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(54) **Support structure for a toilet cover unit**

(57) A support structure (1) for a toilet cover unit, comprises an attachment base (2) for attachment to a bowl part (8) of a toilet; a hinge mechanism (3), wherein the attachment base (2) and the hinge mechanism (3)

are formed as separate pieces; and a fastener (4) for fastening the hinge mechanism (3) to the attachment base (2). The hinge mechanism (3) presents a through hole (18), through which the fastener (4) is insertable to engage the attachment base (2).

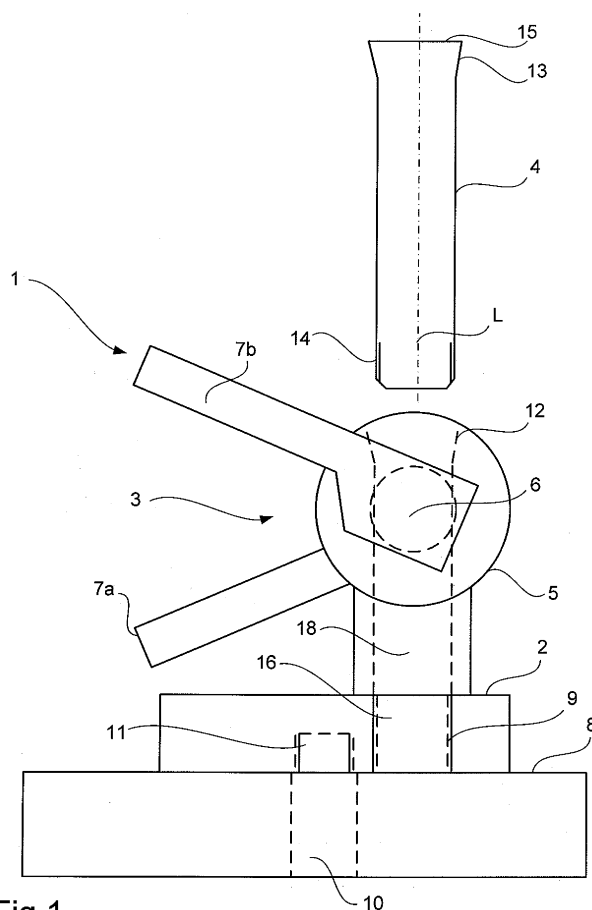


Fig 1

Description

Technical Field

[0001] The present disclosure relates to a hinged support structure for a toilet cover unit, to a toilet cover unit comprising such a support structure and to a toilet comprising such a toilet cover unit.

Background

[0002] A known support structure comprises an attachment base for attachment to a bowl part of a toilet, a separate hinge mechanism, and a fastener for fastening the hinge mechanism to the attachment base. The hinge mechanism has a threaded blind hole, and the attachment base has a through hole, through which the fastener is inserted to engage the blind hole. Thus, the head of the fastener will be positioned at the underside of the attachment base such that it is concealed by the attachment base, and extend upwardly.

[0003] Other types of toilet seat support structures are known from e.g. US 6,393,624 B1, US 5,918,322 and US 6,226,805 B1.

[0004] In order to compensate for manufacturing tolerances of the toilet bowl, for different toilet bowl types and for different lid types, it is desirable to enable the position of the hinge mechanism to be adjusted relative to the toilet bowl. In particular, it is desirable to enable the hinge mechanism to be easily and quickly adjusted.

Summary

[0005] It is a general object of the present disclosure to provide an improved or alternative support structure for a toilet cover unit.

[0006] It is a specific object to provide a support structure for a toilet cover unit, which can be readily adjusted.

[0007] The invention is defined by the appended independent claims. Embodiments are set forth in the dependent claims and in the following description and drawings.

[0008] According to a first aspect, there is provided a support structure for a toilet cover unit, comprising an attachment base for attachment to a bowl part of a toilet; a hinge mechanism, wherein the attachment base and the hinge mechanism are formed as separate pieces; and a fastener for fastening the hinge mechanism to the attachment base. The hinge mechanism presents a through hole, through which the fastener is insertable to engage the attachment base.

[0009] Hence, the fastener may be inserted and operated without disassembling the attachment base from the bowl part of the toilet.

[0010] The fastener and the hinge mechanism may present a respective substantially conical surface, which are arranged to interact with each other.

[0011] Such conical surfaces provide a firm connection

and may be used to eliminate play. They also provide improved tolerances as compared to a normal screw head.

[0012] In different embodiments, the conical surfaces may present an angle relative to a length direction of the fastener, which is less than or equal to 30 degrees, less than or equal to 20 degrees, less than or equal to 10 degrees, less than or equal to 5 degrees or less than or equal to 2.5 degrees.

[0013] The conical surface of the fastener may be provided at an upper portion of the fastener.

[0014] The conical surface of the hinge mechanism may be provided at an upper portion of the hinge mechanism.

[0015] The hinge mechanism may comprise a main body part, arranged to extend substantially vertically from the attachment base.

[0016] A hinge axis may extend substantially horizontally from the main body part.

[0017] A first mounting member may be pivotable relative to the attachment base.

[0018] A second mounting member may be pivotable relative to the attachment base.

[0019] The mounting members may be arranged on opposite sides of a main body part of the hinge mechanism.

[0020] The fastener may present a threaded portion at a lowermost portion thereof.

[0021] The attachment base may present a threaded recess for interaction with the fastener.

[0022] According to a second aspect, there is provided a toilet cover unit, comprising a support structure as described above.

[0023] The toilet cover unit may comprise two support structures, arranged such that their respective hinge mechanisms are substantially aligned.

[0024] The toilet cover unit may comprise a toilet seat, which is attached to a first mounting member of the support structure.

[0025] The toilet cover unit may comprise a toilet lid, which is attached to a second mounting member of the support structure.

[0026] According to a third aspect, there is provided a toilet comprising a toilet cover unit as described above.

[0027] According to a fourth aspect, there is provided a method for attaching a hinge mechanism to an attachment base for attachment to a bowl part of a toilet, the method comprising arranging a fastener through a through hole of the hinge mechanism, such that the fastener engages the attachment base.

[0028] According to a fifth aspect, there is provided a method for adjusting a support structure of a toilet cover unit, the method comprising releasing a fastener, which through a through hole of a hinge mechanism engages an attachment base, adjusting a rotational position of the hinge mechanism relative to the attachment base, and tightening the fastener.

[0029] The method may be performed while the attach-

ment base is fastened to a bowl part of a toilet.

Brief Description of the Drawings

[0030]

Fig. 1 is a schematic cross sectional side view of an embodiment of a support structure 1.

Fig. 2 is a schematic top view of the support structure 1 of Fig. 1.

Description of Embodiments

[0031] Referring to Fig. 1, there is illustrated an embodiment of a support structure for a toilet cover unit (not shown). The support structure comprises an attachment base 2 for attachment to a bowl part 8 of a toilet (not shown). The attachment base 2 may be attached to the bowl part of the toilet in a conventional manner, such as by a bolt (not shown) being introduced from below the bowl part (8) through a through hole 10 thereof and engaging a threaded recess 11 of the attachment base 2. Specifically, the attachment base may have one, two or more such threaded recesses, in order to allow it to be mounted in different positions relative to the through hole 10.

[0032] The support structure further comprises a hinge mechanism 2, which is formed as a separate piece from the attachment base 2, and which may be designed in different manners. In the illustrated example, the hinge mechanism 3 comprises a main body 5, which extends vertically from the attachment base, and which has a through hole 18, into which a fastener 4 may be introduced to engage the attachment base 2, in order to attach the hinge mechanism 3 to the attachment base 2.

[0033] The hinge mechanism may further comprise an axle 6, on which one or more mounting members 7a, 7b may be pivotally arranged about an axis A (Fig. 2). The axle 6 may extend substantially horizontally, when the support structure is in an assembled state on a toilet. The axle may be provided with bearings and/or lubricant to enable the mounting members 7a, 7b to pivot smoothly.

[0034] The mounting members may be arranged such that a toilet lid and/or a toilet seat (not shown) can be fastened thereto, such that the toilet lid and/or toilet seat becomes pivotable relative to the toilet bowl (not shown). In the illustrated embodiment, the mounting members 7a, 7b have through holes 17 (Fig. 2) for receiving e.g. bolts, screws or rivets (not shown) to attach a seat and/or lid thereto.

[0035] In the illustrated embodiment, the mounting members 7a, 7b are arranged on opposite sides of the main body 5 of the hinge mechanism. Furthermore, the mounting members 7a, 7b may be angled or bent upwardly and downwardly, respectively, so as to conform to the anticipated position of a toilet seat and a toilet lid respectively.

[0036] A fastener 4 is provided for fastening the hinge

mechanism 3 to the attachment base 2. The fastener may be an elongate component, having a threaded portion 14 at a lowermost portion thereof for engagement with a recess or through hole 16 of the attachment base 2, which is provided with corresponding threads 9.

[0037] An uppermost portion of the fastener may be provided with a substantially conical surface 13 designed for interaction with a correspondingly conical surface 12 of the hinge mechanism.

[0038] The conical surfaces 12, 13 may present an angle relative to a length direction L of the fastener 4, which is less than or equal to 30 degrees, less than or equal to 20 degrees, less than or equal to 10 degrees, less than or equal to 5 degrees or less than or equal to 2.5 degrees. The conicity of the surfaces 12, 13 need not be linear, but the surfaces may be shaped with a slight radius instead, as seen in a plane parallel with the length direction L of the fastener.

[0039] An upwardly facing portion 15 of the fastener may be provided with gripping means (see e.g. Fig. 2) to enable it to be manipulated by means of a screwdriver or a similar device.

[0040] The uppermost part of the fastener 4 may be shaped so as to conform to the shape of the main body 5 of the hinge mechanism. For example, it may have the shape of a partial sphere, it may be substantially flat, etc.

[0041] In addition, the fastener may have substantially the same diameter throughout its length, i.e. it does not need to have a distinct head like conventional screws or bolts.

[0042] The support structure may be arranged as a part of a toilet cover unit, which is to be installed on a toilet, e.g. on a bowl part thereof. Such a toilet cover unit may comprise two support structures 1, arranged such that their respective hinge mechanisms 3 are substantially aligned. Furthermore, such a toilet cover unit may comprise a toilet seat, which is attached to a first mounting member 7a of the support structure 1, and/or a toilet lid, which is attached to a second mounting member 7b of the support structure 1.

[0043] The toilet cover unit may form part of a toilet.

[0044] According to the present disclosure, the hinge mechanism may be attached to the attachment base 2 by arranging a fastener 4 through a through hole 18 of the hinge mechanism, such that the fastener 4 engages the attachment base 2.

[0045] The fastener 4 may threadingly engage the attachment base 2 to such an extent that the conical surfaces 12, 13 come into contact and provide a firm interconnection between the hinge mechanism 3 and the attachment base 2.

[0046] According to the present disclosure, a support structure for a toilet cover unit may be adjusted by releasing the fastener 4, which through the through hole of a hinge mechanism 3 engages the attachment base 2, adjusting a rotational position of the hinge mechanism 3 relative to the attachment base 2, and subsequently tightening the fastener 4. The method may be performed while

the attachment base is fastened to a bowl part 9 of a toilet, and thus the need for dismounting the attachment base from the bowl part of the toilet has been eliminated.

Claims

1. A support structure (1) for a toilet cover unit, comprising:

an attachment base (2) for attachment to a bowl part (8) of a toilet;
a hinge mechanism (3),
wherein the attachment base (2) and the hinge mechanism (3) are formed as separate pieces; and
a fastener (4) for fastening the hinge mechanism (3) to the attachment base (2),

characterised in that

the hinge mechanism (3) presents a through hole (18), through which the fastener (4) is insertable to engage the attachment base (2).

2. The support structure as claimed in claim 1, wherein the fastener (4) and the hinge mechanism (3) present a respective substantially conical surface (12, 13), which are arranged to interact with each other.
3. The support mechanism as claimed in claim 2, wherein the conical surfaces present an angle relative to a length direction of the fastener (4), which is less than or equal to 30 degrees, less than or equal to 20 degrees, less than or equal to 10 degrees, less than or equal to 5 degrees or less than or equal to 2.5 degrees.
4. The support structure as claimed in claim 2 or 3, wherein the conical surface (13) of the fastener (4) is provided at an upper portion of the fastener (4).
5. The support structure as claimed in any one of claims 2-4, wherein the conical surface (12) of the hinge mechanism (3) is provided at an upper portion of the hinge mechanism (3).
6. The support structure as claimed in any one of the preceding claims, wherein the hinge mechanism (3) comprises a main body part (5), arranged to extend substantially vertically from the attachment base (2).
7. The support structure as claimed in claim 6, wherein a hinge axis (A) extends substantially horizontally from the main body part (5).
8. The support structure as claimed in any one of the preceding claims, wherein a first mounting member (7a) is pivotable relative to the attachment base (2).

9. The support structure as claimed in claim 8, wherein a second mounting member (7b) is pivotable relative to the attachment base (2).

10. The support structure as claimed in claim 9, wherein the mounting members (7a, 7b) are arranged on opposite sides of a main body part (5) of the hinge mechanism (3).

11. The support structure as claimed in any one of the preceding claims, wherein the fastener (4) presents a threaded portion at a lowermost portion thereof.

12. The support structure as claimed in any one of the preceding claims, wherein the attachment base (2) presents a threaded recess (16) for interaction with the fastener (4).

13. A toilet cover unit, comprising a support structure (1) as claimed in any one of the preceding claims.

14. The toilet cover unit as claimed in claim 13, comprising two support structures (1), arranged such that their respective hinge mechanisms are substantially aligned.

15. The toilet cover unit as claimed in claim 13 or 14, comprising a toilet seat, which is attached to a first mounting member (7a) of the support structure (1).

16. The toilet cover unit as claimed in any one of claims 13-15, comprising a toilet lid, which is attached to a second mounting member (7b) of the support structure (1).

17. A toilet comprising a toilet cover unit as claimed in any one of claims 13-16.

18. A method for attaching a hinge mechanism (3) to an attachment base (2) for attachment to a bowl part (8) of a toilet, the method comprising arranging a fastener (4) through a through hole (18) of the hinge mechanism, such that the fastener (4) engages the attachment base (2).

19. A method for adjusting a support structure of a toilet cover unit, the method comprising:

releasing a fastener (4), which through a through hole of a hinge mechanism (3) engages an attachment base (2),
adjusting a rotational position of the hinge mechanism (3) relative to the attachment base (2), and
tightening the fastener (4).

20. The method as claimed in claim 19, wherein the method is performed while the attachment base is

fastened to a bowl part (9) of a toilet.

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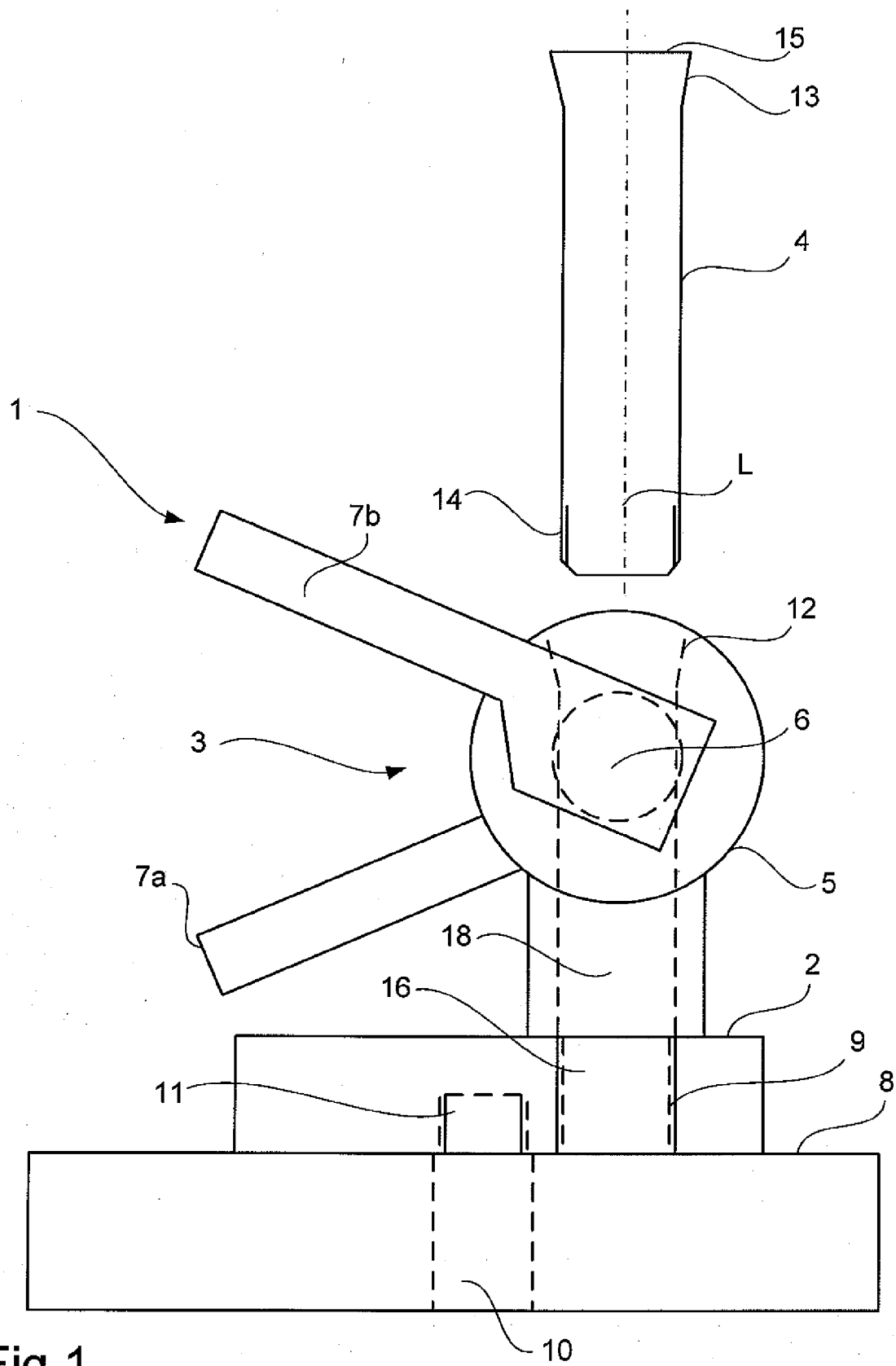


Fig 1

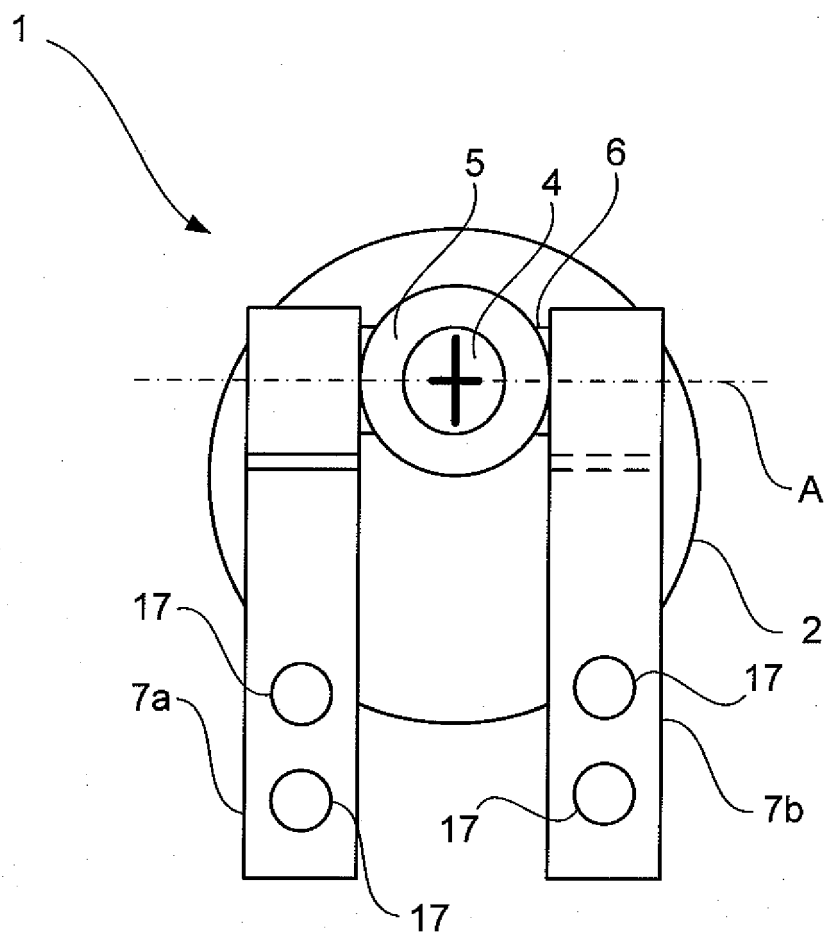


Fig 2



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 08 15 0148

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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 2 June 2008	Examiner Porwoll, Hubert
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 08 15 0148

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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