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(54) **HINGE ARRANGEMENT FOR TOILET SEAT AND/OR COVER**

SCHARNIERANORDNUNG FÜR TOILETTENSITZ UND/ODER ABDECKUNG

AGENCEMENT DE CHARNIÈRE POUR SIÈGE ET/OU COUVERCLE DE TOILETTES

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Description

Field of the Invention

[0001] The present invention relates to the area of supports for toilet seat and or covers and more specifically to the hinge arrangements around which the seat and/or cover may be pivoted.

Background of the Invention

[0002] Toilet seat and/or cover hinge arrangements are well-known in the art and may include simple axle constructions as well as more complex soft closure constructions.

[0003] Often the normal use of a toilet means that the presently available hinge arrangements are sufficient. However, when the use of a toilet is more intensive, such as the use in public toilets and in health institutions, the dimensioning of the hinge arrangement is insufficient and the hinge arrangement will therefor need replacement more often than desired. At the same time there is a desire for a cosmetically attractive hinge arrangement, which may conflict with the need for designs with an increased strength. US2001/0004776 disclose a toilet hinge arrangement for fastening a toilet cover assembly to a toilet bowl, document US2008/189843 A1 discloses a mechanism for lifting and lowering a toilet seat that is activated by foot pressure pushing down on a pedal.

Object of the Invention

[0004] The object of the present invention according to claim 1 is to provide a support device which has an increased strength compared to previously known devices.

Description of the Invention

[0005] The objective is achieved through a toilet hinge arrangement for fastening of a toilet cover assembly, including a toilet seat and/or a toilet cover, to a toilet bowl, so that the toilet cover assembly in use can pivot about a substantially horizontal rotation axis, the hinge arrangement comprising a carrier housing adapted for mounting on a toilet structure, said carrier housing having an inside surface, and two rotatable mounted shaft elements, the rotatable shaft element being in contact with and supported by said inner surface of the carrier housing, each shaft element comprising one or more engagement elements on the outside of said at least one shaft element for engaging with corresponding recesses on the toilet seat or cover wherein at least one ring element is mounted on each shaft element and being adapted for fastening in relation to the toilet seat or the cover, the at least one ring element being secured against rotation relative to the shaft element (18,19) by secondary engagement elements (20,21).

[0006] By providing the shaft element in the manner where this is supported inside the stationary part it is possible to design the shaft element with larger dimensions and hence with more strength and stability.

5 [0007] According to the invention the carrier part is adapted for accommodating and holding at least one damping element and where the rotatable shaft element is adapted for engagement with the damper and hereby enabling damping of the shaft movement and hence the movement of the seat and/or cover.

10 [0008] Further a ring element is mounted on the shaft element and being adapted for fastening in relation to the toilet seat or the cover, the ring being secured against rotation relative to the shaft element by the engagement element.

15 [0009] An embodiment foresees that the shaft element comprises a tap engaging with a corresponding groove in the ring element, the groove extending parallel to the center axis of the ring element.

20 [0010] Still further the shaft element may comprise a locking tap engaging with a corresponding annular locking groove in the ring element.

25 [0011] The invention will be described in more detail in the following description of a preferred embodiment, with reference to the drawing, where:

Description of the Drawing

[0012]

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FIG. 1 shows the hinge arrangement in perspective with a seat and cover mounted;

FIG. 2 shows the hinge arrangement in an exploded view;

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FIG. 3 shows the hinge arrangement in a front view;

FIG. 4 shows the hinge arrangement in a top view;

FIG. 5 shows the hinge arrangement in a side view;

FIG. 6 shows the hinge arrangement in a sectional view according to the line A-A in FIG. 4; and

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FIG. 7 shows an enlarged part of the sectional view in FIG. 6.

Detailed Description of the Invention

45 [0013] From FIG. 1 a hinge arrangement construction 1 according to the invention appears in an assembled view. The construction is adapted for mounting on a toilet structure 4, such as a toilet bowl. The construction carries the toilet seat 2 and the cover 3. The details of the construction will appear from the following description.

50 [0014] From FIG. 2 the hinge arrangement appears in an exploded view. The main elements of the construction appear. The construction comprises a carrier part in the shape of a carrier housing 5 which is connected by screws to a support part 6. In this particular embodiment the carrier part has been designed as a carrier housing 5 connecting and providing fastening for dampeners in both sides of the toilet seat - i.e. for both hinge construc-

tions.

[0015] The carrier housing holds two damping elements 16,17 in a manner where these are prevented from rotating inside the carrier housing. The shaft element in the shape of two bushings 18,19 are provided for insertion into the carrier housing 5 and being adapted for providing a bearing function relative to the inside surface of the carrier housing 5. Ring elements 8,10,12,14 are provided and adapted to be carried by the bushings 18,19 forming shaft elements for the hinge construction. The bushings comprise taps on the outside engaging with corresponding longitudinally extending grooves in the ring elements hereby allowing a single ring element on each side to be freely rotatable and one being fixed against rotation relative to the bushing. As the ring elements are connected to the seat or the cover this enables the damping of the seat movement with one of the two dampers and the damping of the cover movement with the other damper.

[0016] From FIG. 3 the hinge arrangement appears in a front view, where the carrier housing 5 appears supported by the support part 6 and mounting brackets 7. Ring elements 8,10,12,14 are provided and each of these comprising engagement elements 9,11,13,15 for connecting the ring elements to the seat and the cover, respectively.

[0017] The ring elements may in principle be integral parts of the seat and/or cover, however by providing these as separate elements it will be possible to use a wider range of materials for the ring elements, e.g. metal or similar that would correspond to the material of the remaining hinge arrangement.

[0018] From FIG. 4 the construction appears in a top view in an assembled state. It appears that the mounting brackets 7 of the support part 6 are slightly offset in relation to the centreline of the carrier housing 5. This enables the mounting in different distances from the rear part of the toilet structure, as desired or necessary in various situations.

[0019] From FIG. 5 the hinge arrangement appears in a side view, where the engagement elements of the ring elements appear as well as the end area of a bushing 18 carrying the ring elements and being supported inside the carrier housing 5.

[0020] From FIG. 6 the hinge arrangement appears in a sectional view. Here it appears more clearly how the various parts of the hinge arrangement are mutually engaging and providing the improved functionality of the hinge arrangement. The dampers 16,17, which in principle are optional, are shown in their mounted position where these are secured against rotational movement. The end area of the damper 16,17 is adapted for engagement with the shaft element 18,19 in that these two elements have been designed with mutual corresponding shapes that prevent relative rotational movement between these. It appears clearly that the shaft element 18,19 is supported against the inside surface of the carrier housing 5. Both the inside of the carrier housing 5

and the outside of the shaft element 18,19 have a circular shape that allow for relative rotational movement of these two elements.

[0021] By providing this support arrangement it is possible to design the entire hinge arrangement with relative small outer dimensions and at the same time design the inner bearing surfaces with largest possible surface area and hence provide for an increased strength of the hinge arrangement. Mounting elements 22 (see fig. 2) for securing the hinge arrangement relative to a toilet bowl are shown as well as screws for mutual securing of the elements 5 and 6 of the carrier housing.

[0022] Further details are apparent from FIG. 7 showing an enlarged view of an end area of the sectional view presented in FIG. 6. It appears that the shaft element 18 comprises a locking tap 20 engaging with a corresponding groove 21 in one of the ring elements 8,10,12,14. When inserted through the ring elements 8,10,12,14 and into the carrier housing 5 the locking tap 20 and the corresponding locking groove 21 will provide for a secure fastening of the seat and cover and the removal of the seat and cover will require a removal of the entire hinge arrangement. This provides for an increased safety against theft and further makes assembly significantly easier.

Claims

1. Toilet hinge arrangement (1) for fastening of a toilet cover assembly, including a toilet seat (2) and/or a toilet cover (3), to a toilet bowl (4), so that the toilet cover assembly (2,3) in use can pivot about a substantially horizontal rotation axis, the hinge arrangement (1) comprising

- a. a carrier housing (5,6,7) adapted for mounting on a toilet structure (4), said carrier housing having an inside surface, and two rotatable mounted shaft elements (18,19), each rotatable shaft element (18,19) being in contact with and supported by said inner surface of the carrier housing (5,6,7), each shaft element (18,19) comprising one or more engagement elements (9,11,13,15) on the outside of each shaft element for engaging with corresponding recesses on the toilet seat or cover (2,3) wherein at least
- b. one ring element (8,10,12,14) is mounted on each shaft element (18,19) and being adapted for fastening in relation to the toilet seat or the cover (2,3), the at least one ring element (8,10,12,14) being secured against rotation relative to the shaft element (18,19) by secondary engagement elements (20,21),

wherein said ring elements (8,10,12,14) each comprising engagement elements (9,11,13,15) for connecting the ring elements to the seat and/or the cov-

er, and wherein the carrier housing (5,6,7) is adapted for accommodating and holding at least one damping element (16,17) and where the rotatable shaft element (18,19) is adapted for engagement with the damper (16,17) and hereby enabling damping of the shaft elements movement and hence the movement of the seat and/or cover (2,3).

2. A hinge arrangement according to claim 1, where the secondary engagement elements (20,21), comprises a tap (20) on the shaft element 18 engaging with a corresponding groove (21) in the ring element (8,10,12,14), the groove (21) extending parallel to the center axis of the ring element (8,10,12,14).
3. A hinge arrangement according to any of the preceding claims, where each shaft element comprises a locking tap (20) engaging with a corresponding annular locking groove (21) in the ring element (8, 10, 12, 14).

Patentansprüche

1. Scharnieranordnung (1) für eine Toilette zum Befestigen einer Toilettenabdeckungsbaugruppe, die einen Toilettensitz (2) und/oder eine Toilettenabdeckung (3) beinhaltet, an einer Toilettenschüssel (4), sodass die Toilettenabdeckungsbaugruppe (2,3) im Gebrauch um eine im Wesentlichen horizontale Drehachse schwenkbar ist, wobei die Scharnieranordnung (1) Folgendes umfasst:
 - a. ein Trägergehäuse (5, 6, 7), das zum Montieren an einer Toilettenstruktur (4) eingerichtet ist, wobei das Trägergehäuse eine Innenfläche und zwei drehbar montierte Wellenelemente (18, 19) aufweist, wobei jedes drehbare Wellenelement (18, 19) die Innenfläche des Trägergehäuses (5, 6, 7) berührt und durch diese gestützt ist, wobei jedes Wellenelement (18, 19) ein oder mehrere Eingriffselemente (9, 11, 13, 15) an der Außenseite jedes Wellenelements zum Eingreifen in entsprechende Aussparungen an dem Toilettensitz oder der Abdeckung (2, 3) umfasst, wobei mindestens
 - b. ein Ringelement (8, 10, 12, 14) an jedem Wellenelement (18, 19) montiert und zum Befestigen in Bezug auf den Toilettensitz oder die Abdeckung (2,3) eingerichtet ist, wobei das mindestens eine Ringelement (8, 10, 12, 14) durch sekundäre Eingriffselemente (20, 21) relativ zu dem Wellenelement (18, 19) drehfest verbunden ist, wobei die Ringelemente (8, 10, 12, 14) jeweils Eingriffselemente (9, 11, 13, 15) zum Verbinden der Ringelemente mit dem Sitz und/oder der Abdeckung umfassen und wobei das Trägerge-

häuse (5, 6, 7) zum Aufnehmen und Halten mindestens eines Dämpfungselements (16, 17) eingerichtet ist und wobei das drehbare Wellenelement (18, 19) zum Eingriff mit dem Dämpfer (16, 17) geeignet ist und dadurch eine Dämpfung der Wellenelementbewegung und damit der Bewegung des Sitzes und/oder der Abdeckung (2, 3) ermöglicht.

2. Scharnieranordnung nach Anspruch 1, wobei die sekundären Eingriffselemente (20, 21) einen Zapfen (20) an dem Wellenelement (18) umfassen, der in eine entsprechende Nut (21) in dem Ringelement (8, 10, 12, 14) eingreift, wobei sich die Nut (21) parallel zu der Mittelachse des Ringelements (8, 10, 12, 14) erstreckt.
3. Scharnieranordnung nach einem der vorhergehenden Ansprüche, wobei jedes Wellenelement einen Verriegelungszapfen (20) umfasst, der in eine entsprechende ringförmige Verriegelungsnut (21) in dem Ringelement (8, 10, 12, 14) eingreift.

Revendications

1. Agencement de charnière de toilettes (1) pour la fixation d'un ensemble de couvercle de toilettes, comportant un siège de toilettes (2) et/ou un couvercle de toilettes (3), à une cuvette de toilettes (4), de sorte que l'ensemble de couvercle de toilettes (2, 3) en utilisation peut pivoter autour d'un axe de rotation sensiblement horizontal, l'agencement de charnière (1) comprenant
 - a. un boîtier de support (5, 6, 7) conçu pour être monté sur une structure de toilettes (4), ledit boîtier de support ayant une surface intérieure, et deux éléments d'arbre montés rotatifs (18, 19), chaque élément d'arbre rotatif (18, 19) étant en contact avec et supporté par ladite surface interne du boîtier de support (5, 6, 7), chaque élément d'arbre (18, 19) comprenant un ou plusieurs éléments de mise en prise (9, 11, 13, 15) sur l'extérieur de chaque élément d'arbre pour venir en prise avec des évidements correspondants sur le siège ou le couvercle de toilettes (2, 3), dans lequel au moins
 - b. un élément annulaire (8, 10, 12, 14) est monté sur chaque élément d'arbre (18, 19) et est conçu pour être fixé par rapport au siège ou au couvercle de toilettes (2, 3), l'au moins un élément annulaire (8, 10, 12, 14) étant fixé en rotation par rapport à l'élément d'arbre (18, 19) par des éléments de mise en prise secondaires (20, 21), dans lequel lesdits éléments annulaires (8, 10, 12, 14) comprennent chacun des éléments de mise en prise (9, 11, 13, 15) pour relier les élé-

ments annulaires au siège et/ou au couvercle, et dans lequel le boîtier de support (5, 6, 7) est conçu pour recevoir et maintenir au moins un élément amortisseur (16, 17) et où l'élément d'arbre rotatif (18, 19) est conçu pour venir en prise avec l'amortisseur (16, 17) et permettre ainsi d'amortir le mouvement des éléments d'arbre et donc le mouvement du siège et/ou du couvercle (2, 3).

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2. Agencement de charnière selon la revendication 1, où les éléments de mise en prise secondaires (20, 21) comprennent une languette (20) sur l'élément d'arbre 18 venant en prise avec une rainure correspondante (21) de l'élément annulaire (8, 10, 12, 14), la rainure (21) s'étendant parallèlement à l'axe central de l'élément annulaire (8, 10, 12, 14).

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3. Agencement de charnière selon l'une quelconque des revendications précédentes, où chaque élément d'arbre comprend une languette de verrouillage (20) venant en prise avec une rainure de verrouillage annulaire (21) correspondante de l'élément annulaire (8, 10, 12, 14).

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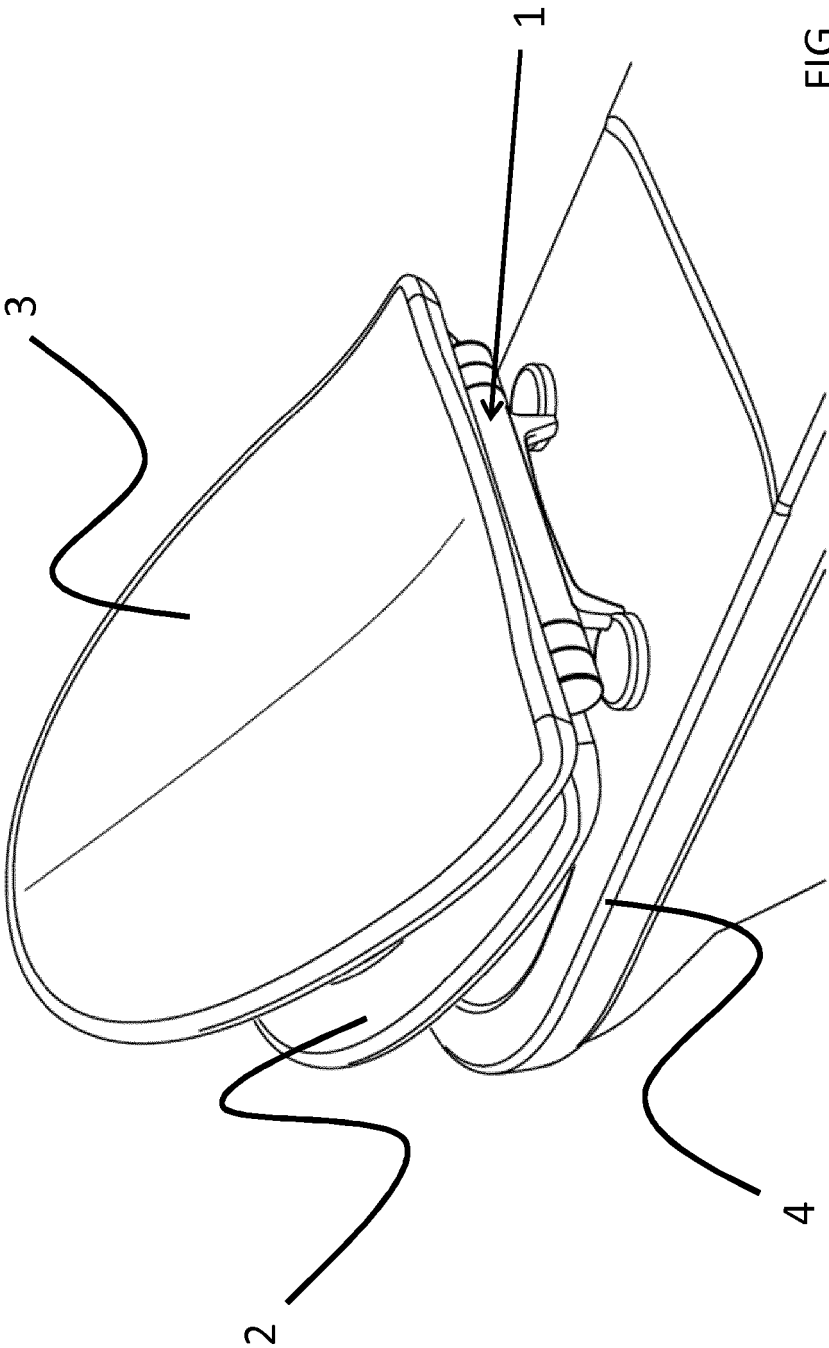


FIG. 1

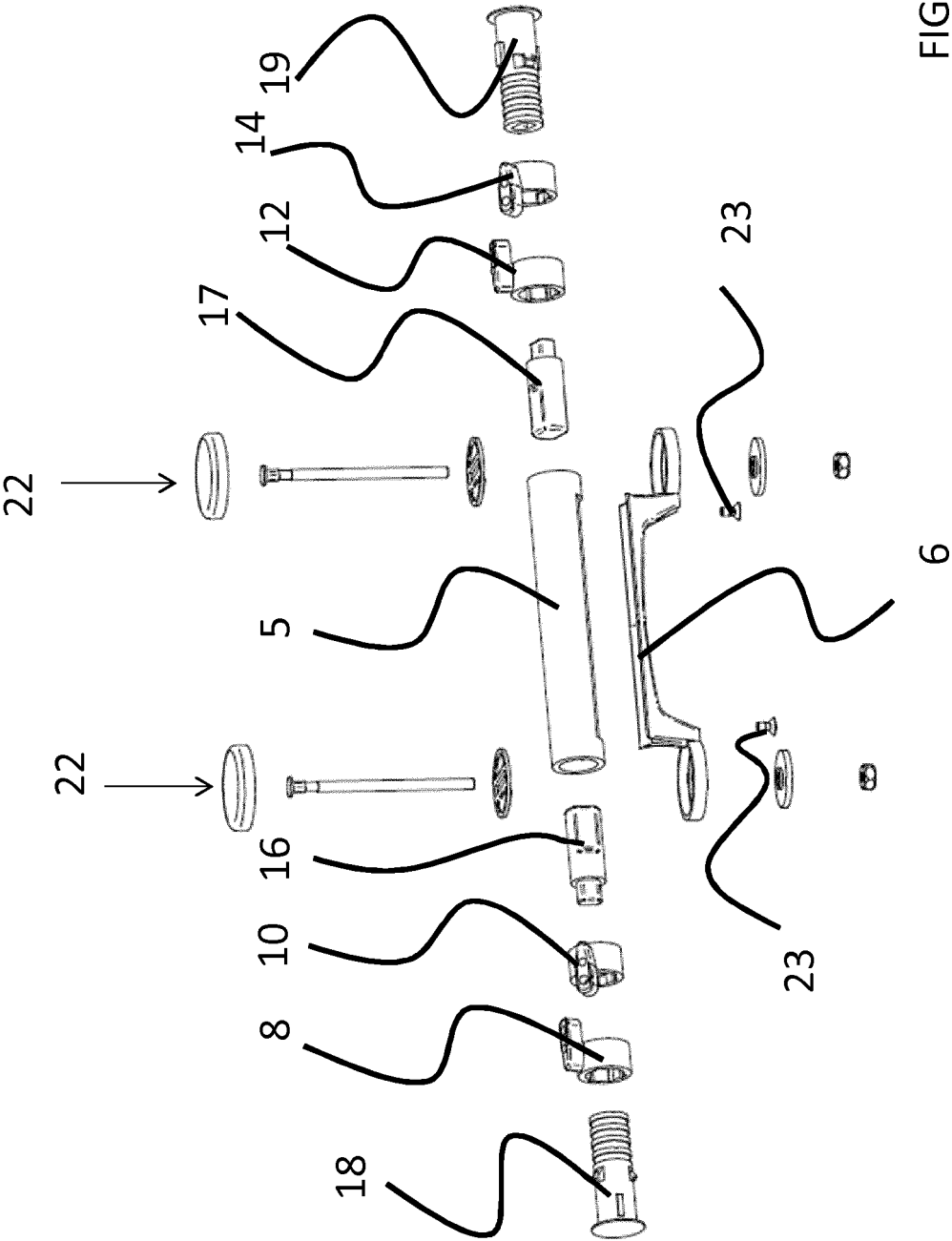
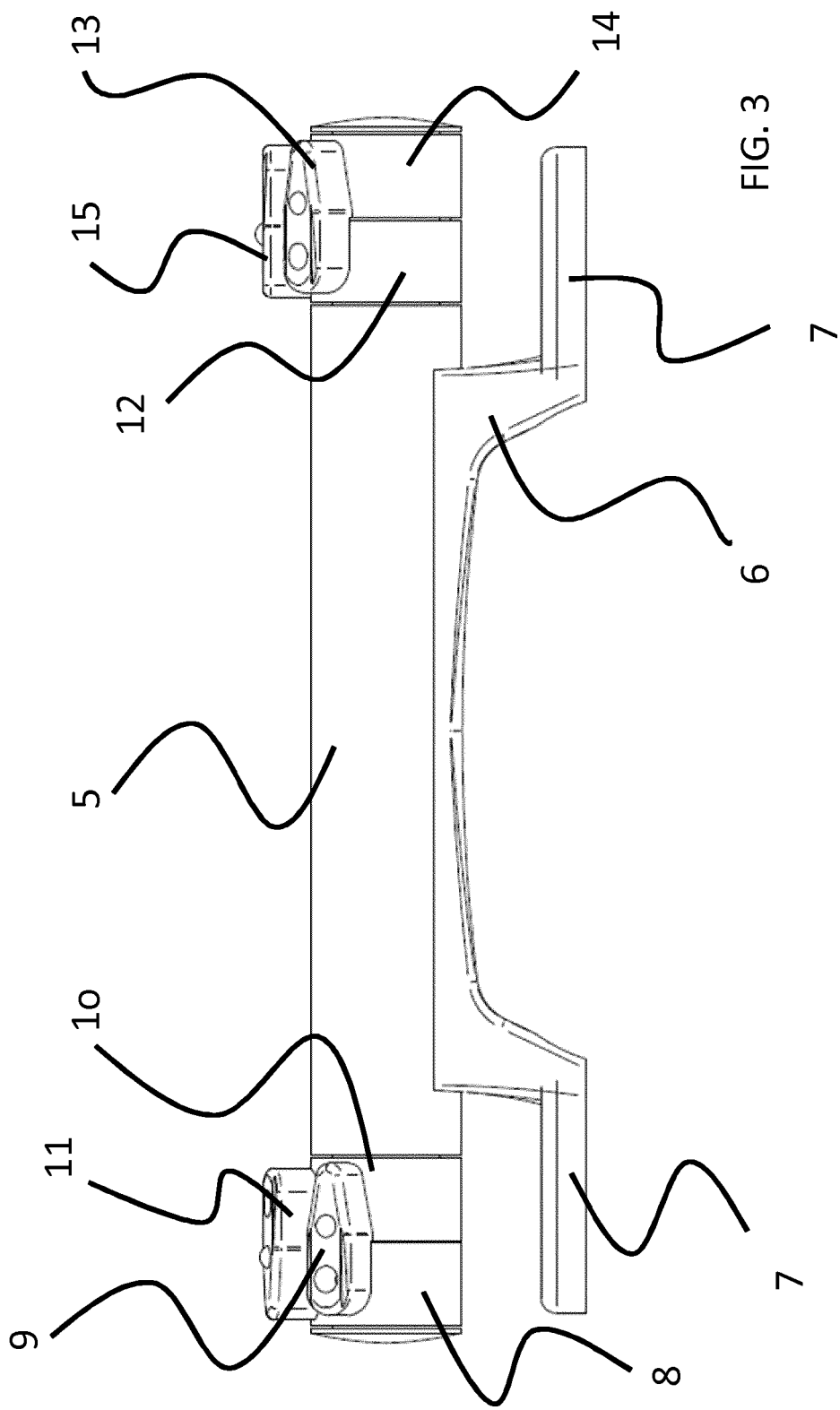
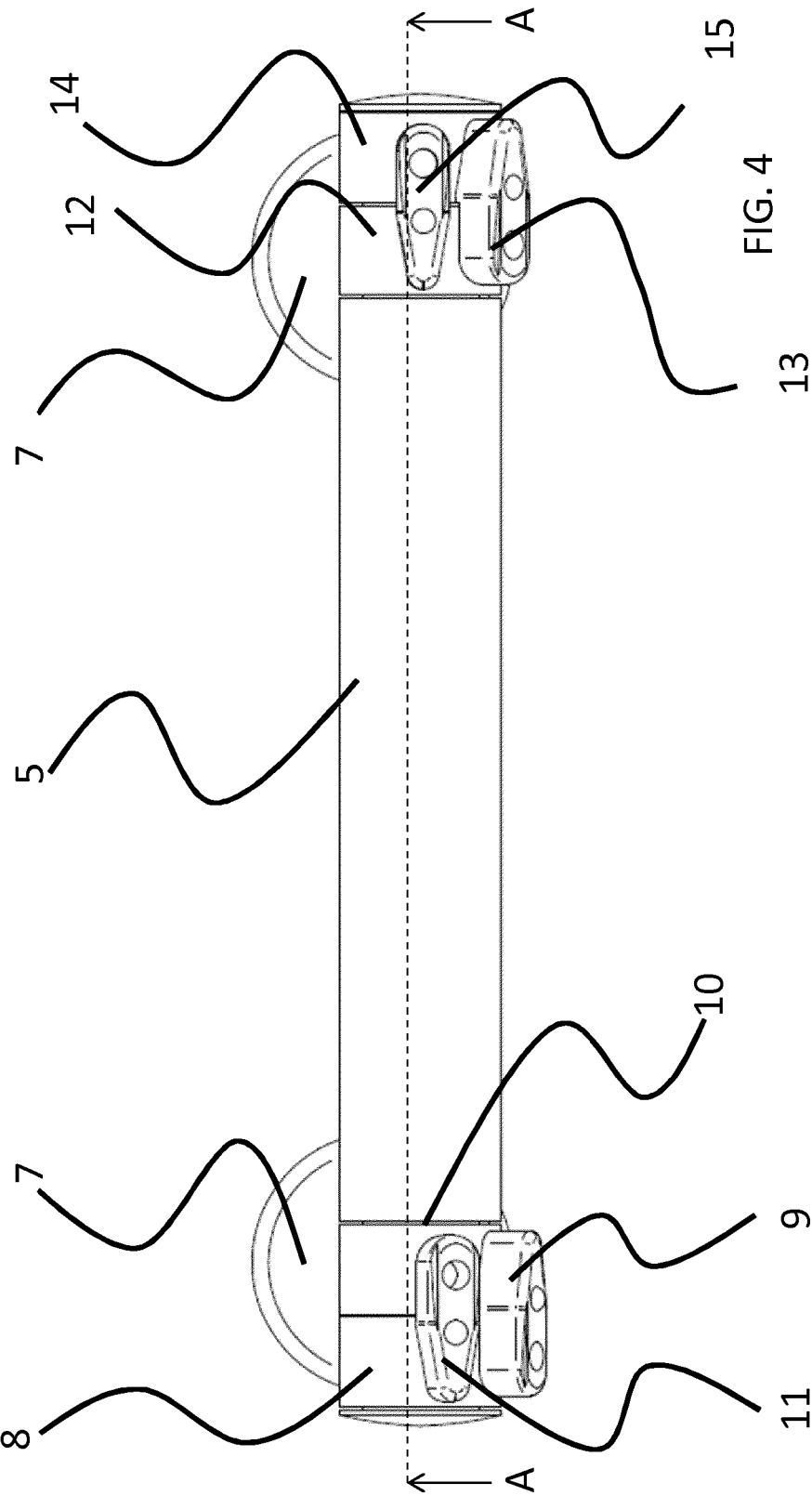


FIG. 2





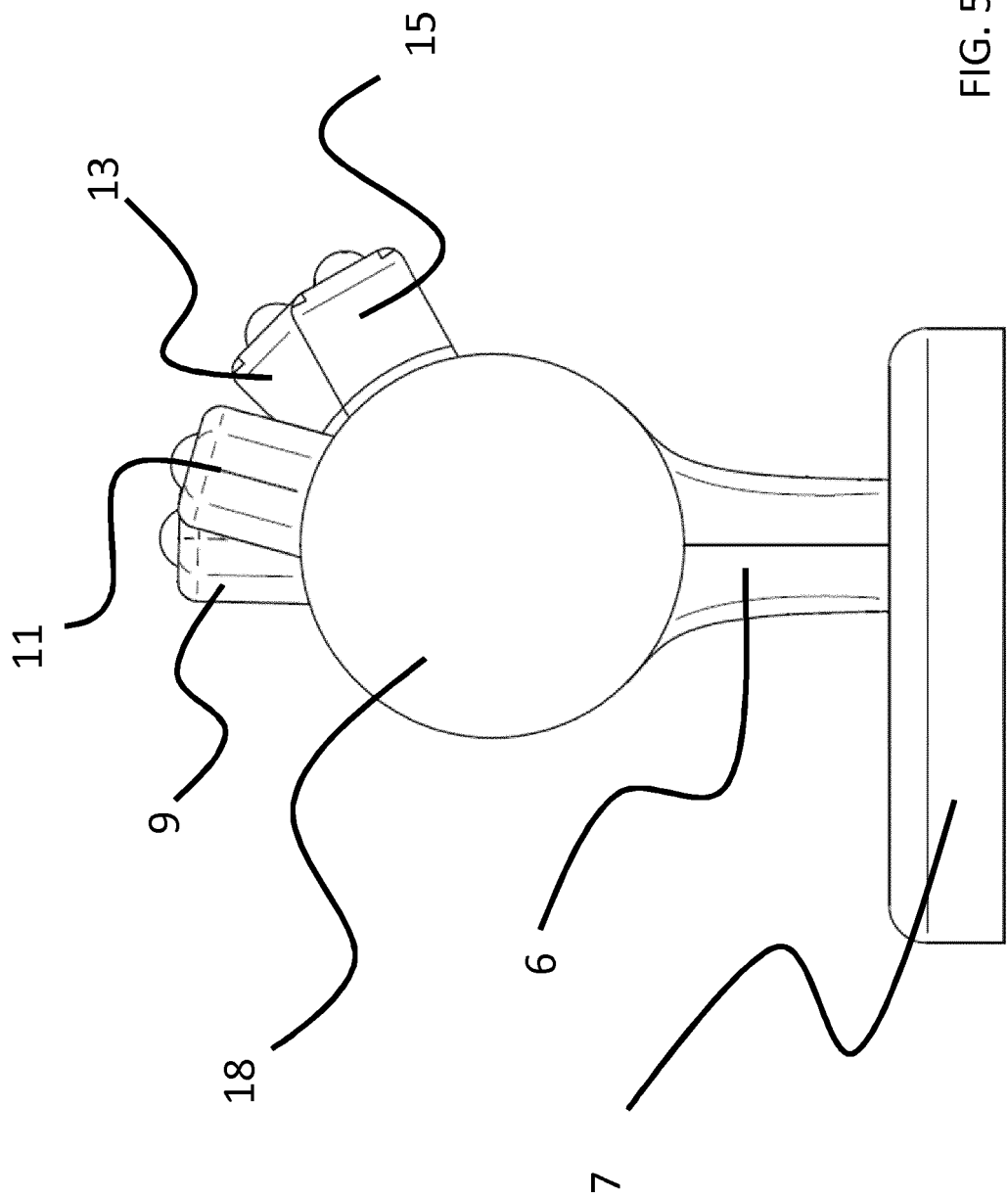


FIG. 5

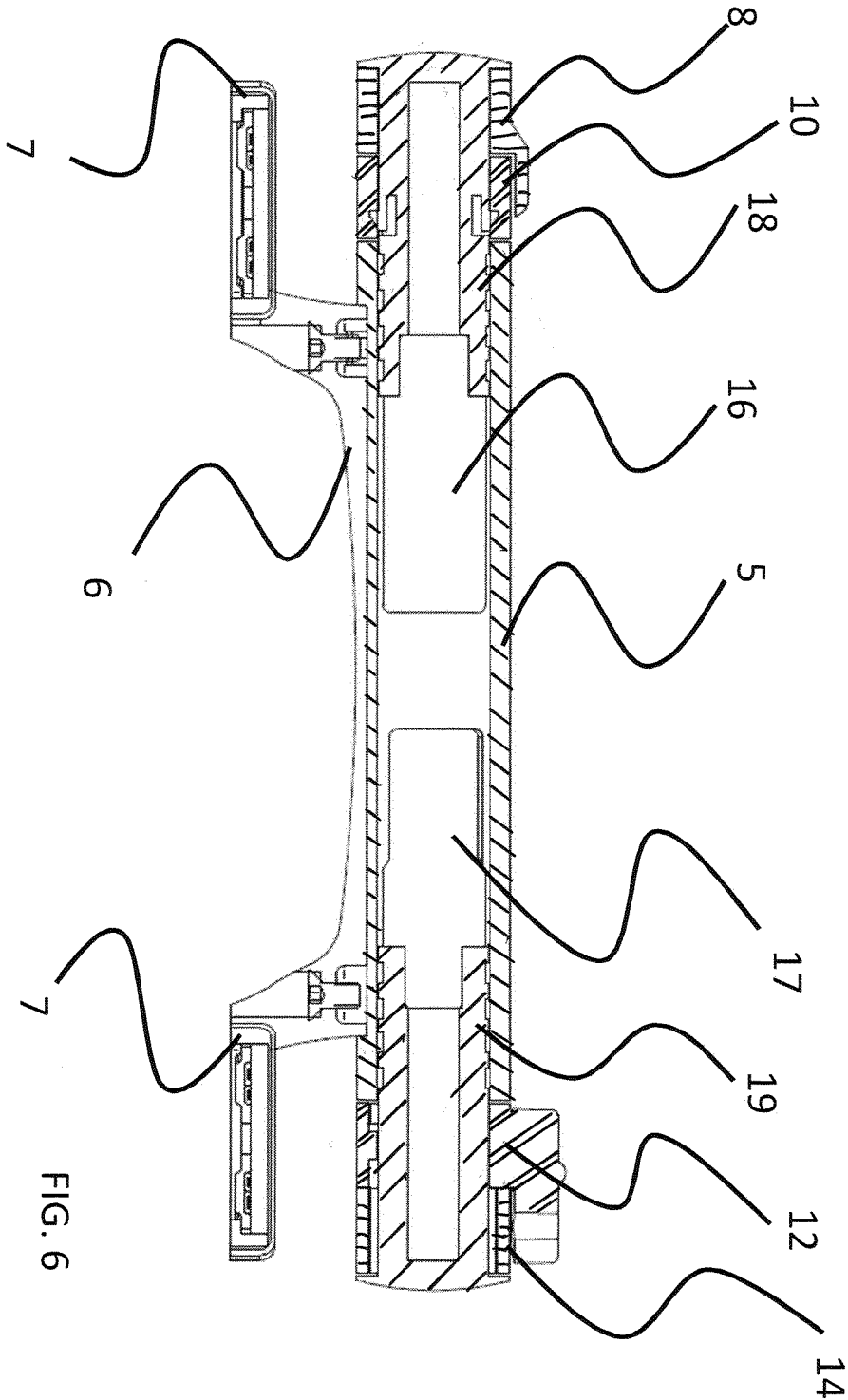


FIG. 6

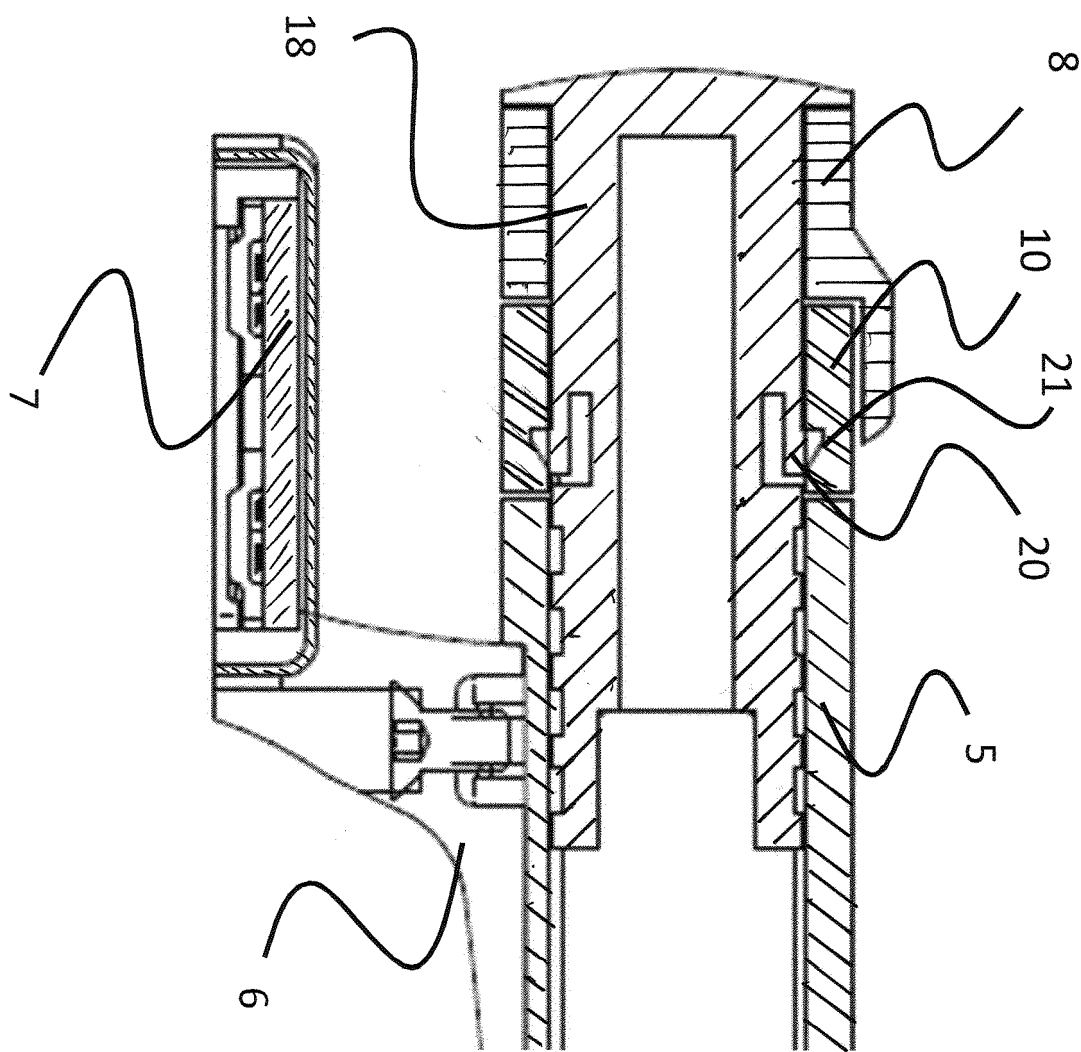


FIG. 7

REFERENCES CITED IN THE DESCRIPTION

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