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(54) **A device with a tilt mounting for chair**

Eine Vorrichtung mit Stuhlkipphalter

Un dispositif comprenant un montage à bascule pour chaise

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Description

[0001] The present invention relates to a device with a tilt mounting for a chair, wherein the seat of the chair is tiltable forwards and backwards against a spring force from tilt resistance springs, wherein the tilt mounting has an upper part which is attachable to the chair seat and a lower part which is attachable to the undercarriage of the chair and tiltably connected to the upper part, and wherein the tilt resistance is regulated by adjusting the pre-tensioning of the springs. More specifically, the invention relates to a device as specified in the preamble of the independent claim 1.

[0002] There exist several previously known tilt mountings for chairs, and particularly office chairs, and emphasizing different characteristics and functional controls. As an example of an earlier tilt mounting, reference is made to the mounting shown and described in the applicant's Norwegian patent No. 327014B1. Another example is shown in US4744600A.

[0003] With basis in the prior art, an object of the invention is to provide an especially compact and simple construction, which is solved by a device as specified in the characterizing part of the independent claim 1.

[0004] Preferred embodiments of the invention are disclosed by the dependent claims.

[0005] A preferred, not limiting embodiment of the invention is further described in the following, with reference to the attached drawings, where

fig. 1 is a front perspective view of the device according to the invention, where the tilt mounting is attached to a chair seat and to an upper part of the undercarriage of the chair,

fig. 2 is a side view corresponding to fig. 1,

fig. 3 is a rear view corresponding to fig. 1,

fig. 4 is a cross-sectional view along the line A-A in fig. 2, with the tilt resistance springs of the tilt mounting in a minimal pre-tensioned position,

fig. 5 is a cross-sectional view along the line B-B in fig. 2, with the tilt resistance springs of the tilt mounting in a minimal pre-tensioned position,

fig. 6 is a cross-sectional view corresponding to fig. 4, but with the tilt resistance springs of the tilt mounting in a maximum pre-tensioned position,

fig. 7 is a cross-sectional view corresponding to fig. 5, but with the tilt resistance springs of the tilt mounting in a maximum pre-tensioned position,

fig. 8 is a perspective view of parts of the tilt mounting shown in fig. 1 to 7, and

fig. 9 is another perspective view of parts of the tilt mounting shown in fig. 1 to 7.

[0006] In the description below, direction indications such as "front", "rear", "upper", "lower", "upwards", "downwards", or similar related to the standing operational position of the chair.

[0007] It should further be noticed that even though this is not shown in the figures, and of illustrating considerations, the mounting will among other of visual and functional considerations and also of safety considerations be in all essentials encased, such that what is visible from the outside is an upper and a lower part of the mounting arranged with a mutual clipping motion and with the necessary operating levers projecting out from the mounting. In the figures, only the operating lever for altering the pre-tensioning of the tilt resistance springs is shown, but for other functions of the tilt mounting, normally other operating levers are provided, and a latch lever as shown and described in the applicant's Norwegian patent application No. 20120001538A1 and filed the same day as the present application can especially preferably be provided for locking the mounting in different desired tilt positions and also releasable from these.

[0008] With reference to the figures, and especially fig. 1 to 7, it is according to the invention shown a device with tilt mounting 1 for chair, where the seat 2 of the chair is tiltable forwards and backwards against spring force from tilt resistance springs 3, wherein the tilt mounting 1 has an upper part 4 which is attachable to the chair seat 2 and a lower part 5 which is attachable to the undercarriage 6 of the chair and tiltably connected to the upper part 4, and wherein tilt resistance is regulated by adjusting the pre-tensioning of the springs 3, as the distance between an upper spring seat 7 allocated to the upper part 4 and a lower spring seat 8 allocated to the lower part 5 is altered. This as two lower flap-like spring seats 8 are mutually opposite tiltably arranged in proportion to each other for altering said distance, as each lower spring seat 8 is provided with a respective arm or portion 9 projecting up in an operative thread connection with the thread portion 10 of a common rotatable adjusting lever 11, and as the distance between the connection points of the arms 9 along the thread portion 10, and thus the mutually opposite tilt positions of the lower spring seat 8, is altered by rotating the adjustment lever 11.

[0009] The springs 8 are preferably, and as shown, helical springs, but could alternatively be elastomeric blocks.

[0010] The two flap-like lower spring seats 8 are preferably provided with respective longitudinal projecting grooves 12 at each lower edge, for tiltable contact with two corresponding longitudinal recessed grooves 13 arranged in parallel in a middle portion 14 projecting up of the lower part 5, as is especially evident from fig. 8 and 9.

[0011] Each lower flap-like spring seat 8 is preferably provided with a tilt element 15 for contacting a lower part of the spring 3 and to counteract bending of the springs

3 about their longitudinal axis by compensating for altered tilt positions for the lower spring seats 8, as is also especially evident from fig. 8 and 9.

[0012] The connection points for each arm is preferably in the shape of a respective boss 16 turnably attached to each respective arm 9, and provided with respective levelled passing thread openings for guiding through of and thread connection with the thread portion 10 of the adjustment lever 11. Each boss 16 is preferably supported between two outer branches of each respective arm 9, and with its turn axis parallel with the tilt axis of the flap-like lower spring seat 8 and normal on the length axis of the adjustment lever. The bosses are, as it will also be evident for the person skilled in the art in light of the description and drawings, provided to retain level thread openings in the connection points at the different tilt positions for the lower spring seats 8. Further, it is preferably arranged a stopping pin in an outer end of the thread portion 10 of the adjustment lever 11, as is also evident from fig. 8 and 9.

[0013] The upper spring seats 7 are preferably provided with a respective substantially conical tapered portion 18 adapted the inner end portion of the helical springs 3, as the substantially conical tapered portion 18 is formed as a recess in the upper part 4.

Claims

1. A device with a tilt mounting (1) for a chair, wherein the seat (2) of the chair is tiltable forwards and backwards against a spring force from tilt resistance springs (3), where the tilt mounting (1) has an upper part (4) which is attachable to the seat (2) of the chair and a lower part (5) which is attachable to the undercarriage (6) of the chair and tiltably connected to the upper part (4), and where tilt resistance is adjustable by adjustment of the pre-tensioning of the springs (3), wherein the distance between an upper spring seat (7) allocated to the upper part (4) and a lower spring seat (8) allocated to the lower part (5) is altered, **characterized in that** two lower flap-like spring seats (8) are mutually opposite tiltably arranged relative to each other for altering said distance, wherein each lower spring seat (8) is provided with a respective arm or portion (9) projecting up in an operative thread connection with the thread portion (10) of a common rotatable adjusting lever (11), wherein the distance between the connection points of the arms (9) along the thread portion (10), and thus the mutually opposite tilt positions of the lower spring seat (8), is altered by rotating the adjustment lever (11).
2. A device according to claim 1, **characterized in that** the springs (3) are helical springs or elastomeric blocks.

3. A device according to claim 1 or 2, **characterized in that** the two flap-like lower spring seats (8) are provided with respective longitudinal projecting grooves (12) at each lower edge, for tiltable contact with two corresponding longitudinal recessed grooves (13) arranged in parallel in a middle portion (14) projecting up of the lower part (5).
4. A device according to any of the preceding claims 1 to 3, **characterized in that** each lower flap-like spring seat (8) is provided with a tilt element (15) for contacting a lower part of the spring (3) and to counteract bending of the springs (3) about their longitudinal axis by compensating for altered tilt positions for the lower spring seats (8).
5. A device according to any of the preceding claims 1 to 4, **characterized in that** the connection points for each arm (9) is in the shape of a respective boss (16) turnably attached to each respective arm (9), and provided with respective levelled passing thread openings for guiding through of and thread intervention with the thread portion (10) of the adjustment lever (11).
6. A device according to claim 5, **characterized in that** each respective boss (16) is supported between two outer branches of each respective arm (9), and with its turn axis parallel with the tilt axis of the flap-like lower spring seats (8) and normal on the length axis of the adjustment lever (11).
7. A device according to any of the preceding claims 1 to 6, **characterized in that** a stopping pin (17) is arranged in an outer end of the thread portion (10) of the adjustment lever (11).
8. A device according to any of the preceding claims 2 to 7, **characterized in that** the upper spring seats (7) are provided with a respective substantially conical tapered portion (18) adapted the inner end portion of the helical springs (3), wherein the substantially conical tapered portion (18) is formed as a recess in the upper part (4).

Patentansprüche

1. Vorrichtung mit einer Kipphalterung (1) für einen Stuhl, wobei der Sitz (2) des Stuhls gegen eine Federkraft von Federn (3), die gegen Kippen widerstandsfähig sind, nach vorn und nach hinten kippbar ist, wobei die Kipphalterung (1) einen oberen Teil (4), der an dem Sitz (2) des Stuhls befestigbar ist, und einen unteren Teil (5), der an dem Fahrwerk (6) des Stuhls befestigbar ist und mit dem oberen Teil (4) kippbar verbunden ist, aufweist, und wobei die Widerstandsfähigkeit gegen Kippen durch Verstell-

- len der Vorspannung der Federn (3) verstellbar ist, wobei der Abstand zwischen einem oberen dem oberen Teil (4) zugeordneten Federsitz (7) und einem unteren dem unteren Teil (5) zugeordneten Federsitz (8) geändert wird, **dadurch gekennzeichnet, dass** zwei untere klappenähnliche Federsitze (8) zum Ändern des Abstands im Verhältnis zu einander gegenseitig entgegengesetzt kippbar angeordnet sind, wobei jeder untere Federsitz (8) mit einem jeweiligen Hebel oder Teil (9) versehen ist, welcher in einer wirksamen Gewindeverbindung mit dem Gewindeteil (10) eines gemeinsamen drehbaren Verstellhebels (11) nach oben ragt, wobei der Abstand zwischen den Verbindungspunkten des Hebels (9) entlang dem Gewindeteil (10), und somit den gegenseitig entgegengesetzten Kipppositionen des unteren Federsitzes (8), durch Drehung des Verstellhebels (11) geändert wird.
2. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** die Federn (3) spiralförmige Federn oder Elastomerblöcke sind.
 3. Vorrichtung nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die zwei klappenähnlichen unteren Federsitze (8) mit jeweiligen in Längsrichtung vorstehenden Rillen (12) an jeder unteren Kante versehen sind, zum kippbaren Kontakt mit zwei entsprechenden in Längsrichtung ausgesparten Rillen (13), die in einem von dem unteren Teil (5) hervorstehenden mittleren Teil (14) parallel angeordnet sind.
 4. Vorrichtung nach einem der vorgehenden Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** jeder untere klappenähnliche Federsitz (8) mit einem Kippement (15) versehen ist, zur Herstellung von Kontakt mit einem unteren Teil der Feder (3) und zum Entgegenwirken von Biegen der Federn (3) um ihre Längsachse durch Ausgleich von geänderten Kipppositionen für die unteren Federsitze (8).
 5. Vorrichtung nach einem der vorgehenden Ansprüche 1 bis 4, **dadurch gekennzeichnet, dass** der Verbindungspunkt für jeden Hebel (9) in Form einer jeweiligen Nabe (16) ist, die an jeweils jedem Hebel (9) drehbar befestigt ist, und mit jeweiligen abgeflachten Durchgangsgewindeöffnungen zum Durchleiten von und Gewindeeingriff mit dem Gewindeteil (10) des Verstellhebels (11).
 6. Vorrichtung nach Anspruch 5, **dadurch gekennzeichnet, dass** jede jeweilige Nabe (16) zwischen zwei äußeren Zweigen von jedem jeweiligen Hebel (9) unterstützt ist, und wobei ihre Drehachse zur Kippachse der klappenähnlichen unteren Federsitze (8) parallel und auf der Längsachse des Verstellhebels (11) normal ist.
 7. Vorrichtung nach einem der vorgehenden Ansprüche 1 bis 6, **dadurch gekennzeichnet, dass** ein Sperrstift (17) an einem äußeren Ende des Gewindeteils (10) des Verstellhebels (11) angeordnet ist.
 8. Vorrichtung nach einem der vorgehenden Ansprüche 2 bis 7, **dadurch gekennzeichnet, dass** die oberen Federsitze (7) mit einem jeweiligen im Wesentlichen konischen spitz zulaufenden Teil (18) versehen sind, der dem inneren Endteil der spiralförmigen Federn (3) angepasst ist, wobei der im Wesentlichen konische spitz zulaufende Teil (18) als eine Aussparung im oberen Teil (4) ausgeformt ist.
- ### Revendications
1. Dispositif avec un montage à bascule (1) pour une chaise, le siège (2) de la chaise pouvant être basculé vers l'avant et vers l'arrière contre une force de ressort issue de ressorts de résistance à bascule (3), le montage à bascule (1) présentant une partie supérieure (4) qui peut être fixée sur le siège (2) de la chaise et une partie inférieure (5) qui peut être fixée au châssis (6) de la chaise et reliée à bascule à la partie supérieure (4), et la résistance à bascule étant réglable par réglage de la précontrainte des ressorts (3), la distance entre un siège de ressort supérieur (7) attribué à la partie supérieure (4) et un siège de ressort inférieur (8) attribué à la partie inférieure (5) étant modifiée, **caractérisé en ce que** les deux sièges de ressort inférieurs en forme de rabat (8) sont mutuellement disposés l'un opposé de l'autre de façon basculante pour modifier ladite distance, chaque siège de ressort inférieure (8) étant pourvu d'un bras respectif ou d'une partie respective (9) faisant saillie dans un raccord fileté opératoire avec la partie filetée (10) d'un levier de réglage rotatif commun (11), la distance entre les points de raccordement des bras (9) le long de la partie filetée (10), et donc les positions à bascule mutuellement opposées du siège de ressort inférieur (8), étant modifiée en faisant tourner le levier de réglage (11).
 2. Dispositif selon la revendication 1, **caractérisé en ce que** les ressorts (3) sont des ressorts hélicoïdaux ou des blocs élastomères.
 3. Dispositif selon la revendication 1 ou 2, **caractérisé en ce que** les deux sièges inférieurs de ressort en forme de rabat (8) sont pourvus de rainures respectives longitudinales en saillie (12) à chaque bord inférieur, par un contact à bascule avec deux rainures correspondantes longitudinales creuses (13) disposées en parallèle dans une partie médiane (14) faisant saillie à partir de la partie inférieure (5).
 4. Dispositif selon l'une quelconque des revendications

précédentes 1 à 3, **caractérisé en ce que** chaque siège inférieur de ressort en forme de rabat (8) est pourvu d'un élément à bascule (15) pour la mise en contact d'une partie inférieure du ressort (3) et pour contrecarrer la flexion des ressorts (3) autour de leur axe longitudinal en compensant les positions à bascule modifiées pour les sièges de ressort inférieurs (8).

5. Dispositif selon l'une quelconque des revendications précédentes 1 à 4, **caractérisé en ce que** le point de raccordement pour chaque bras (9) se présente dans la forme d'un bossage respectif (16) fixé de manière rotative à chaque bras respectif (9), et est pourvu d'ouvertures respectives filetées, traversantes et nivelées pour le guidage à travers et l'intervention filetée avec la partie filetée (10) du levier de réglage (11). 10
6. Dispositif selon la revendication 5, **caractérisé en ce que** chaque bossage respectif (16) est supporté entre deux branches extérieures de chaque bras respectif (9), et son axe de rotation étant parallèle à l'axe de basculement du siège inférieur de ressort en forme de rabat (8) et à la normale sur l'axe de longueur du levier de réglage (11). 20 25
7. Dispositif selon l'une quelconque des revendications précédentes 1 à 6, **caractérisé en ce qu'une** broche d'arrêt (17) est disposée dans une extrémité extérieure de la partie filetée (10) du levier de réglage (11). 30
8. Dispositif selon l'une quelconque des revendications précédentes 2 à 7, **caractérisé en ce que** les sièges à ressort supérieurs (7) sont pourvus d'une partie respective effilée essentiellement conique (18) adaptée à la partie d'extrémité intérieure des ressorts hélicoïdaux (3), la partie effilée essentiellement conique (18) étant formée comme un évidement dans la partie supérieure (4). 35 40

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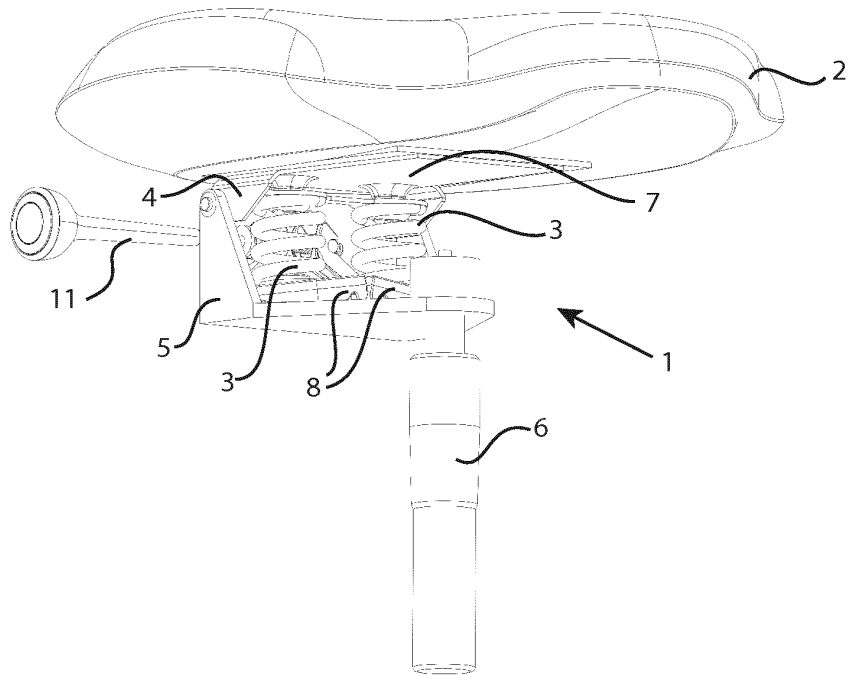


FIG. 1

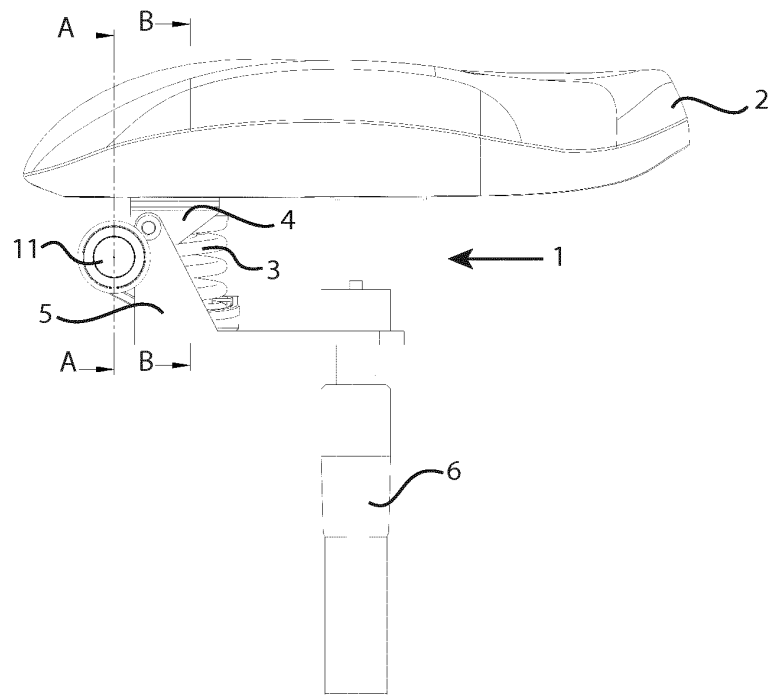


FIG. 2

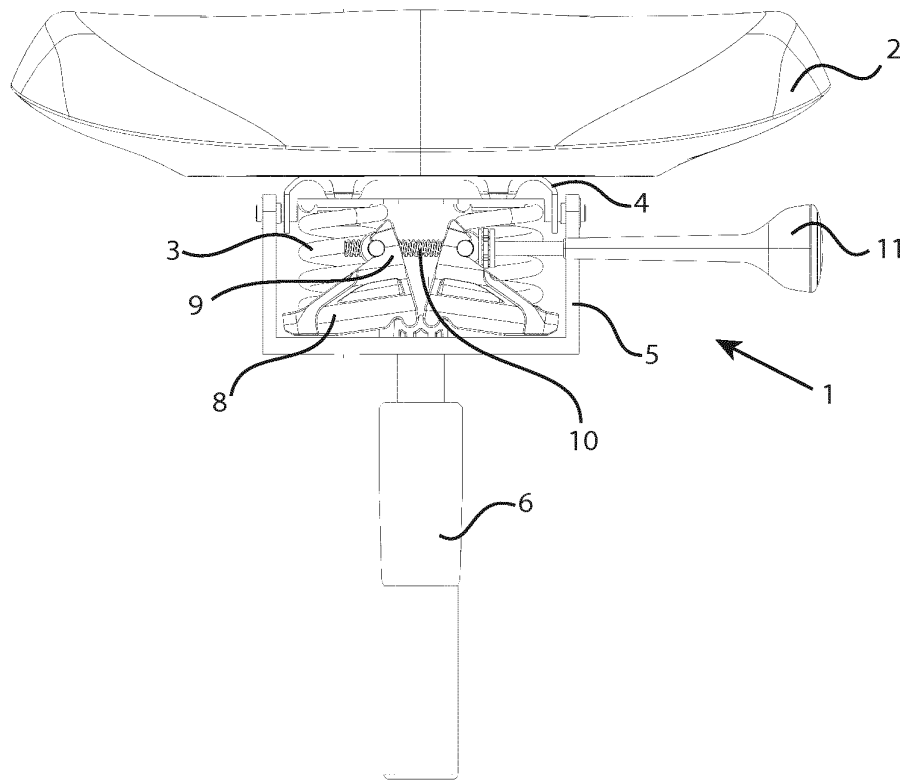


FIG. 3

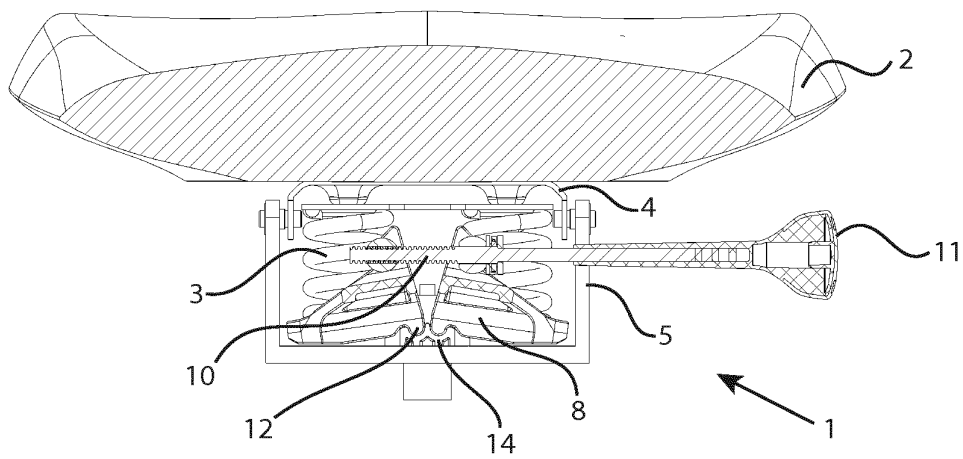


FIG. 4

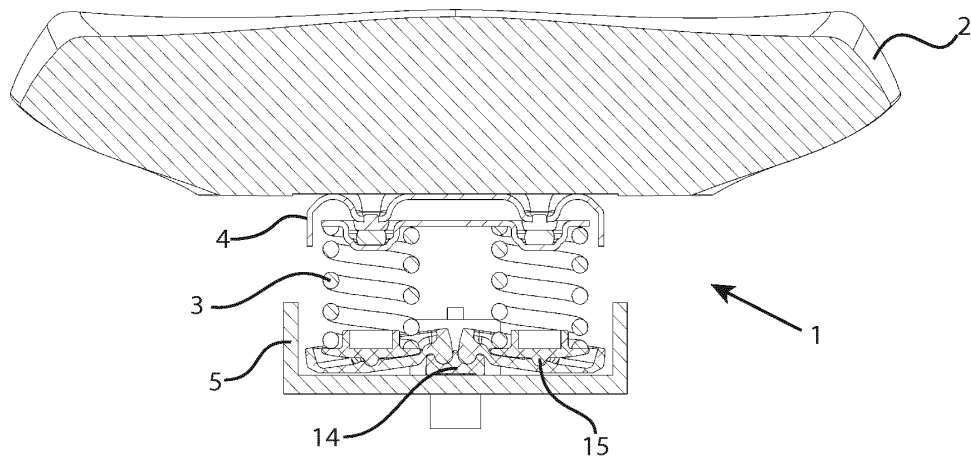


FIG. 5

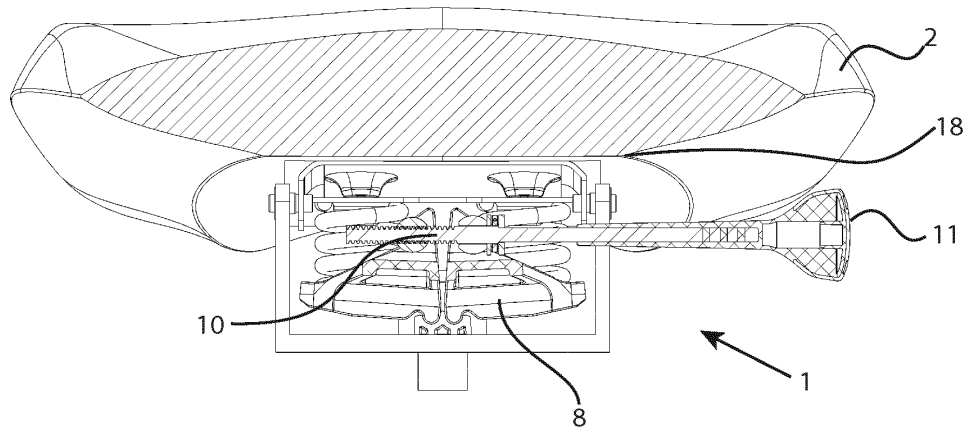


FIG. 6

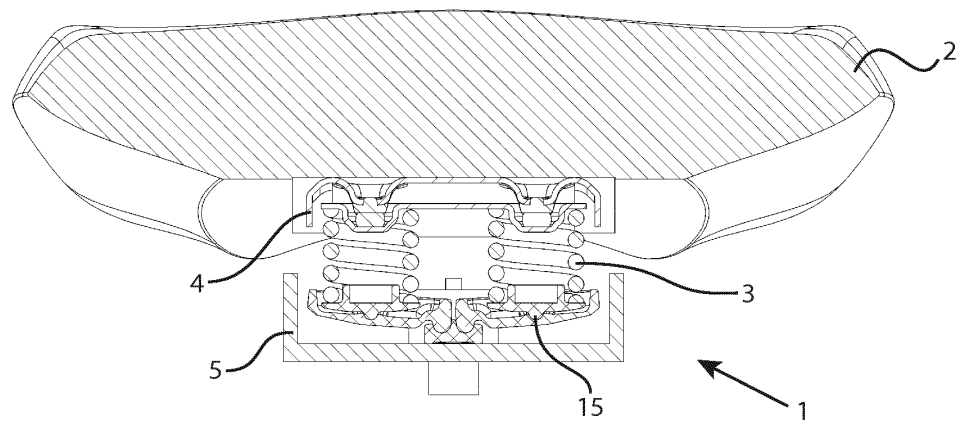
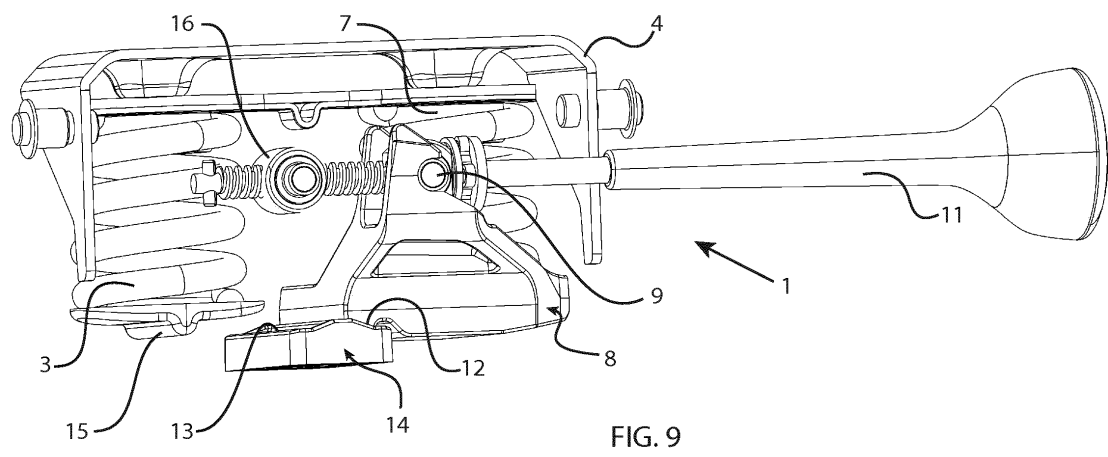
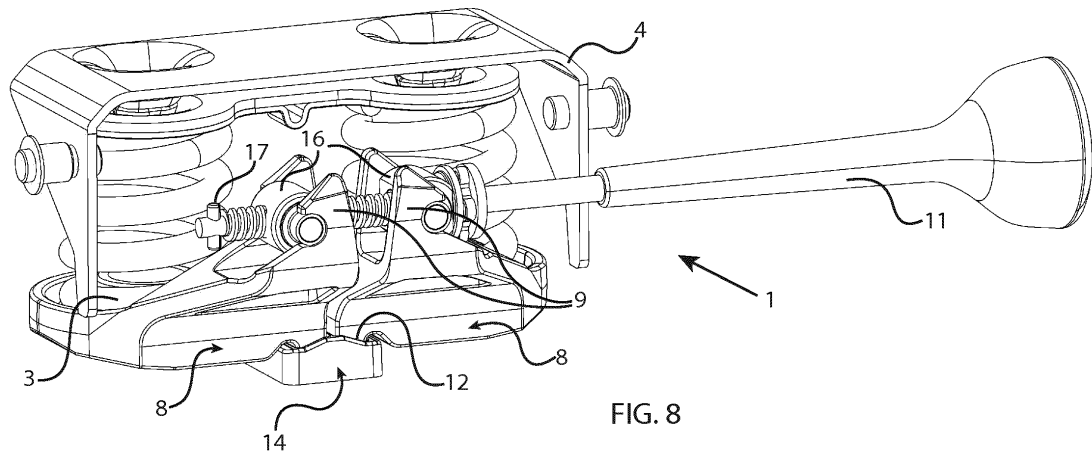


FIG. 7



REFERENCES CITED IN THE DESCRIPTION

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