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(54) **TOILET COVER ASSEMBLY WITH A SCREW HINGE ASSEMBLY**

TOILETTENDECKELANORDNUNG MIT SCHRAUBSCHARNIERANORDNUNG

COUVERCLE DE TOILETTES EQUIPE D'UN ENSEMBLE CHARNIERE A VIS

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## Description

### Technical Field

[0001] The invention relates to a toilet cover assembly comprising a toilet seat and/or a toilet cover and at least one hinge assembly for pivotally connecting the toilet seat and/or the toilet cover with a toilet bowl about a horizontal axis of rotation, said hinge assembly comprising at least one first hinge member secured to the rearmost end portion of the cover or the seat and at least one second hinge member defining the axis of rotation jointly with the first hinge member and being adapted to be secured to the toilet bowl, the first hinge member being connected to the seat or the cover by means of a screw connection comprising a projecting threaded pin and a corresponding threaded hole.

### Background Art

[0002] DE 32 48 028 A1 discloses a toilet cover assembly of the above type, wherein a first hinge member of the seat and the cover, respectively, is provided with a projecting threaded pin screwed into a bore in the rearmost edge of the seat and of the cover, respectively. The threaded pin is comparatively long and its thread pitch corresponds to that commonly known from screws. A large number of revolutions are thus required for screwing the threaded pin into the threaded hole. A threaded connection with a thread length greatly exceeding the thread pitch is disadvantageous as regards production and mounting.

### Description of the Invention

[0003] The object of the invention is to provide a toilet cover assembly of the above type comprising a reliable and strong threaded connection between a first hinge member and the seat or the cover, said connection also being advantageous for ease of manufacture and mounting.

[0004] The toilet cover assembly according to the invention is **characterised in that** the pitch of the threaded connection is at least equal to the diameter of the threaded connection. At the same time as a reliable and strong threaded connection is obtained, the coarse thread pitch allowing for a quick and easy moulding of the threaded pin and the threaded hole and a subsequent quick and easy engagement between the threaded pin and the threaded hole. In this context thread pitch means the pitch of a full helix (360°) even when the thread extends less than 360°.

[0005] According to the invention the threaded connection may have a pitch of at least two times the diameter of the threaded connection and preferably such a pitch allowing the threaded pin to be screwed into the threaded hole merely by being subjected to an axial force in relation to the threaded hole. A suitably coarse pitch

in the threaded connection allows for an easy insertion of the threaded pin into the threaded hole. At the same time the demoulding of the threaded hole is considerably simplified, the core forming the threaded hole being pulled out without being forcibly rotated.

[0006] According to the invention the screw connection may comprise a threaded pin extending from a first hinge member and engaging a corresponding threaded hole in the seat or the cover. This embodiment of the invention is currently considered to be the most advantageous embodiment.

[0007] Furthermore according to the invention the first hinge member and the seat or the cover may have abutment faces orientating the first hinge member correctly in relation to the axis of rotation at a mutual abutment of the said faces. As a result a very accurate orientation of the first hinge member is obtained at a mutual abutment of the abutment faces. Due to the coarse pitch of the threaded connection, only a minimal turning of the hinge member past the correct orientation provides a significant increase of the necessary screwing torque. In contrast thereto in a threaded connection with a fine thread pitch the first hinge member is more readily turned past the correct orientation, whereby the correct orientation is less well-defined.

[0008] The abutment faces may advantageously be formed of a shoulder on the threaded pin and a circumferential abutment face along the edge of the threaded hole. The abutment faces may, however, also be formed of the end face of the threaded pin and the bottom of the threaded hole or optionally of the rearmost end face of the threaded groove as seen in the driving direction and of the foremost end face of the ridge as seen in the driving direction.

[0009] Moreover according to the invention the thread of the threaded connection may be formed such that a turning of the threaded pin relative to the threaded hole of less than or equal to 360°, preferably of less than or equal to 180°, and most preferably of less than or equal to 90°, is required for driving the threaded pin. For ease of manufacture and mounting it is preferred to use the shortest possible thread. This is rendered possible due to the coarse thread pitch of the threaded connection without losing the strength and reliability of the threaded connection.

[0010] Furthermore according to the invention the thread of the threaded pin may be a helical groove and the thread of the threaded hole may be a corresponding projection. The thread of the threaded hole may, however, also be a helical groove and the thread of the threaded pin may be a projection being substantially complementary to the helical groove or optionally a projecting knob.

[0011] Furthermore according to the invention the toilet cover assembly may comprise two interspaced first hinge members, the threaded connection of one of said hinge members with the seat or the cover being right-handed and the threaded connection of the other hinge member with the seat or the cover being left-handed.

**[0012]** In this connection the right-handed and left-handed threaded connections may be arranged such in relation to the seat or cover that the threaded connections are tightened when the seat or the cover is subjected to load.

**[0013]** According to another embodiment of the invention each of the first hinge members and the seat or the cover may have abutment faces engaging each other immediately before the first hinge members adopt their correct orientation when the threaded connection is provided. When connecting the first hinge members, eg each provided with a hinge eye, with the other hinge members, eg each provided with a hinge axis, the two first hinge members are turned to adopt their correct orientations, whereby a tension eliminating any slack in the hinge arising in the hinge assemblies is provided.

**[0014]** Finally according to the invention the threaded connection of each of the first hinge members with the seat or the cover may comprise a first left-handed, helical groove and a second right-handed, helical groove, the two grooves preferably extending less than or equal to 90°. As a result the two first hinge members may be shaped identically to reduce the number of different parts of the toilet cover assembly. The right-handed and left-handed grooves may advantageously extend from substantially the same point at the end of the threaded pin.

#### Brief Description of the Drawings

**[0015]** The invention is explained in greater detail below with reference to the accompanying drawings, in which

Fig. 1 is a diagrammatic and partial sectional view of a portion of an embodiment of a toilet cover assembly according to the invention mounted on a toilet bowl,

Fig. 2 is a enlarged and partial sectional view of a threaded connection between a toilet seat and a first hinge member of the toilet cover assembly in Fig. 1,

Fig. 3 is a perspective exploded view of a hinge arrangement of the toilet cover assembly in Fig. 1, said assembly comprising a first seat hinge member, a first cover hinge member and another hinge member adapted to be secured to a toilet bowl, and

Fig. 4 is a perspective and enlarged view of the seat hinge member shown in the preceding Figs.

#### Best Modes for Carrying Out the Invention

**[0016]** The toilet cover assembly according to the invention illustrated in the drawings comprises a toilet seat 1 and a toilet cover 2 being interconnected at their rear-most portions by means of two interspaced hinge assemblies 3 of which only one is visible in the drawings. The

hinge assembly 3 is provided with an axis of rotation, which is horizontal in the mounted state of the toilet cover assembly on a toilet bowl 5. The seat 1 and the cover 2 may rotate about the axis of rotation between a lowered position and a raised position.

**[0017]** Each hinge assembly 3 comprises a seat hinge member 6 connected with the seat 1, a cover hinge member 7 connected with the cover 2 and a mounting member or bowl hinge member 8 adapted to be secured to the toilet bowl 5.

**[0018]** The seat hinge member 6 is provided with a substantially cylindrical hinge eye 9 and a curved projecting arm 10 formed integrally therewith. The arm 10 has an outer cylindrical surface 11 and passes into a projecting threaded pin 13 via a shoulder 12. The threaded pin 13 engages a corresponding threaded hole 14 in the rear edge of the seat. The threaded hole 14 is provided with a circular recess 15 adjacent the rear edge of the seat. Between the recess and the actual threaded hole 14 an abutment face 16 is formed. The shoulder 12 of the seat hinge member 6 abuts said abutment face 16 when the seat hinge member 6 is screwed into the threaded hole 14 of the seat 1.

**[0019]** The hinge eye 9 of the seat hinge member 6 is provided with a through-going bore 17 having a radially recessed area 18 being substantially semicircular in the present embodiment. A bridging member 19, which is narrow in axial and radial direction, extends as a secant through the bore 17 in the area between the bore and the radially recessed area 18. The bridging member is shown as a single continuous member. It may, however, be separated in its central portion (indicated by means of dotted lines in Fig. 4) and thus be formed of two aligned bridging member portions. Optionally the bridging member may be formed of a single bridging member portion extending from one side. In any event the shape and dimension of the bridging member have to enable the element to serve its purpose, which will be described in detail below.

**[0020]** The cover hinge member 7 comprises a cover hinge eye 20 and an arm 21 formed integrally therewith and at its outer end provided with a cylindrical surface 22 passing into a threaded pin 24 via a shoulder 23. The threaded pin 24 engages a threaded hole 25 in the rear edge of the cover 2. The threaded hole 25 opens into the rear edge of the cover via an abutment face 26. In the mounted position of the cover hinge member 7, the shoulder 23 abuts the abutment face 26. The hinge eye 20 of the cover hinge member 7 is provided with a bore 27 in form of a blind hole. The hinge members 6, 7 may be made of metal, eg by casting, or from plastics, eg ABS, POM or PA, by injection moulding. The seat 1 and the cover 2 are preferably made of plastics, eg. urea-formaldehyde resin (UF), by injection moulding or by compression moulding or transfer moulding.

**[0021]** As illustrated in Figs. 1 and 3, the bowl hinge member 8 comprises a circular base 28 and a post 29 extending upwardly and displaced in relation to the centre

of the base 28. The post 29 is bent 90° to form a hinge pin 30 having a diameter corresponding to the diameter of the bore 17 in the eye 9 of the seat hinge member 6 and to the diameter of the bore 27 in the eye 20 of the cover hinge member 7, respectively. The hinge pin 30 is provided with a circumferential recess 31 for receiving the bridging member 19 in the hinge eye 9 of the seat hinge member 6. By pushing a seat hinge member 6 made of plastics onto the hinge pin 30 the bridging member 19 thereof is caused to deflect in the direction towards the recessed area 18 of the bore 17 and subsequently to snap into the circumferential recess 31 of the hinge pin 30 when positioned directly opposite the recess 31. Both the recess 31 and the bridging member are preferably formed such that the application of a given axial force to the seat hinge member in relation to the hinge pin causes them to disengage. It should be noted in relation to the above arrangement of the seat hinge member 6 on the hinge pin 30 and the snap engagement of the bridging member with the recess that the described mounting arrangement may be used in general for positioning an eye hinge member on a shaft member. The mounting arrangement may thus also be used for eye hinge members connected to a toilet seat or a toilet cover in a manner different from the threaded connection described above. The characterising feature of this mounting principle is a plastic eye hinge member formed by injection moulding and having an integral bridging member, which is caused to snap-engage and optionally disengage a circumferential recess on a shaft member.

**[0022]** The base 28 of the bowl hinge member 8 is provided with a cavity 32 in which a bottom plate 33 having an oblong slit 34 is rotatably arranged. A head 35 of a screw 36 is received in the cavity of the base 28. The screw shank 37 extends through the slit 34 and is inserted through a hole 38 in the toilet bowl 5. The bowl hinge member 8 is secured to the toilet bowl 5 by means of a nut 39 and a washer 40 on the screw 36. A sleeve 41 arranged at the periphery of the base 28 extends downwardly to abut the upper face of the toilet bowl 5 in the mounted state of the bowl hinge member 8.

**[0023]** The threaded connection between the threaded pin 13 of the seat hinge member 6 and the threaded hole 14 of the seat 1, and the threaded connection between the threaded pin 24 and the threaded hole 25 of the cover will be described below.

**[0024]** The threaded pin 13 of the seat hinge member 6 and the threaded pin 24 of the cover hinge member 7 is each provided with a left-handed and a right-handed thread in form of a right-handed and a left-handed threaded groove 42,43 and 44,45, respectively. It should be noted that the threaded grooves of the threaded pins are arranged symmetrically opposite each other (confer Fig. 3), for which reason only one groove is visible in Figs. 1, 2 and 4. The threaded grooves 42-45 are provided with a coarse pitch exceeding the diameter of the threaded pins and preferably with a pitch causing the grooves to engage the threaded holes 14, 25, respectively, of the

seat 1 and the cover 2, respectively, when an axial force is applied to the threaded pin in relation to the threaded hole. The threaded grooves 42, 43 in the seat hinge member 6 and threaded grooves 44,45 in the cover hinge member 7 all extend substantially 90° starting from substantially the same point of the threaded pin 13, 24, respectively, of the seat hinge member 6 and the cover hinge member 7, respectively. Due to the oppositely turned threaded grooves the same cover hinge members and seat hinge members may be used for the two hinge assemblies. The drawings only show the right hinge assembly 3 when seen in the direction from the front edge of the seat or the cover towards the hinge members.

**[0025]** In the right hinge assembly 3 shown in the drawings the threaded hole 14 of the seat 1 and the threaded hole 25 of the cover 2 is each provided with a left-hand thread in form of a projecting ridge. The ridge 46 in the threaded hole 14 is indicated by means of dotted lines in Fig. 2.

**[0026]** In the left hinge assembly when seen in the direction from the front edge of the seat or the cover towards the hinge assemblies and which is not shown in the drawings, the threaded holes of the seat 1 and the cover 2, respectively, are provided with oppositely turned threads, ie with a right-handed projecting ridge. As a result the right-handed threaded grooves of the seat hinge member 6 and the cover hinge member 7 are made to engage these ridges. Due to the oppositely turned threaded connections of the right and left hinge assembly 3, the respective threaded connections are tightened, when the seat or the cover is subjected to load.

**[0027]** Finally it should be noted that the threaded connections between the hinge members 6, 7, respectively, and the seat 1 and the cover 2, respectively, are formed such that when the threaded pins 13,24 are driven into threaded holes 14,25, the shoulders 12, 23 are made to abut the abutment faces 16,26 just before the hinge eyes 9,20 of the hinge members 6,7 adopt their correct orientation corresponding to the axis of rotation 4. The correct orientation is only obtained when the hinge pins 30 of the bowl hinge member 8 are inserted into the bores 17, 27 of the seat hinge member 6 and the cover hinge member 7, respectively. As a result any slack in the hinge assembly is eliminated.

**[0028]** The described embodiments of the invention may be altered in many different ways without thereby deviating from the scope of the invention as defined in the attached claims. Thus, the threaded connections between the seat hinge members and the seat and between the cover hinge members and the cover may be formed of threaded pins projecting from the seat and the cover, respectively, and threaded holes in the corresponding seat hinge members and cover hinge members, respectively. Furthermore the threads in the threaded holes may be formed of helical grooves and the threads of threaded pins may be formed of corresponding ridges.

## Claims

1. Toilet cover assembly comprising a toilet seat (1) and/or a toilet cover (2) and at least one hinge assembly (3) for pivotally connecting the toilet seat and/or toilet cover with a toilet bowl (5) about a horizontal axis of rotation (4), said hinge assembly (3) comprising at least one first hinge member (6,7) secured to the rearmost end portion of the cover (2) or the seat (1) and at least one second hinge member (8) defining the axis of rotation jointly with the first hinge members (6,7) and being adapted to be connected with the toilet bowl (5), first hinge member (6,7) being connected to the seat or the cover by means of a screw connection comprising a projecting threaded pin (13,24) and a corresponding threaded hole (14,25),  
**characterised in that** the pitch of the threaded connection is at least equal to the diameter of the threaded connection.
 

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2. Toilet cover assembly according to claim 1, **characterised in that** the threaded connection has a pitch being at least two times the diameter of the threaded connection and preferably a pitch allowing the threaded pin (13,24) to be screwed into the threaded hole (14,25) merely by being subjected to an axial force in relation to the threaded hole.
 

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3. Toilet cover assembly according to claim 1 or 2, **characterised in that** the screw connection comprises a threaded pin (13,24) projecting from the first hinge member (6,7) and engaging a corresponding threaded hole (14,25) in the seat (1) or the cover (2).
 

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4. Toilet cover assembly according to one or more of the preceding claims, **characterised in that** the first hinge member (6,7) and the seat (1) or the cover (2) have abutment faces (12,16;23,26) orientating the first hinge member correctly in relation to the axis of rotation (4) at mutual abutment of said faces.
 

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5. Toilet cover assembly according to one or more of the preceding claims, **characterised in that** the thread of the threaded connection is formed such that a turning of the threaded pin (13,24) relative to the threaded hole (14,25) of less than or equal to 360°, preferably of less than or equal to 180°, and most preferably of less than or equal to 90°, is required for driving in the threaded pin (13,24).
 

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6. Toilet cover assembly according to one or more of the preceding claims, **characterised in that** the thread of the threaded pin (13, 24) is a helical groove (42, 43; 44, 45) and that the thread of the threaded hole (14, 25) is a corresponding projection (46).
 

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7. Toilet cover assembly according to one or more of
 

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the preceding claims and comprising two inter-spaced first hinge members (6,7), **characterised in that** the threaded connection of one of the first hinge members with the seat (1) or the cover (2) is right-handed and the threaded connection of the other first hinge member with the seat (1) or the cover (2) is left-handed.

8. Toilet cover assembly according to claim 7, **characterised in that** the right-handed and the left-handed threaded connections are arranged such in relation to the seat (1) or cover (2) that the threaded connections are tightened when the seat or the cover is subjected to load.
 

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9. Toilet cover assembly according to claim 7 or 8, **characterised in that** each of the first hinge members (6,7) and the seat (1) or the cover (2) have abutment faces (12,23; 16,26) engaging each other immediately before the first hinge members adopt their correct orientation when threaded connection is provided.
 

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10. Toilet cover assembly according to one or more of the claims 7 - 9, **characterised in that** the threaded connection of each of the first hinge members (6, 7) with the seat (1) or the cover (2) comprises a threaded pin (13, 24) having a first left-handed, helical groove (43,45) and a second right-handed, helical groove (42, 44), the two grooves preferably substantially extending over a maximum of 90°.
 

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## Patentansprüche

1. Toilettenabdeckungsanordnung, die einen Toilettensitz (1) und/oder eine Toilettenabdeckung (2) und wenigstens eine Scharnieranordnung (3) zum schwenkbaren Verbinden des Toilettensitzes und/oder der Toilettenabdeckung mit einer Toilettenschüssel (5) um eine horizontale Drehachse (4) umfasst, wobei die Scharnieranordnung (3) wenigstens ein erstes Scharnierelement (6, 7), das am hintersten Endabschnitt der Abdeckung (2) oder des Sitzes (1) befestigt ist, und wenigstens ein zweites Scharnierelement (8), das die Drehachse definiert und mit den ersten Scharnierelementen (6, 7) gelenkig verbunden ist und dazu ausgelegt ist, mit der Toilettenschüssel (5) verbunden zu werden, umfasst, wobei das erste Scharnierelement (6, 7) mit dem Sitz oder mit der Abdeckung mittels einer Schraubverbindung verbunden ist, die einen vorstehenden Gewindestift (13, 24) und ein entsprechendes Gewindeloch (14, 25) aufweist,  
**dadurch gekennzeichnet, dass** die Steigung der Gewindeverbindung wenigstens gleich dem Durchmesser der Gewindeverbindung ist.
 

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2. Toilettenabdeckungsanordnung nach Anspruch 1, **dadurch gekennzeichnet, dass** die Gewindeverbindung eine Steigung hat, die wenigstens gleich dem doppelten Durchmesser der Gewindeverbindung ist, und vorzugsweise eine Steigung hat, die ermöglicht, dass der Gewindestift (13, 24) in das Gewindeloch (14, 25) geschraubt wird, indem er lediglich einer axialen Kraft relativ zu dem Gewindeloch unterworfen wird.
3. Toilettenabdeckungsanordnung nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die Schraubverbindung einen Gewindestift (13, 24), der von dem ersten Scharnierelement (6, 7) vorsteht und mit einem entsprechenden Gewindeloch (14, 25) im Sitz (1) oder der Abdeckung in Eingriff ist, umfasst.
4. Toilettenabdeckungsanordnung nach einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das erste Scharnierelement (6, 7) und der Sitz (1) oder die Abdeckung (2) Anschlagflächen (12, 16; 23, 26) besitzen, die das erste Scharnierelement in Bezug auf die Drehachse (4) bei einem gegenseitigen Anschlag der Flächen korrekt ausrichten.
5. Toilettenabdeckungsanordnung nach einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Gewinde der Schraubverbindung in der Weise ausgebildet ist, dass eine Drehung des Gewindestifts (13, 14) in Bezug auf das Gewindeloch (14, 25), die kleiner oder gleich 360°, vorzugsweise kleiner oder gleich 180° und am stärksten bevorzugt kleiner oder gleich 90° ist, erforderlich ist, um den Gewindestift (13, 24) einzutreiben.
6. Toilettenabdeckungsanordnung nach einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Gewinde des Gewindestifts (13, 24) eine schraubenlinienförmige Nut (42, 43; 44, 45) ist und dass das Gewinde des Gewindelochs (14, 25) ein entsprechender Vorsprung (46) ist.
7. Toilettenabdeckungsanordnung nach einem oder mehreren der vorhergehenden Ansprüche, die zwei voneinander beabstandete erste Scharnierelemente (6, 7) umfasst, **dadurch gekennzeichnet, dass** die Schraubverbindung eines der ersten Scharnierelemente mit dem Sitz (1) oder der Abdeckung (2) ein Rechtsgewinde aufweist und die Schraubverbindung des anderen ersten Scharnierelements mit dem Sitz (1) oder der Abdeckung (2) ein Linksgewinde aufweist.
8. Toilettenabdeckungsanordnung nach Anspruch 7, **dadurch gekennzeichnet, dass** die Gewindever-

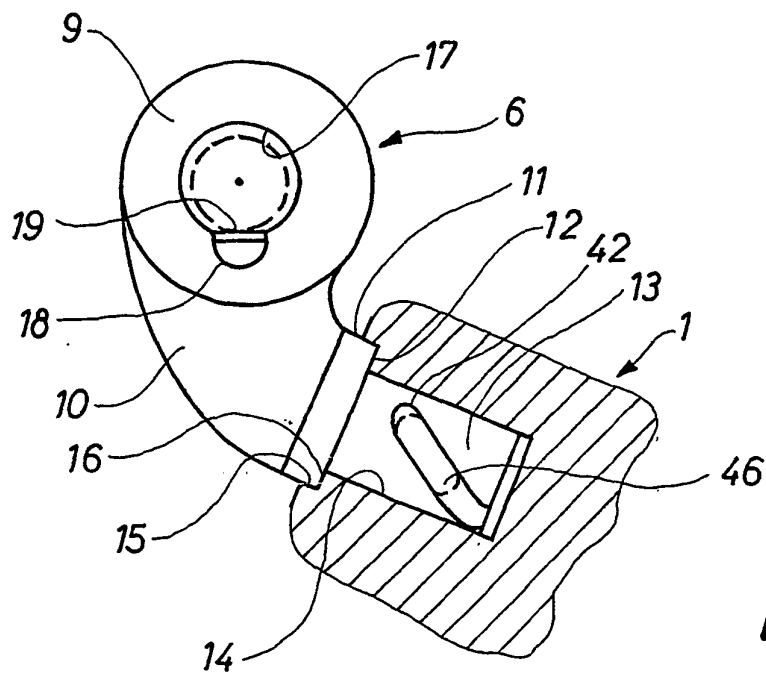
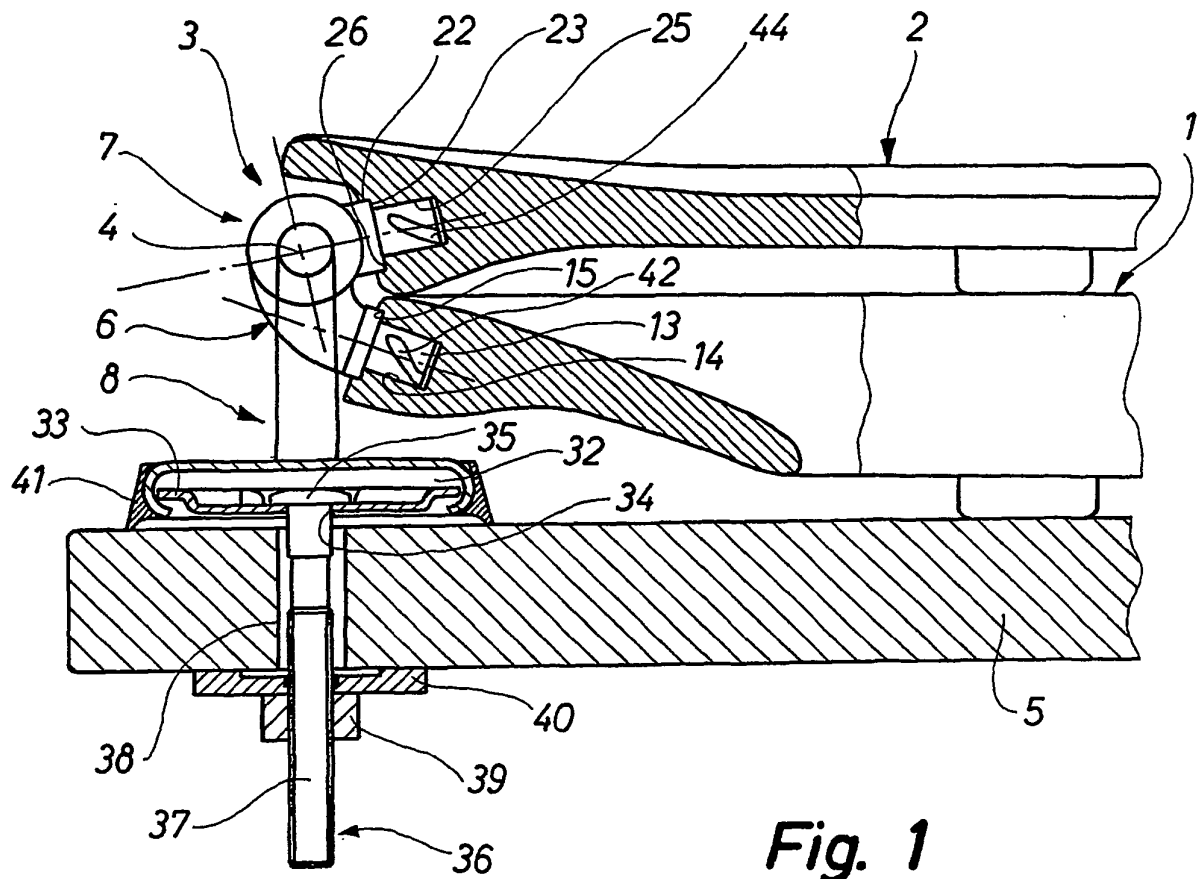
bindungen mit Rechtsgewinde bzw. mit Linksgewinde in Beziehung zu dem Sitz (1) und der Abdeckung (2) in der Weise angeordnet sind, dass die Schraubverbindungen angezogen werden, wenn der Sitz oder die Abdeckung einer Last unterworfen wird.

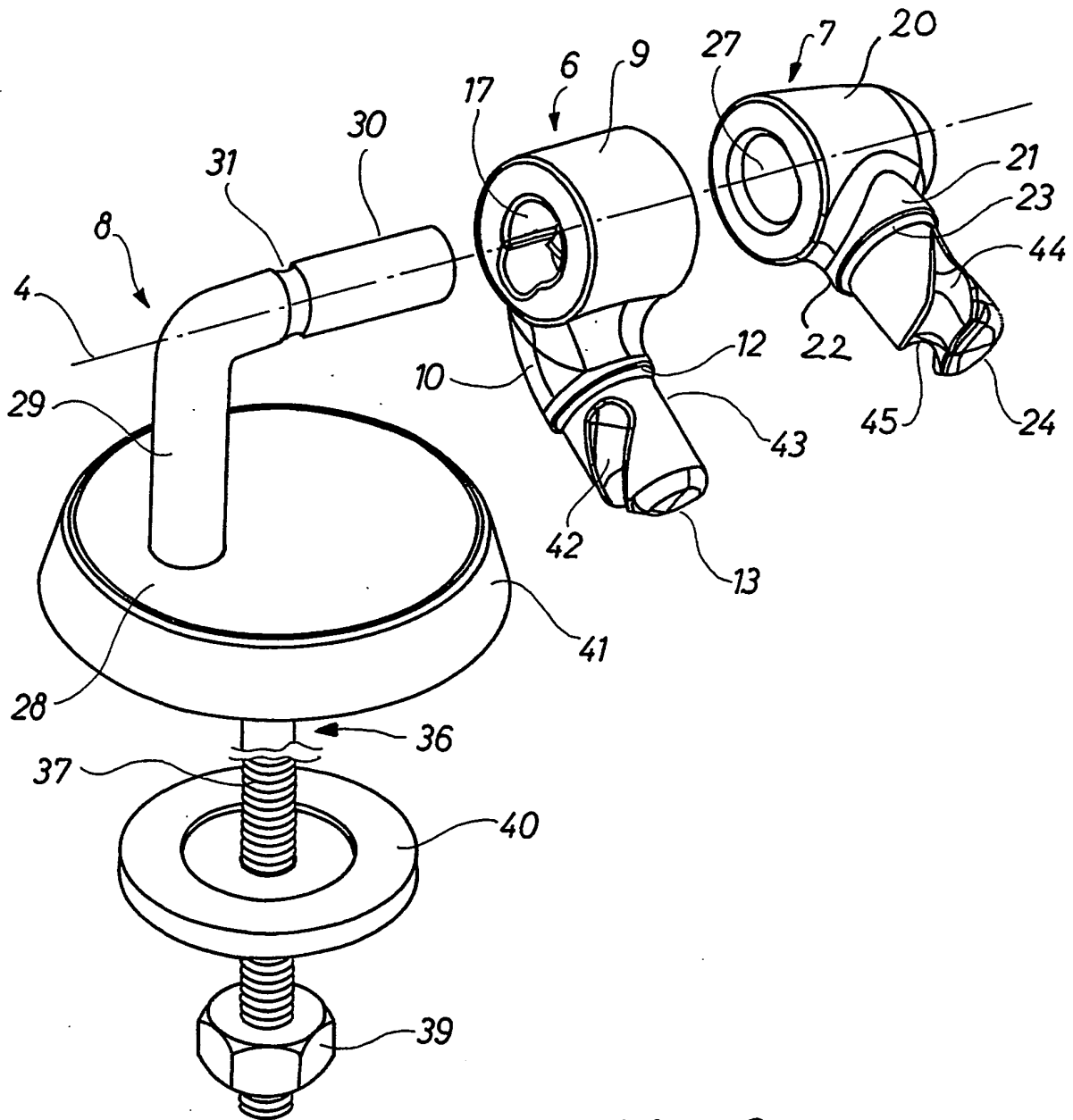
9. Toilettenabdeckungsanordnung nach Anspruch 7 oder 8, **dadurch gekennzeichnet, dass** jedes der ersten Scharnierelemente (6, 7) und der Sitz (1) oder die Abdeckung (2) Anschlagflächen (12, 13; 16, 27) besitzen, die miteinander in Eingriff gelangen, direkt bevor die ersten Scharnierelemente ihre korrekten Orientierung einnehmen, wenn die Schraubverbindung geschaffen wird.
10. Toilettenabdeckungsanordnung nach einem oder mehreren der Ansprüche 7-9, **dadurch gekennzeichnet, dass** die Schraubverbindung jedes der ersten Scharnierelemente (6, 7) mit dem Sitz (1) oder der Abdeckung (2) einen Gewindestift (13, 24) mit einer ersten schraubenlinienförmigen Linksgewindenut (23, 24) und einer zweiten schraubenlinienförmigen Rechtsgewindenut (42, 44) besitzt, wobei sich die zwei Nuten vorzugsweise im Wesentlichen über höchstens 90° erstrecken.

#### Revendications

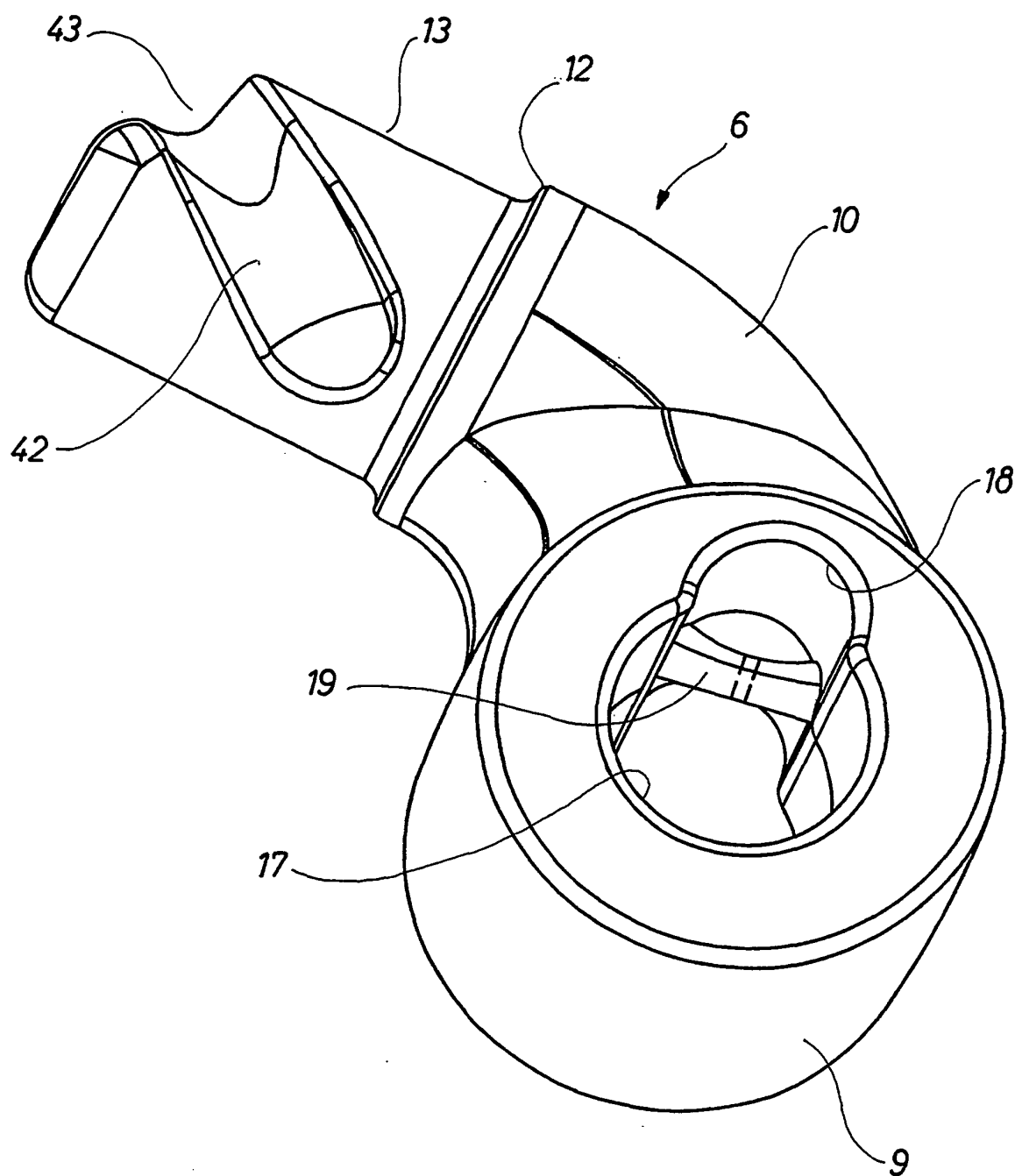
1. Dispositif de couvercle de toilettes comprenant un siège de toilettes (1) et/ou un couvercle de toilettes (2) et au moins un dispositif de charnière (3) pour la connexion à pivot du siège de toilette et/ou couvercle de toilette à une cuvette de toilette (5) autour d'un axe de rotation horizontal (4), ledit dispositif de charnière (3) comportant au moins un premier membre de charnière (6, 7) fixé à la partie arrière du couvercle (2) ou du siège (1) et au moins un deuxième membre de charnière (8) définissant l'axe de rotation conjointement avec les premiers membres de charnière (6, 7) et étant adapté à être lié à la cuvette de toilette (5), le premier membre de charnière (6, 7) étant lié au siège ou au couvercle au moyen d'une connexion à vis comportant une goupille saillante avec filetage (13, 24) et un trou taraudé correspondant (14, 25), **caractérisé en ce que** le pas de la connexion filetée est au moins égal au diamètre de la connexion filetée.
2. Dispositif de couvercle de toilettes selon la revendication 1, **caractérisé en ce que** la connexion filetée comporte un pas étant au moins deux fois le diamètre de la connexion filetée et de préférence un pas permettant la goupille avec filetage (13, 24) d'être vissée dans le trou taraudé (14, 25) par le seul fait d'être soumis à une force axiale par rapport au trou taraudé.

3. Dispositif de couvercle de toilettes selon la revendication 1 ou 2, **caractérisé en ce que** la connexion à vis comporte une goupille avec filetage (13, 24) en saillie du premier membre de charnière (6, 7) et engrenant un trou taraudé correspondant (14, 25) dans le siège (1) ou le couvercle (2). 5
4. Dispositif de couvercle de toilettes selon une ou plusieurs des revendications précédentes, **caractérisé en ce que** le premier membre de charnière (6, 7) et le siège (1) ou le couvercle (2) ont des surfaces d'appui (12,16 ;23,26) acheminant le premier membre de charnière correctement par rapport à l'axe de rotation (4) par butée mutuelle desdites surfaces. 10
5. Dispositif de couvercle de toilettes selon une ou plusieurs des revendications précédentes, **caractérisé en ce que** le filet de la connexion filetée est formé de sorte qu'une rotation de la goupille avec filetage (13, 24) par rapport au trou taraudé (14, 25) de moins de ou égal à 360°, de préférence de moins de ou égal à 180° et spécialement de moins de ou égal à 90°, est requise pour le vissage de la goupille avec filetage (13, 24). 15
6. Dispositif de couvercle de toilettes selon une ou plusieurs des revendications précédentes, **caractérisé en ce que** le filet de la goupille filetée (13, 24) est une rainure hélicoïdale (42, 43 ; 44, 45) et que le filet du trou taraudé (14, 25) est une saillie correspondante (46). 20
7. Dispositif de couvercle de toilettes selon une ou plusieurs des revendications précédentes et comportant deux premiers membres de charnière (6, 7) espacés, **caractérisé en ce que** la connexion filetée de l'un des premiers membres de charnière avec le siège (1) ou le couvercle (2) est filetée à droite et la connexion filetée de l'autre des premiers membres de charnière avec le siège (1) ou le couvercle (2) est filetée à gauche. 25
8. Dispositif de couvercle de toilettes selon la revendication 7, **caractérisé en ce que** les connexions filetées à droite et à gauche sont arrangées par rapport au siège (1) ou au couvercle (2) de telle sorte que les connexions filetées sont serrées lorsque le siège ou le couvercle est soumis à une charge. 30
9. Dispositif de couvercle de toilettes selon la revendication 7 ou 8, **caractérisé en ce que** chacun des premiers membres de charnière (6, 7) et le siège (1) ou le couvercle (2) a des surfaces d'appui (12,23 ; 16, 26) engrenant l'un dans l'autre immédiatement avant que les premiers membres de charnière adoptent leur orientation correcte lorsqu'une connexion filetée est prévue. 35
10. Dispositif de couvercle de toilettes selon l'une ou plusieurs des revendication 7-9, **caractérisé en ce que** la connexion filetée de chacun des premiers membres de charnière (6, 7) avec le siège (1) ou le couvercle (2) comprend une goupille filetée (13, 24) comportant une première rainure hélicoïdale à gauche (43, 45) et une deuxième rainure hélicoïdale à droite (42, 44), les deux rainures s'étendant essentiellement de préférence sur 90 °au maximum. 40





**Fig. 3**



**Fig. 4**

**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

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