mechanism comprises: a spring in one end supported by a first spring support and in a second end comprising support means, wherein the support means is movably supported against a restrictor surface inclined in relation to an longitudinal axis of the spring, and wherein the spring is rotational around its first end and translational in a longitudinal direction at the second end, and wherein the mechanism further comprises; a rotatable cam comprising a cam surface, and a cam follower adapted to follow the cam surface, wherein the cam follower is adapted to lift or lower the support means in

relation to the restrictor surface to change the effective length of the spring.

[0007] According to some embodiments, the mechanism comprises a second spring support adapted to hold the second end of the spring.

[0008] According to some embodiments, the support means is a roller means adapted to rotate and being movably supported against a restrictor surface, wherein the mechanism further comprises a connection member connecting the roller means and the cam follower, such that when the cam follower is moved, the roller bearing moves an equal distance.

[0009] According to some embodiments, the mechanism comprises a handle in connection with the rotatable cam, though a camshaft, adapted to be operable by a user and to transfer rotation from the handle to the rotatable cam.

[0010] According to some embodiments, the restrictor surface 8 at least comprises a plate member transverse and inclined in relation to a longitudinal axis of the spring 4, and wherein the restrictor surface is further connected to a pull rod(s).

[0011] According to a second aspect there is provided an adjustable seat mechanism for an office chair for adjusting the backrest tension, the mechanism comprises: a mechanism base adaptable to be supported on an actuator column, and being rotatable around a fixed vertical rotational axis, and a backrest support adapted to support at least one of the a seat support and a back support, and wherein the first and second part are adjustable and relative rotational around a fixed horizontal axis, and wherein the tension between the relative rotation of the mechanism base and the backrest support is controlled and adjustable by an tension adjustment mechanism according to any of the first aspect.

[0012] According to some embodiments, the spring is in one end, the first end, rotationally supported to the first spring support or holder, wherein the first spring holder comprises a seating surface adapted to seat an end of a spring, such as a coiled spring, the first spring holder comprises further pivotal support member adapted to pivotally attach the spring holder to the mechanism base, the pivotal support member may be protruding members adapted to be supported by cradles or corresponding members of the mechanism base, and/or corresponding female and male connectors respectively parts of the first spring holder and the mechanism base.

[0013] According to some embodiments, the spring is in another end, the second end, seated in a second spring holder comprises a seating surface adapted to seat the second end of a spring, such as a coiled spring. The second spring holder further comprises holding means for holding the roller means, bearing, wheel, or a rotational member in a rotational manner.

[0014] According to some embodiments, the spring is translational in its longitudinal direction, such that the distance between the first and second end increases or decreases, and the springs tension, or resistance

for movement, or resilience, is regulated by the length of the spring, and wherein the spring can rotate around the pivotal support member.

[0015] According to some embodiments, the restrictor surface comprises an inclined surface member with a part situated a first distance from the pivotal support member and a second part, below the first part and situated a second distance from the pivotal support member, wherein the first distance is closer than the second distance, and being adapted to rotate the spring around pivotal support member in a first direction, the restrictor surface compresses the spring by providing the inclined surface member, and if the spring is rotated around pivotal support member in an opposite direction of the first direction, the spring will expand due to the increased distance provided by the inclined restrictor surface.

[0016] According to some embodiments, the tension adjustment mechanism is situated inside a housing defined by the mechanism base, wherein the tension adjustment mechanism is connected to the a backrest support via the pull rod.

[0017] According to a third aspect there is provided a chair comprising a tension adjustment mechanism according to the first aspect for tension adjustment of a reclining function.

[0018] According to a fourth aspect there is provided a chair comprising an adjustable seat mechanism according to the second aspect.

[0019] Effects and features of the second through fourth aspects are to a large extent analogous to those described above in connection with the first aspect. Embodiments mentioned in relation to the first aspect are largely compatible with the second through fourth aspects.

[0020] The present disclosure will become apparent from the detailed description given below. The detailed description and specific examples disclose preferred embodiments of the disclosure by way of illustration only. Those skilled in the art understand from guidance in the detailed description that changes and modifications may be made within the scope of the disclosure.

[0021] Hence, it is to be understood that the herein disclosed disclosure is not limited to the particular component parts of the device described or steps of the methods described since such device and method may vary. It is also to be understood that the terminology used herein is for purpose of describing particular embodiments only, and is not intended to be limiting. It should be noted that, as used in the specification and the appended claim, the articles "a", "an", "the", and "said" are intended to mean that there are one or more of the elements unless the context explicitly dictates otherwise. Thus, for example, reference to "a unit" or "the unit" may include several devices, and the like. Furthermore, the words "comprising", "including", "containing" and similar wordings does not exclude other elements or steps.

Brief description of the drawings:

[0022] The above objects, as well as additional objects, features and advantages of the present disclosure, will be more fully appreciated by reference to the following illustrative and non-limiting detailed description of example embodiments of the present disclosure, when taken in conjunction with the accompanying drawings.

Fig. 1 illustrates a chair movement mechanism according to some embodiments.

Fig. 2 illustrates a chair movement mechanism according to some embodiments in a max tension state.

Fig. 3 illustrates a parts of the tension adjustment mechanism according to some embodiments.

Fig. 4 illustrates the adjustment of the tension adjustment mechanism into a low-tension state.

Fig. 5 illustrates the adjustment of the tension adjustment mechanism into a low-tension state.

Fig. 6 illustrates the adjustment of the tension adjustment mechanism into a low-tension state.

Fig. 7 illustrates a parts of the tension adjustment mechanism into a low-tension state.

Fig. 8 illustrates a parts of the tension adjustment mechanism into a low-tension state with the backrest reclined.

Fig. 9 illustrates the adjustment of the tension adjustment mechanism into a max-tension state.

Fig. 10 illustrates the adjustment of the tension adjustment mechanism into a max-tension state.

Fig. 11 illustrates the adjustment of the tension adjustment mechanism into a max-tension state.

Fig. 12 illustrates a parts of the tension adjustment mechanism into a max-tension state.

Fig. 13 illustrates a parts of the tension adjustment mechanism into a max-tension state with the backrest reclined.

Detailed description of the invention

[0023] Embodiments herein will now be described more fully with reference to the accompanying drawings, in which example embodiments are shown. However, this application should not be construed as limited to the embodiments set forth herein. Disclosed features of ex-

ample embodiments may be combined as readily understood by one of ordinary skill in the art to which this application belongs. Like numbers refer to like elements throughout.

[0024] Well-known functions or constructions will not necessarily be described in detail for brevity and/or clarity.

[0025] Typically, for adjustable seat and backrest mechanisms for office chairs, a spring 4 is used to provide resistance and tensions when a user leans back on the backrest. The harder the spring, the more tension the backrests can withstand, such that a user must push harder back on the backrest to find a comfortable position. There are situations where a user desires a soft tension in the backrest, to easily change between a leaned back or upright position. In other situations, a user might desire a harder tension between the backrest and seat, for greater support against involuntary seat-back lean. Thus, the invention sets forth a mechanism to adjust the seat and backrest movement, and more specifically adjusting the backrest tension i.e. the backrest resistance. Adjustable chair should be understood as the a chair at least comprising reclining and/or inclining functions.

[0026] Fig. 1 illustrates an underside of a mechanism to control the movement of the seat and backrest movement and/or adjust and control the tension of the mechanism. The figure does not illustrate the seat and backrest, however, the mechanism is typically situated and attached to a seat part, a backrest part and a support actuator column, wherein the support actuator column is attached to the mechanism, or parts thereof, via an attachment mean 15 in the mechanism base 12 as seen in fig 2. However, it should be understood that further parts, such as armrests can be fitted as well. In the illustration in fig. 1, the mechanism is illustrated with a mechanism base 12, that can be a frame or housing, adaptable to be supported on a support, actuator or leg (not shown) and to support a seat and/or a back support, and being rotatable around a fixed vertical rotational axis. The mechanism is further illustrates with a backrest support 13, that can be a frame or housing, adapted to support the other of the seat support and a back support. The backrest support 13 is the main carrier of the load applied on the assembled backrest frame. Wherein the first and second part are adjustable and relative rotational around a fixed horizontal axis, and wherein the tension between the relative rotation of the first and backrest support is controlled by a tension adjustment mechanism.

[0027] When the backrest of the chair (not illustrated) is reclined, the spring 4 is being compressed between the first and second spring holders 2, 3. The load is applied from the backrest through the backrest support 13, which pulls on the pull rods 10 which is connected with the restrictor surface 8. This restrictor surface acts on the end of the spring 4. The spring 4 is housed inside the cassette or housing that are formed by the mechanism base 12 and

backrest support 13 and the first spring holder 2 and second spring holder 3. The stiffer the spring 4, the greater tension force is needed to compress the spring. The load, or tension force, is applied to the spring 4 by a pull rod 10 in one end connected to the backrest support 13, or parts thereof, and in another end to the second spring holder 3 via an restrictor surface 8 and roller means 5. The tension adjustment mechanism is operable and adjustable by a user by at least a handle 1, 1'.

[0028] As can be seen in the embodiment illustrated in fig. 2, the handle 1 seen on fig 1 interacts in a rotably manner with an a rotatable cam 6 comprising a cam surface. As illustrated, the cam 6 comprises a surface with a variable distance from the centre of the cam 6.

[0029] A cam follower 7 is situated above the cam surface and in contact with the cam 6 adapted to follow the cam surface as the cam rotate, when being manipulated by a user through handle 1. In fig. 2, the cam follower 7 is seen contacting the cam at the point where the surface is furthest away from the centre of the cam. In fig. 6, the cam follower 7 is seen contacting the cam at the point where the surface is closest to the centre of the cam. As the cam follower 7 can only move with an translational movement as later disclosed, the cam follower 7 will move gradually up, and away from the centre of the cam 6, as the cam 6 rotates clockwise, until it reaches the point illustrated in fig. 2, where it will drop down to the point closest to the centre of the cam 6 on the cam surface illustrated in fig. 6. The cam follower 7 can be a protrusion, protruding from a bracket adapted to move in translation relative to the rotation of the handle 1. The support means 5 is in one embodiment a roller means 5, such as a wheel, adapted to rotate and being movably supported against a restrictor surface 8, wherein the mechanism further comprises a connection member 14 connecting the roller means 5 and the cam follower 7, such that when the cam follower 7 is moved, the roller means 5 moves an equal distance. The connection member 14 can be a frame part or the like with attachment sections or points for at least the roller means 5 and cam follower 7 and it may further comprise a guiding groove 18, as seen in fig 5, 6 and 10, wherein a portion of the main shaft 9 can go through or sit in the guiding groove 18.

[0030] Fig. 3 illustrates the internals of the tension adjustment mechanism without any housing. The spring 4 is in one end, the first end, rotationally supported to a first spring support or holder 2. Wherein the first spring holder 2 comprises a seating surface adapted to seat an end of a spring, such as the coiled spring in the illustration. The first spring holder 2 comprises further pivotal support members 11, 11' adapted to pivotally attach the spring holder 2 to the mechanism base 12. The pivotal support members 11 may be protruding members, as illustrated, adapted to be supported by cradles or corresponding members not illustrated of the mechanism base 12, and/or corresponding female and male connectors respectively parts of the first spring holder 2 and the mechanism base 12. As can be seen in fig. 3, the re-

restrictor surface 8 attached to, and located between, first and second side plates 17, 17'. The side plates 17, 17' are hinged around the shaft 2 in one end and connected to the pull rods 10, 10' in another end, such that movement of the pull rods 10 is transferred to the restrictor surface 8 via the side plates 17, 17'. The pull rods 10 will in turn be connectable to a backrest of a chair or parts thereof, such that when the backrest is reclined or inclined, the pull rods 10 will move and thereby push/pull on restrictor surface 8, which will act on the spring 4.

[0031] Fig. 3 further illustrates that two handles 1, 1', each protruding from separate sides of the mechanism, is connected by a main shaft 9. The shaft 9 goes through and is supported in a frame part connected to the restrictor surface 8 and to at least one rotatable cam 6, or to two rotatable cams 6, 6' as illustrated. In the illustrations, the shaft 9 is faceted for transferring rotation from the handles 1, 1' to the rotatable cams 6, 6' via corresponding shaft receiving surface's of the cams 6, 6'. The shaft 9 thus functions as a cam axle. The restrictor surface 8 is transverse and inclined in relation to a longitudinal axis L of the spring 4 (see fig. 5), and is further connected to a pull rod 10, or two or more pull rods 10, 10' as illustrated.

[0032] Fig. 4, 5 and 6 illustrates how the tension of the tension adjustment mechanism is adjusted by adjusting the handle 1 to a position that can be considered the low tension position. As can be seen in fig. 4, the handle 1 is rotated anti clockwise to adjust the tension system to the "LOW" setting.

[0033] As can be seen in fig 5, this lowers the cam follower 7, and thus the roller means 5, such that they are moved to the is lowest positioned in relation to the restrictor surface 8. As the lower part of the restrictor surface 8 is further away from the first spring holder 2 than the upper part of the restrictor surface 8, the spring 4 will be able to extend, and hence, require a lesser force to be compressed, than compared to if the spring was more compressed, for instance it if was positioned in the "MAX" top of the restrictor surface 8 illustrated in fig. 2. The roller means 5 can be a ball bearing, wheel, sliding mean or the like, supported by a holder to the spring 4 via the spring holder 3.

[0034] This can be achieved by the configuration illustrated in fig. 6, wherein the rotatable cam 6 is adapted to be rotated anti clockwise such that the cam follower 7 is guided to the point, or section, of the cam surface, that is closest to the center of the cam 6. It should be understood that the direction clockwise and anti clockwise is in relation to the figures. If the cam surface is reversed from the illustrated cam surface, the directions of rotations will be reversed to achieve the same.

[0035] Fig. 7 illustrates the invention wherein tension adjustment system is set to "LOW" setting. This create less compression on spring 4 compared to a "MAX" setting. The inclined relation between the restrictor surface 8 and roller means 5 creates lower leverage by shortening the arm of momentum.

[0036] Fig. 8 illustrates a position of the invention,

wherein a back support (not shown) is inclined. As can be seen, the backrest support 13 has been moved downwards by rotation compared to it's position in fig. 7 relative to the mechanism base 12. When back support is reclined, the spring 4 is being compressed between the first and second spring holder 2, 3, as the pull rod 10, which is connected to the backrest support 13, is pulled with the inclination of the backrest, it pushes the restrictor surface 8 towards the spring 4, to compress the spring 4. The stiffer the spring 4 is, or the shorter it is prior to the backrest being reclined, the more tension needed to compress the spring further.

[0037] To reduce the risk for the cam 6 to move involuntary, for instance, due to the force of the cam follower 7 pin on the cam surface, the cam surface can comprise indentations 16 spaced apart along the surface of the cam surface, as illustrated in fig. 6 and 11. This allows for the tension adjustment system to rests in different locked position due to support of the cam follower 7 pin that is settled in the indents of the surface of the rotatable cam 6. The indents 16 can be located along the entire perimeter of the cam 6.

[0038] Fig. 9, 10 and illustrates how the tension of the tension adjustment mechanism is adjusted by adjusting the handle 1 to a position that can be considered the high tension position, higher than low. As can be seen in fig. 9, the handle 1 is rotated clockwise to adjust the tension system to the "HIGH" setting by forcing the roller means 5 upwards (in the figure) so the length of the spring 4 decreases, thus making it stiffer. To adjust tension system to "HIGH" setting, the handle 1 needs to be close to rotated 360° clockwise, as seen in fig. 9. By turning the handle 1, the roller means 5 and cam follower 7 are lifted up. FIG.10 illustrates the cam follower 7, and thus the roller means 5, in it's highest setting.

[0039] As can be seen in fig 10, this lifts the cam follower 7, and thus the roller means 5, such that they are moved to upper positioned in relation to the restrictor surface 8. As the upper part of the restrictor surface 8 is closer to the first spring holder 2 than the lower part of the restrictor surface 8, the spring 4 is forced to compress, and hence, require a greater force to be compressed further, than compared to if the spring was less compressed, for instance it if was positioned in the "LOW" bottom of the restrictor surface 8 illustrated in fig. 6.

[0040] This can be achieved by the configuration illustrated in fig. 11, wherein the rotatable cam 6 is adapted to be rotated clockwise such that the cam follower 7 is guided to the point, or section, of the cam surface, that is furthest away from the centre of the cam 6, on the cam surface. The cam 6 can comprise different types of cam surface shapes, such off centred round, eccentric, oval, elliptical, heart or snail.

[0041] Fig. 12 illustrates the relation to backrest support when tension system is set to "MAX" setting. This creates a compression on spring 4 compared to the "LOW" setting. In this position, the position of the roller means 5 on the restrictor surface 8 results in a higher

leverage by longer momentum arm between the cam and roller means.

[0042] When the back support of an chair, comprising the invention as disclosed, is reclined, the spring 4 is being compressed. In fig. 13 it is illustrated that the spring is being compressed inside

[0043] Fig. 13 illustrates a position of the invention, wherein a backrest (not shown) is inclined. As can be seen, the backrest support 13 has been moved downwards by rotation compared to its position in fig. 12 relative to the mechanism base 12. When the backrest is reclined, the spring 4 is being compressed between the first and second spring holder 2, 3, as the pull rod 10, which is connected to the backrest support 13, is pulled with the inclination of the backrest, it pushes/pulls the restrictor surface 8 towards the spring 4, to compress the spring 4 (illustrated by arrow). In the figure, the cam 6 is in the rotated position such that the cam follower 7 is at its furthest position away from the centre of the cam 6 and shaft 9, such that the roller means 5 is positioned on top of the restrictor surface 8, thus initially compressing the spring 4. Fig. 13 illustrates that the spring 4 is further compressed by the declination of the backrest, and hence the initial compressed increases the tension of the spring 4. The stiffer the tension of the spring 4, or the shorter it is prior to the backrest being reclined, the more tension is needed to compress the spring further.

[0044] To hold the spring 4 in a supported manner, the spring 4 is in one end, the first end, supported to the first spring support or holder 2. The spring may be rotationally supported by pivotal support members 11. Wherein the first spring holder 2 comprises a seating surface adapted to seat an end of a spring, such as a coiled spring. The first spring holder 2 comprises further pivotal support members 11 adapted to pivotally attach the spring holder 2 to the mechanism base 12. The pivotal support members 11 may be protruding members adapted to be supported by cradles or corresponding members of the mechanism base 12, and/or corresponding female and male connectors respectively parts of the first spring holder 2 and the mechanism base 12.

[0045] The spring 4 is in another end, the second end, seated in a second spring holder 3 comprises a seating surface adapted to seat the second end of a spring, such as a coiled spring. The second spring holder 3 further comprises holding means 19, such as a holding shoe or bracket, as seen in fig. 2 and 6 for holding the roller means 5 in a rotational manner.

[0046] The spring is translational in its longitudinal direction, which should be understood that it can extend and contract in the lengthwise direction, such that the distance between the first and second end increases or decreases. The springs tension, or resistance for movement, or resilience, is regulated by the length of the spring. Furthermore, the spring can rotate around the pivotal support members 11.

[0047] The restrictor surface 8 comprises an inclined surface member with a part situated a first distance from

the pivotal support members 11 and a second part, below the first part and situated a second distance from the pivotal support members 11, wherein the first distance is closer than the second distance. Thus, when the spring 4 is rotated around pivotal support members 11 in a first direction, the restrictor surface 8 compresses the spring 4 by providing the inclined surface member, and if the spring 4 is rotated around pivotal support members 11 in an opposite direction of the first direction, the spring 4 will expand due to the increased distance provided by the inclined restrictor surface 8.

[0048] As the spring's 4 tension, or resistance, is dependent on the length of the spring, the spring 4 will provide higher tension, or greater resistance, when it is shortened by compression, and less tension, when it is extended. Thus, the invention achieves this by rotating the spring 4 around the pivotal support members 11 such that the roller bearing 5 of the second end moves against the inclination of the restrictor surface 8 forcing the spring 4 to shorten, hence compress.

[0049] The person skilled in the art realizes that the present disclosure is not limited to the preferred embodiments described above. The person skilled in the art further realizes that modifications and variations are possible within the scope of the claims. Additionally, variations to the disclosed embodiments can be understood and effected by the skilled person in practicing the claimed disclosure, from a study of the drawings, the disclosure, and the claims.

Claims

1. A tension adjustment mechanism for an adjustable chair, the tension adjustment mechanism comprises:

a spring (4) in one end supported by a first spring support (2) and in a second end comprising support means (5), wherein the support means (5) is movably supported against a restrictor surface (8) inclined in relation to an longitudinal axis (L) of the spring, and

wherein the spring (4) is rotational around its first end and translational in a longitudinal direction at the second end, and wherein the mechanism further comprises;

a rotatable cam (6) comprising a cam surface, and

a cam follower (7) adapted to follow the cam surface, wherein the cam follower (7) is adapted to lift or lower the support means (5) in relation to the restrictor surface (8) to change the effective length of the spring (4).

2. The adjustment mechanism according to claim 1, wherein the mechanism comprises a second spring support (3) adapted to hold the second end of the

spring (4).

3. The adjustment mechanism according to claim 1 or 2, wherein the support means (5) is a roller means (5) adapted to rotate and being movably supported against a restrictor surface (8), wherein the mechanism further comprises a connection member (14) connecting the roller means (5) and the cam follower (7), such that when the cam follower (7) is moved, the roller bearing (5) moves an equal distance.

4. The adjustment mechanism according to any one of the previous claims, wherein the mechanism comprises a handle (1) in connection with the rotatable cam (6), though a camshaft (9), adapted to be operable by a user and to transfer rotation from the handle (1) to the rotatable cam (6).

5. The adjustment mechanism according to any one of the previous claims, wherein the restrictor surface 8 at least comprises a plate member transverse and inclined in relation to a longitudinal axis of the spring 4, and wherein the restrictor surface 8 is further connected to a pull rod 10.

6. An adjustable seat mechanism for an office chair for adjusting the backrest tension, the mechanism comprises:

a mechanism base (12) adaptable to be supported on an actuator column, and being rotatable around a fixed vertical rotational axis, and a backrest support (13) adapted to support at least one of the a seat support and a back support, and

wherein the first and second part are adjustable and relative rotational around a fixed horizontal axis, and wherein the tension between the relative rotation of the mechanism base (12) and the backrest support (13) is controlled and adjustable by an tension adjustment mechanism according to any of the claims 1-5.

7. The adjustable seat mechanism according to claim 6, wherein the spring (4) is in one end, the first end, rotationally supported to the first spring support or holder (2), wherein the first spring holder (2) comprises a seating surface adapted to seat an end of a spring, such as a coiled spring, the first spring holder (2) comprises further pivotal support member(s) (11) adapted to pivotally attach the spring holder (2) to the mechanism base (12), the pivotal support member(s) (11) may be protruding members adapted to be supported by cradles or corresponding members of the mechanism base (12), and/or corresponding female and male connectors respectively parts of the first spring holder (2) and the mechanism base (12).

8. The adjustable seat mechanism according to claim 6 or 7, wherein the spring (4) is in another end, the second end, seated in a second spring holder (3) comprises a seating surface adapted to seat the second end of a spring, such as a coiled spring. The second spring holder (3) further comprises holding means for holding the roller means (5), bearing, wheel, or a rotational member (5) in a rotational manner.

9. The adjustable seat mechanism according to any one of the claims 6-8, wherein the spring is translational in its longitudinal direction, such that the distance between the first and second end increases or decreases, and the springs tension, or resistance for movement, or resilience, is regulated by the length of the spring, and wherein the spring can rotate around the pivotal support member(s) (11).

10. The adjustable seat mechanism according to any one of the claims 6-9, wherein the restrictor surface (8) comprises an inclined surface member with a part situated a first distance from the pivotal support member(s) (11) and a second part, below the first part and situated a second distance from the pivotal support member(s) (11), wherein the first distance is closer than the second distance, and being adapted to rotate the spring (4) around pivotal support member(s) (11) in a first direction, the restrictor surface (8) compresses the spring (4) by providing the inclined surface member, and if the spring (4) is rotated around pivotal support member(s) (11) in an opposite direction of the first direction, the spring (4) will expand due to the increased distance provided by the inclined restrictor surface (8).

11. The adjustable seat mechanism according to any one of the claims 6-10, wherein the tension adjustment mechanism is situated inside a housing defined by the mechanism base 12, wherein the tension adjustment mechanism is connected to the a backrest support (13) via the pull rod(s) (10, 10').

12. A chair comprising a tension adjustment mechanism according to any one of the claims 1-5 for tension adjustment of a reclining function.

13. A chair comprising an adjustable seat mechanism according to any one of the claims 6-11.

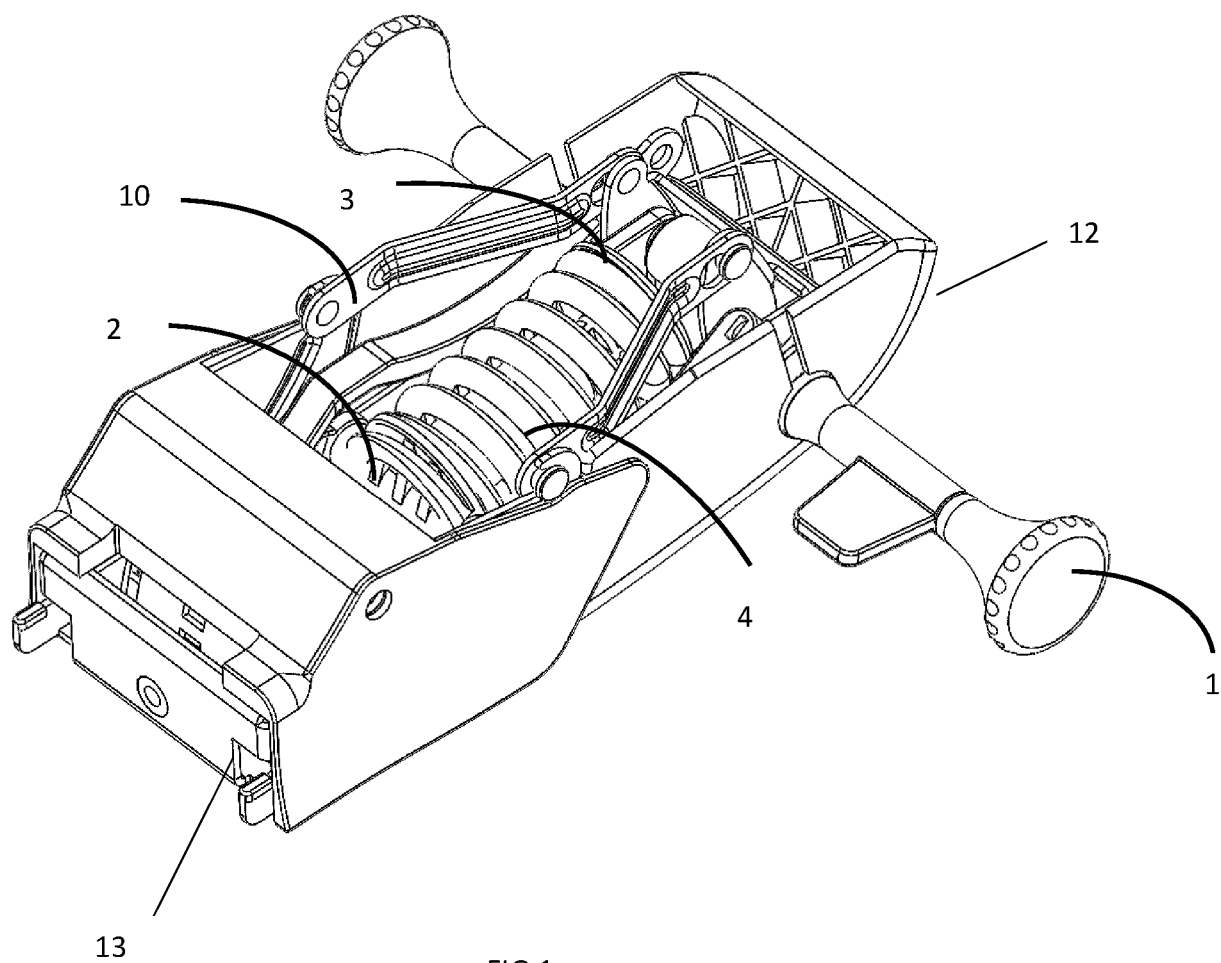
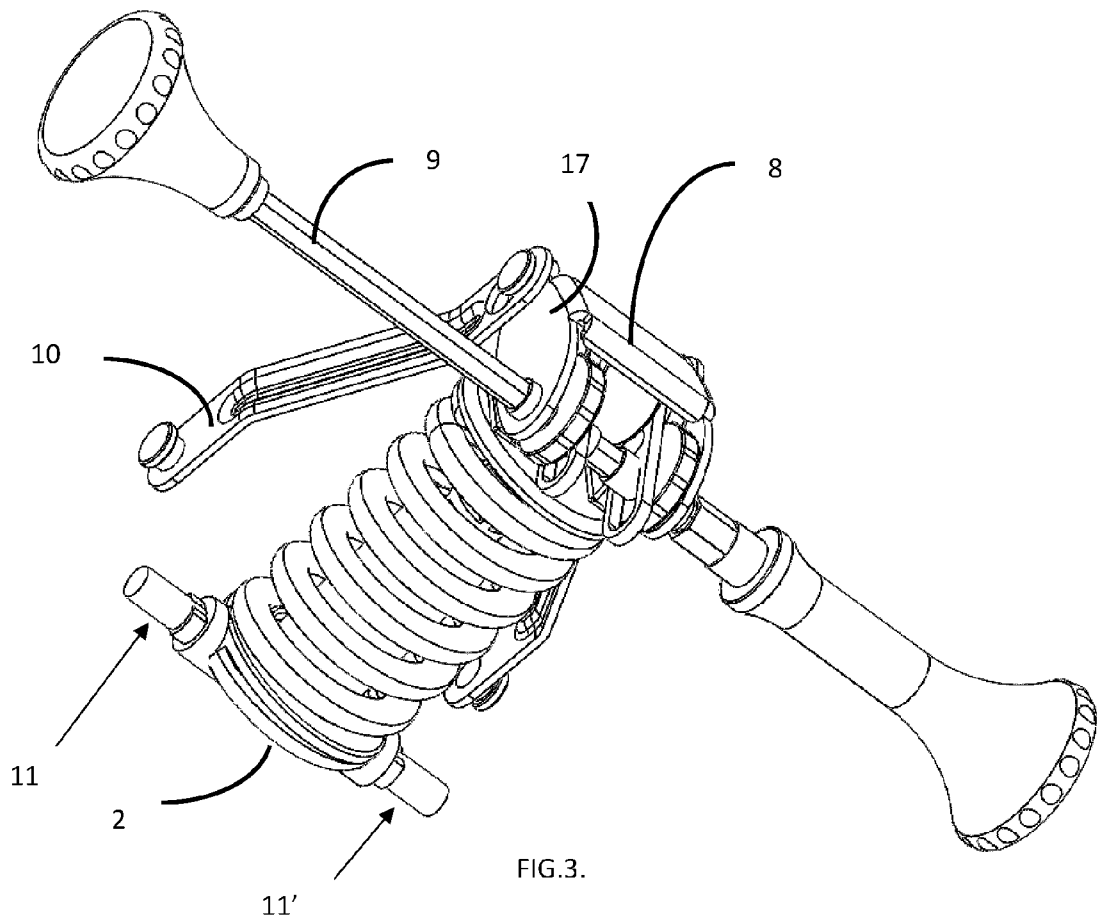
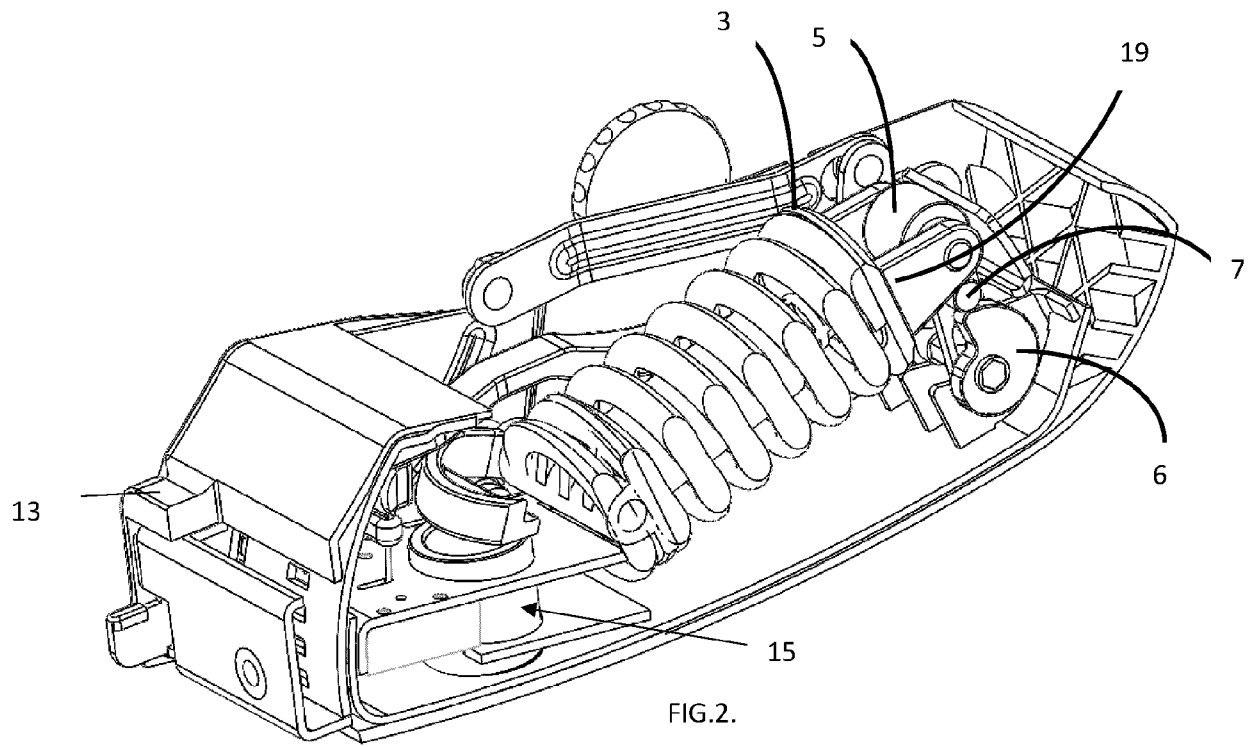
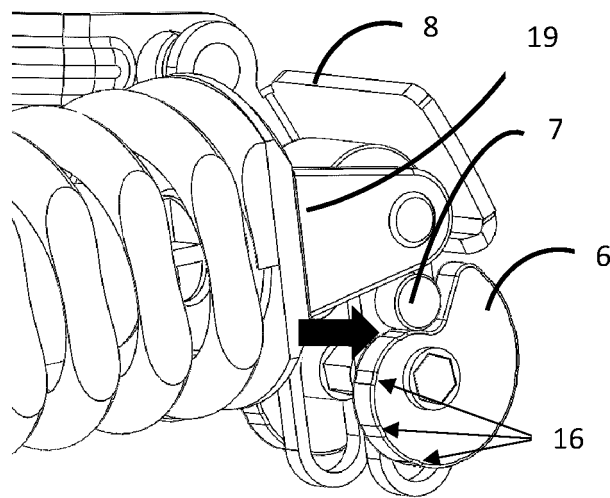
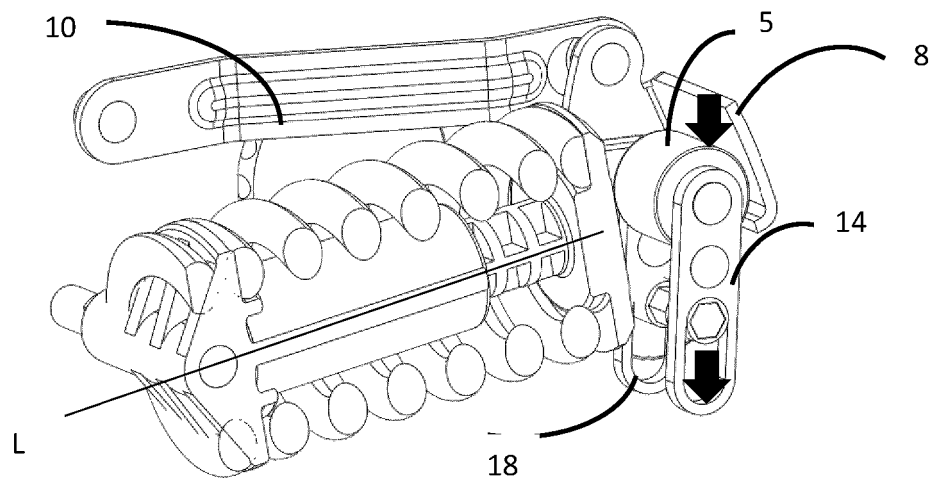
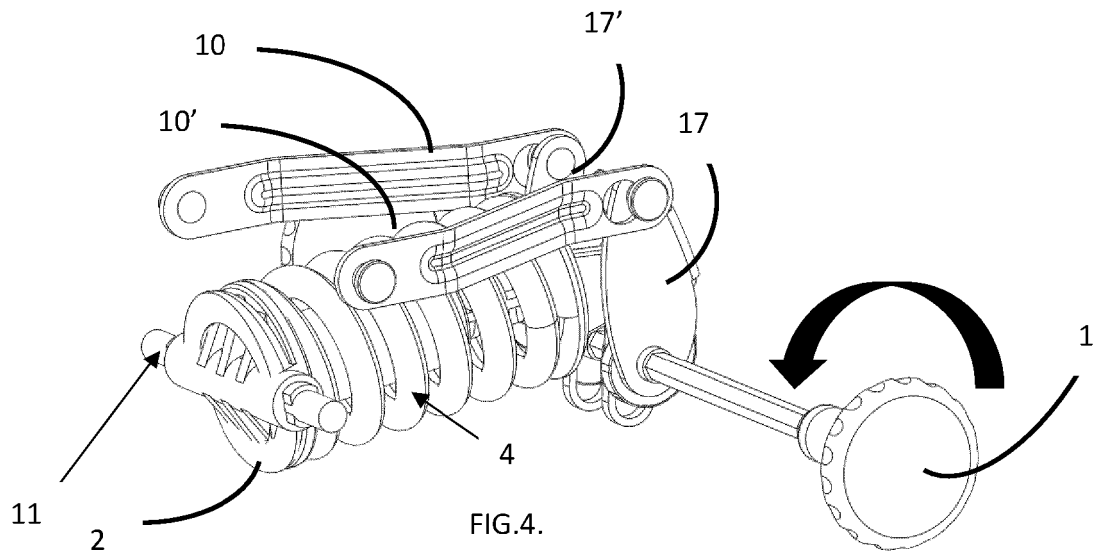


FIG.1.





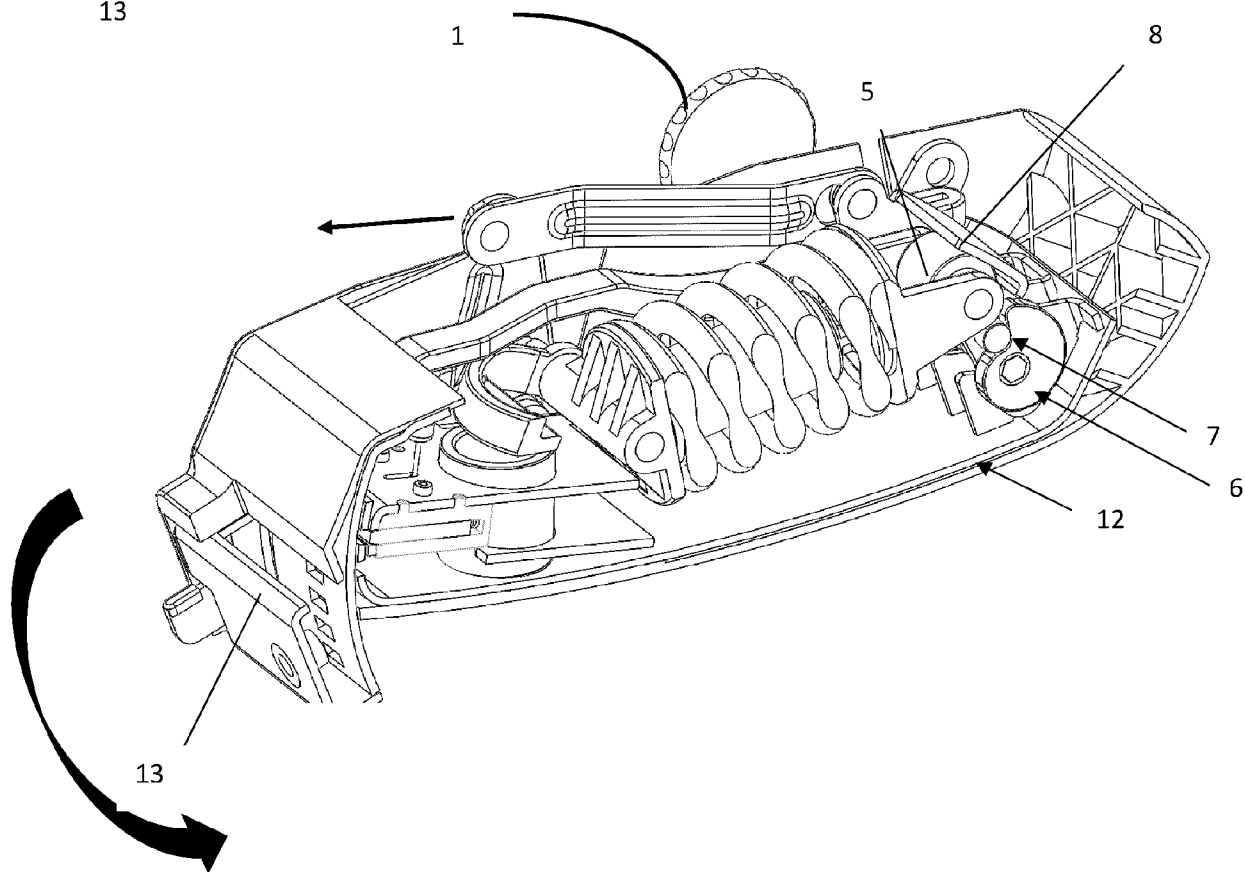
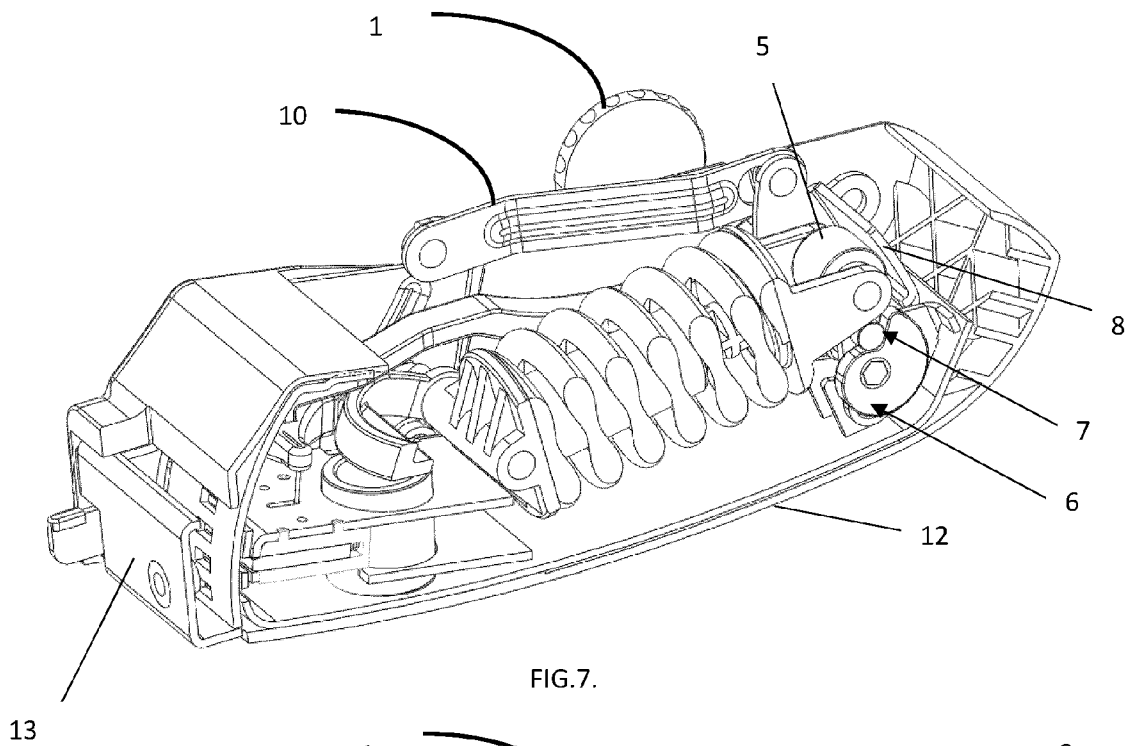
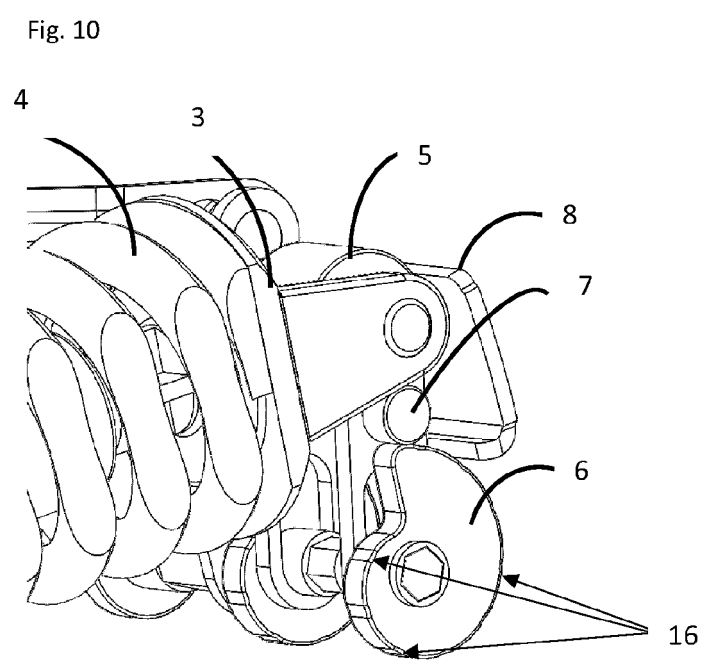
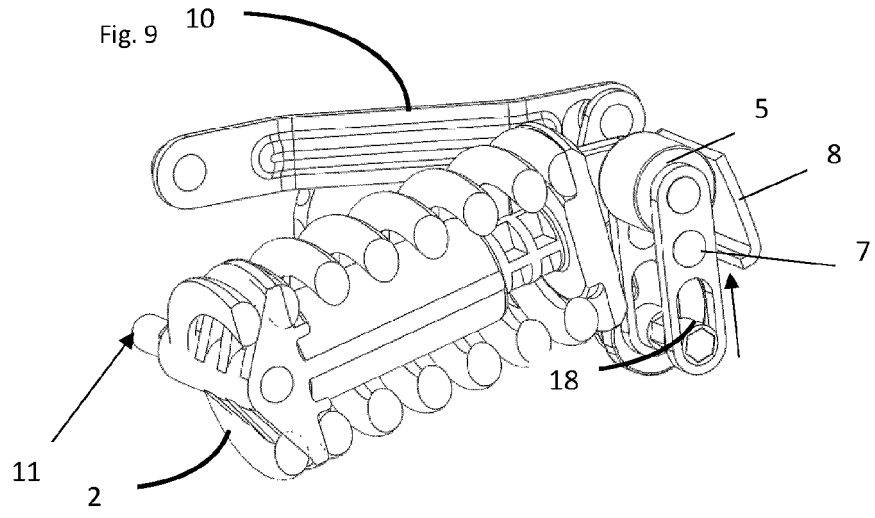
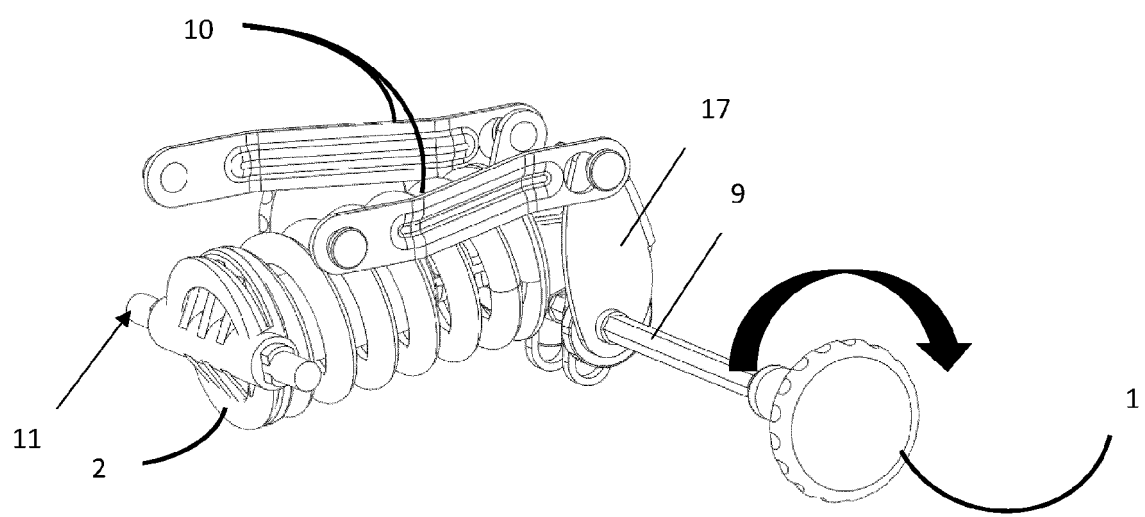
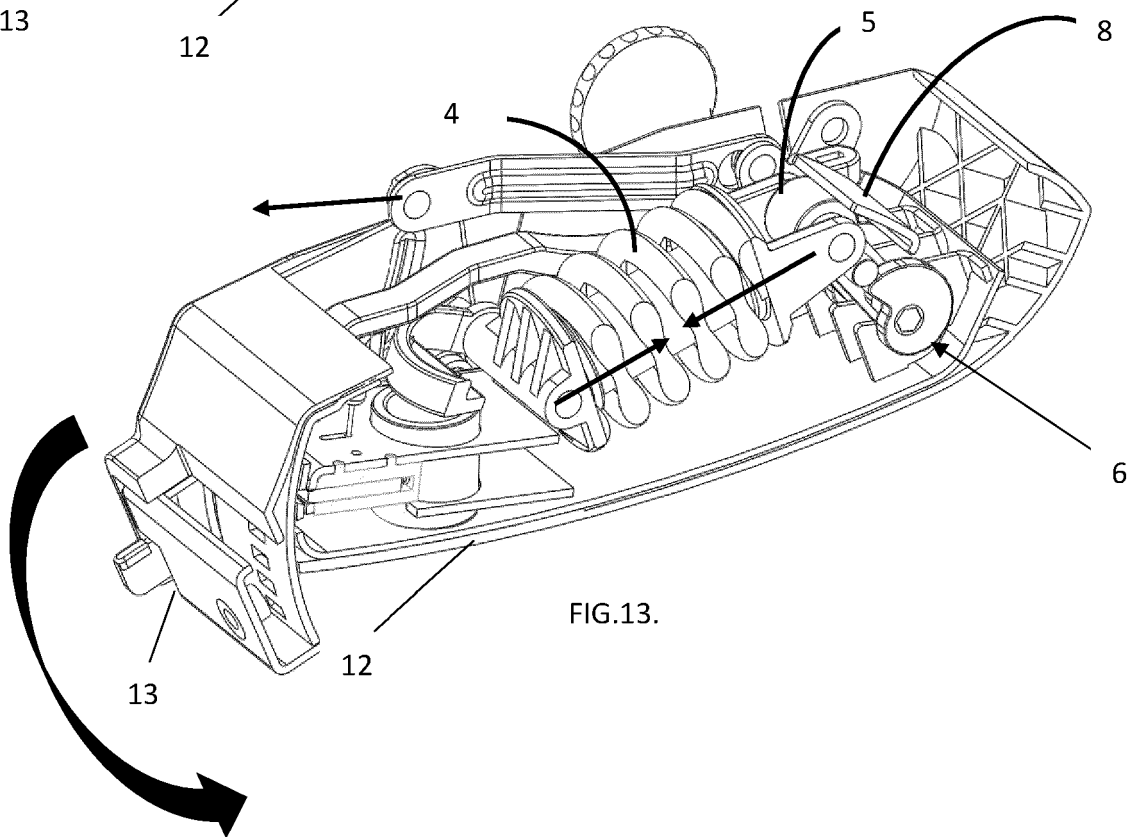
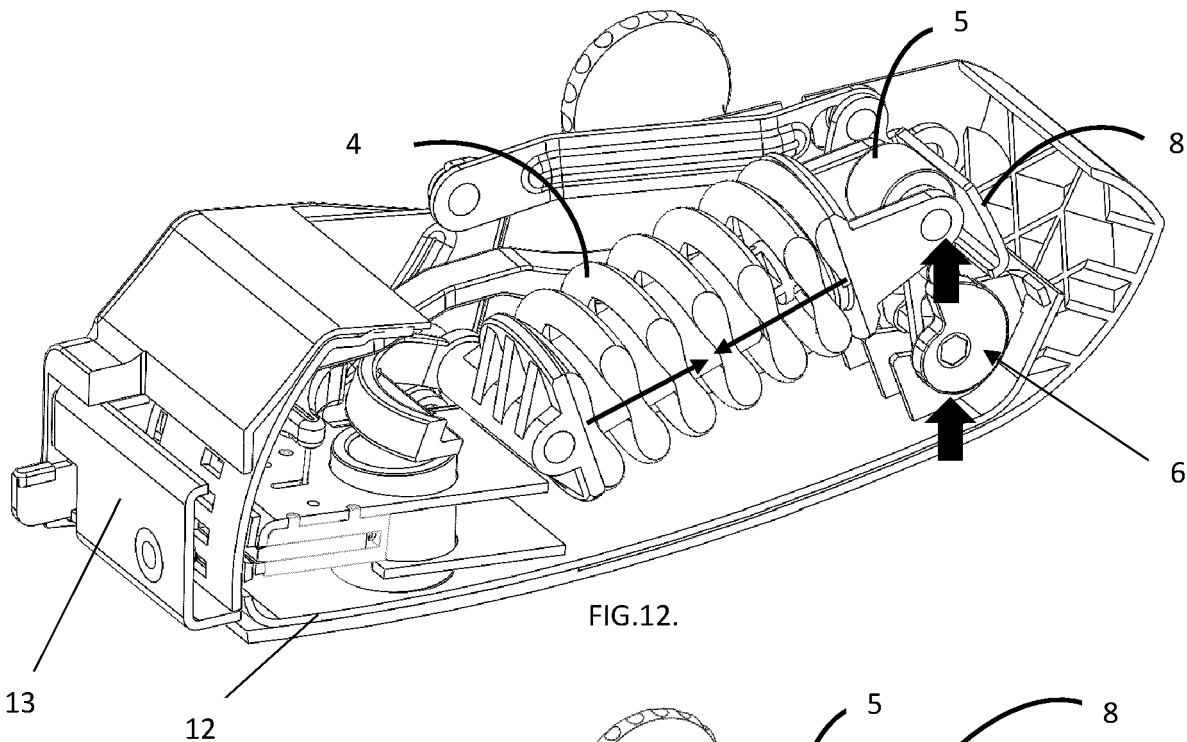


FIG. 8.







EUROPEAN SEARCH REPORT

Application Number

EP 24 19 9590

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			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		23 January 2025	Kis, Pál
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