

(19)



(11)

EP 3 360 450 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
15.08.2018 Bulletin 2018/33

(51) Int Cl.:
A47K 13/26 (2006.01)

(21) Application number: **18155679.6**

(22) Date of filing: **08.02.2018**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**
Designated Extension States:
BA ME
Designated Validation States:
MA MD TN

(71) Applicant: **Sipex Cavagna S.P.A.**
25065 Lumezzane (IT)

(72) Inventor: **CAVAGNA, Livio Francesco Eugenio**
25065 LUMEZZANE BS (IT)

(74) Representative: **Modiano, Micaela Nadia et al**
Modiano & Partners
Via Meravigli, 16
20123 Milano (IT)

(30) Priority: **10.02.2017 IT 201700014760**

(54) **COUPLING DEVICE, PARTICULARLY FOR FIXING A SEAT ASSEMBLY TO A SANITARY FIXTURE**

(57) A coupling device (1), particularly for fixing a seat assembly to a sanitary fixture, comprising a pivot (2) which can be fixed to a sanitary fixture (3) and is provided with a head (4) adapted to accommodate in a seat

(5) of a transverse pivot (6) which forms an element for pivoting between a lid (7) and a ring (8) of the seat assembly, the seat (5) being constituted by a through hole (5).

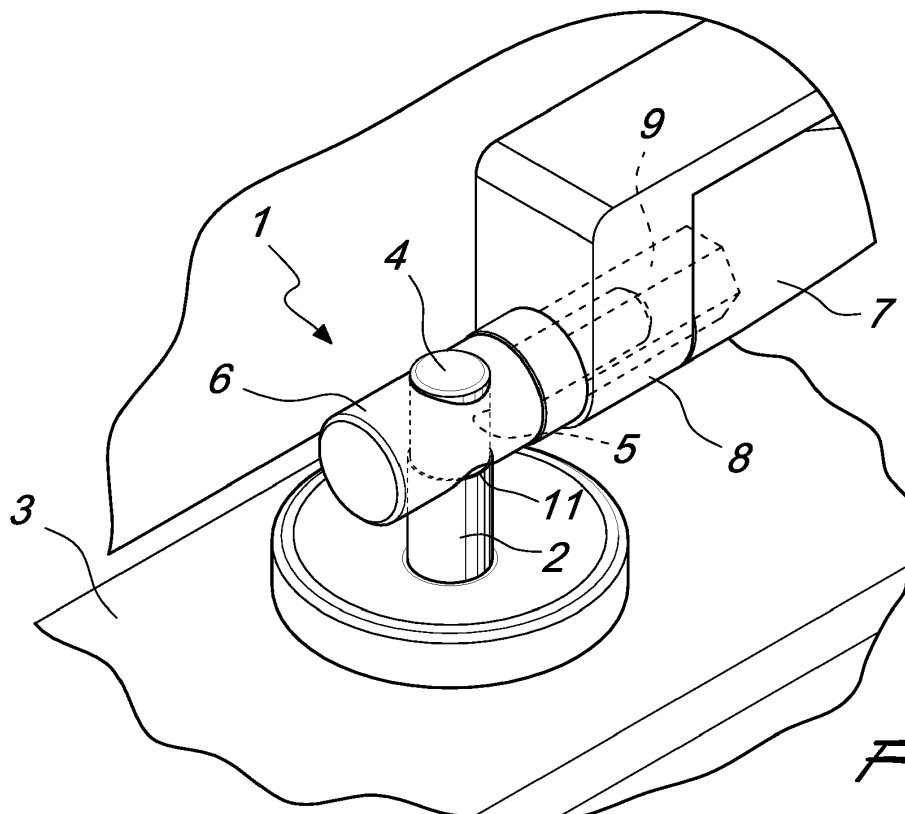


Fig. 2

EP 3 360 450 A1

Description

[0001] The present invention relates to a coupling device, particularly for fixing the seat assembly to a sanitary fixture. More particularly, the invention relates to a coupling device, particularly for fixing the seat assembly to a toilet.

[0002] As is known, the seat assembly is fixed to a toilet normally by using pivoting elements which connect the ring or seat and the lid of the seat assembly, which are connected to threaded stems which are inserted in holes provided in the toilet and are fixed by means of a wing nut and in most cases are difficult to actuate.

[0003] Although this embodiment is normally used, it has the drawback that it does not allow easy removal of the seat assembly of the toilet and is not always able to allow stable fixing.

[0004] EP0853916 has introduced a new solution, which allows to connect a pin with a shaped head to the toilet, with which a slider engages with which the seat assembly pivoting element is associated, allowing to obtain a quick and safe coupling without having to use tools of any kind.

[0005] Although this solution has proved itself valid in many respects, it too can be improved, especially as regards the tightening force that can be applied to connect the pin.

[0006] EP1800585 describes a coupling solution which comprises a pin which can be fixed to a toilet provided with a shaped head which can be accommodated detachably in a seat of a transverse pivot which forms the element for pivoting between the lid and the ring of the seat assembly.

[0007] This document provides for detachable means for fixing the transverse pivot to the pin, which are constituted by screw means accommodated with threaded seats formed in the transverse pivot and which can translate substantially at right angles to the pin. There are also extraction prevention means in order to ensure the disengagement of the screw means from the threaded seat.

[0008] The solution described above is certainly effective, but it too can be improved, especially as regards the simplicity of the coupling device.

[0009] The aim of the present invention is to provide a coupling device, particularly for fixing the seat assembly to a sanitary fixture, in which the coupling device is extremely simplified with respect to the coupling devices of the background art.

[0010] Within this aim, an object of the present invention is to provide a coupling device for fixing the seat assembly to a sanitary fixture that does not require tools of any kind both for coupling and for uncoupling the seat assembly with respect to said sanitary fixture.

[0011] A still further object of the present invention is to provide a coupling device particularly for fixing the seat assembly to a sanitary fixture that is highly reliable, relatively simple to provide and at competitive costs.

[0012] This aim, as well as these and other objects

which will become better apparent hereinafter, are achieved by a coupling device, particularly for fixing a seat assembly to a sanitary fixture, comprising a pivot which can be fixed to a sanitary fixture and is provided with a head adapted to accommodate in a seat of a transverse pivot which forms an element for pivoting between a lid and a ring of said seat assembly, characterized in that said seat is constituted by a through hole.

[0013] Further characteristics and advantages of the invention will become better apparent from the description of preferred but not exclusive embodiments of the device according to the present invention, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is an exploded perspective view of the coupling device according to the invention, applied to a sanitary fixture;

Figure 2 is a perspective view of the coupling device according to the present invention;

Figure 3 is a longitudinally sectional elevation view of the coupling device according to the present invention, shown in the uncoupled condition;

Figure 4 is a longitudinally sectional elevation view of the coupling device according to the invention, shown in the coupled condition;

Figure 5 is an exploded perspective view of the coupling device according to the invention, according to a second embodiment thereof, applied to a sanitary fixture;

Figure 6 is a longitudinally sectional elevation view of the coupling device according to the invention shown in Figure 5, shown in the coupled condition.

[0014] With reference to the figures, the coupling device according to the invention, generally designated by the reference numeral 1, comprises a pivot 2 which can be fixed to a sanitary fixture 3 and is provided with a head 4 that can be accommodated in a seat 5 of a transverse pivot 6 which forms the element for pivoting between a lid 7 and a ring 8 of the seat assembly of the toilet.

[0015] Conveniently, the seat 5 is constituted by a through hole, which thus can be fitted over the pivot 2.

[0016] The coupling between the pivot 2 and the hole 5 thus allows to keep the seat assembly coupled to the sanitary fixture 3.

[0017] Advantageously, once coupling has been performed, the head 4 of the pivot 2 can protrude from the seat 5.

[0018] The transverse pivot 6 in turn engages in a bushing 9, which is accommodated in a seat 10 formed jointly in the lid 7 and in the ring 8.

[0019] Conveniently, the pivot 2 has a circumferential protrusion 11 (or an enlargement in diameter) adapted to allow the resting of the transverse pivot 6 when the pivot 2 is coupled within the through hole 5 of the transverse pivot 6.

[0020] The disengagement of the seat assembly from

the sanitary fixture 3 can occur only if the seat assembly is lifted perfectly vertically, a situation which cannot occur neither during use, since the user is sitting on said seat assembly and therefore the weight of the user prevents disengagement, nor when the ring 8 is opened, since in order to remove it it would be necessary to make the pivot 2 follow a perfectly rectilinear path vertically within the hole 5, since a lifting in an oblique position or on only one side would not allow to slide the seat assembly off the pivot 2, which is fixed to the sanitary fixture 3.

[0021] Moreover, the fact of providing a pair of pivots 2 paired with the sanitary fixture 3 makes extraction of the seat assembly from the sanitary fixture 3 even more difficult if said seat assembly is not lifted perfectly vertically.

[0022] Figures 5 and 6 are views of a second embodiment of the coupling device according to the invention, wherein the pivot 2 is provided with at least one groove 15 adapted to accommodate a gasket, for example of the O-Ring® type 16.

[0023] As an alternative, not shown in the figures, the through hole 5 can be provided with at least one groove adapted to accommodate an O-Ring®.

[0024] The solution proposed above allows to avoid any screw means, threaded seat and in any case types of complex coupling, since it merely provides a pivot or pin which can be fixed to the sanitary fixture, which is already normally present in sanitary fixtures of the known type, and a transverse pivot with a through hole.

[0025] In this manner, the absence of screws, plugs or grubs and therefore the lack of use of tools of any kind allows extremely quick coupling and uncoupling without the user having to act with his hands to screw or unscrew anything.

[0026] The coupling device according to the invention is therefore particularly easy to use and manufacture, since all the component elements of the devices of the known type have been eliminated, leaving simply a pin by providing a transverse pivot with a through hole.

[0027] In practice it has been found that the coupling device according to the present invention achieves fully the intended aim and objects, since it allows the quick coupling without tools of any kind of a seat assembly to a corresponding sanitary fixture.

[0028] The device thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0029] Thus, for example, the head 4 of the pivot 2 can have any kind of transverse cross-section.

[0030] All the details may furthermore be replaced with other technically equivalent elements.

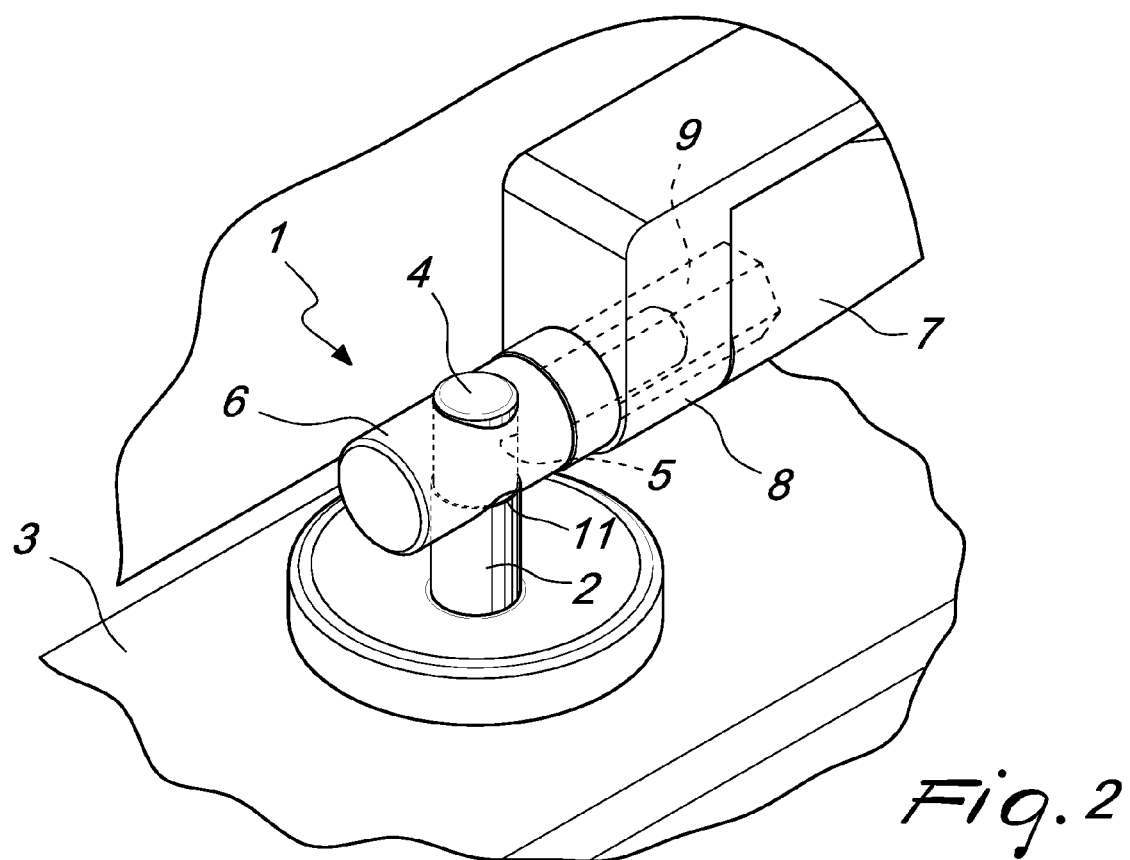
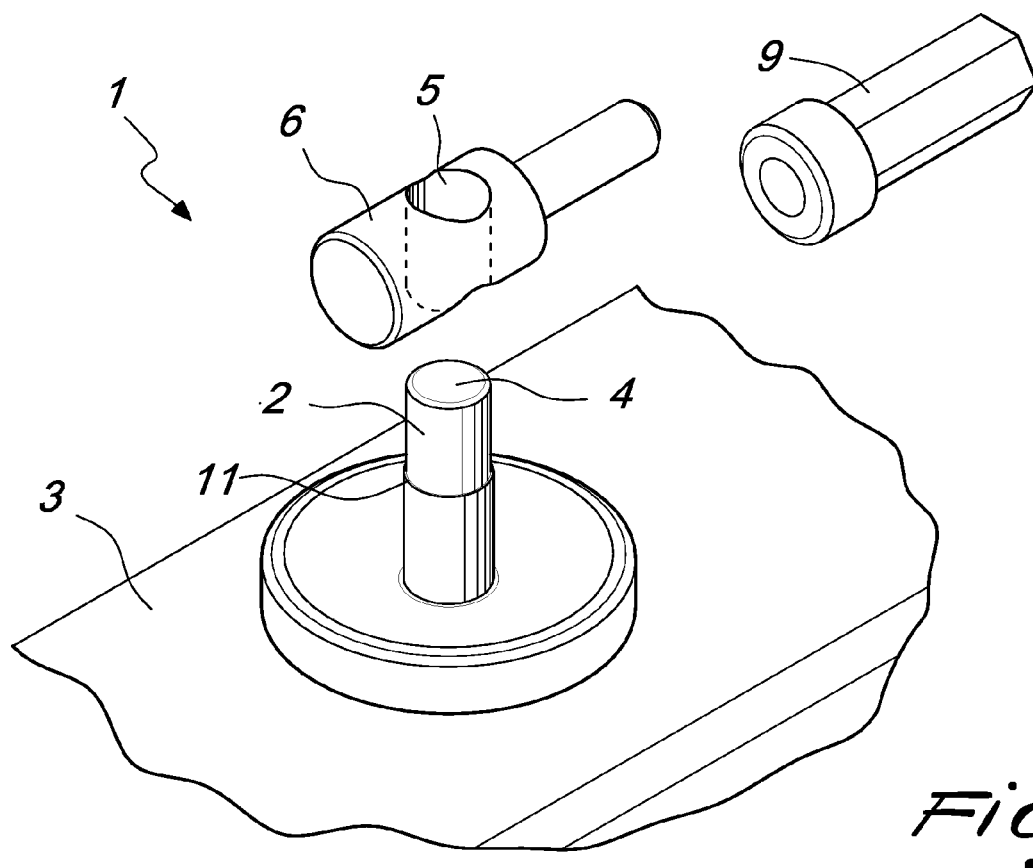
[0031] In practice, the materials used, as well as the contingent shapes and dimensions, may be any according to the requirements and the state of the art.

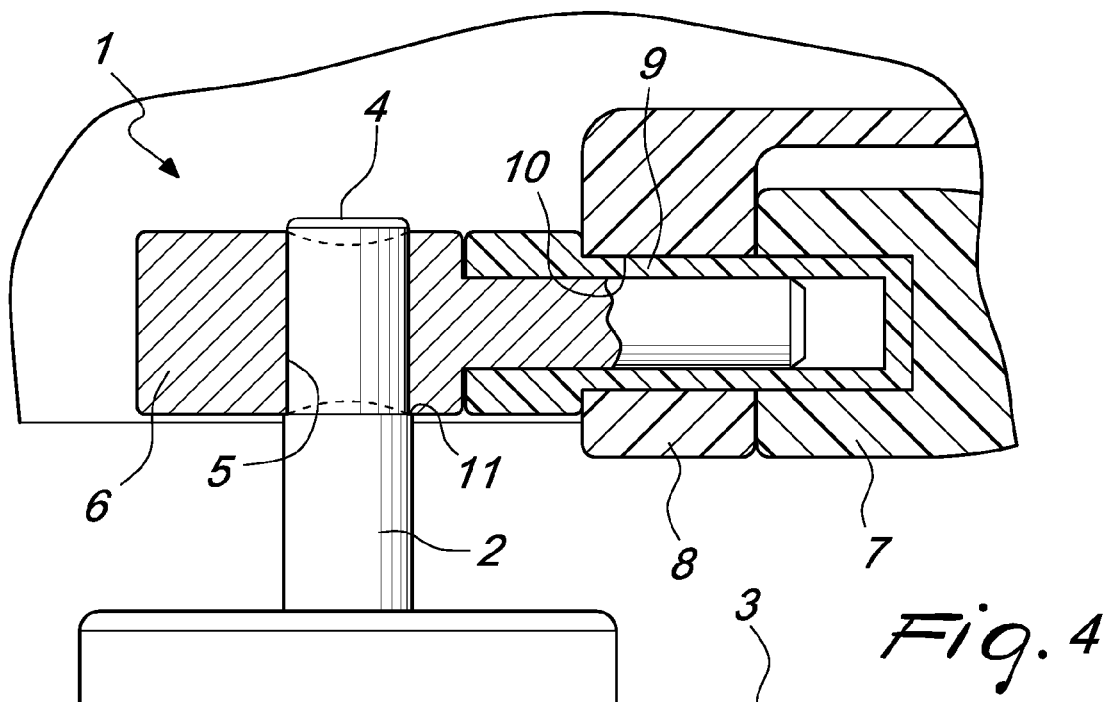
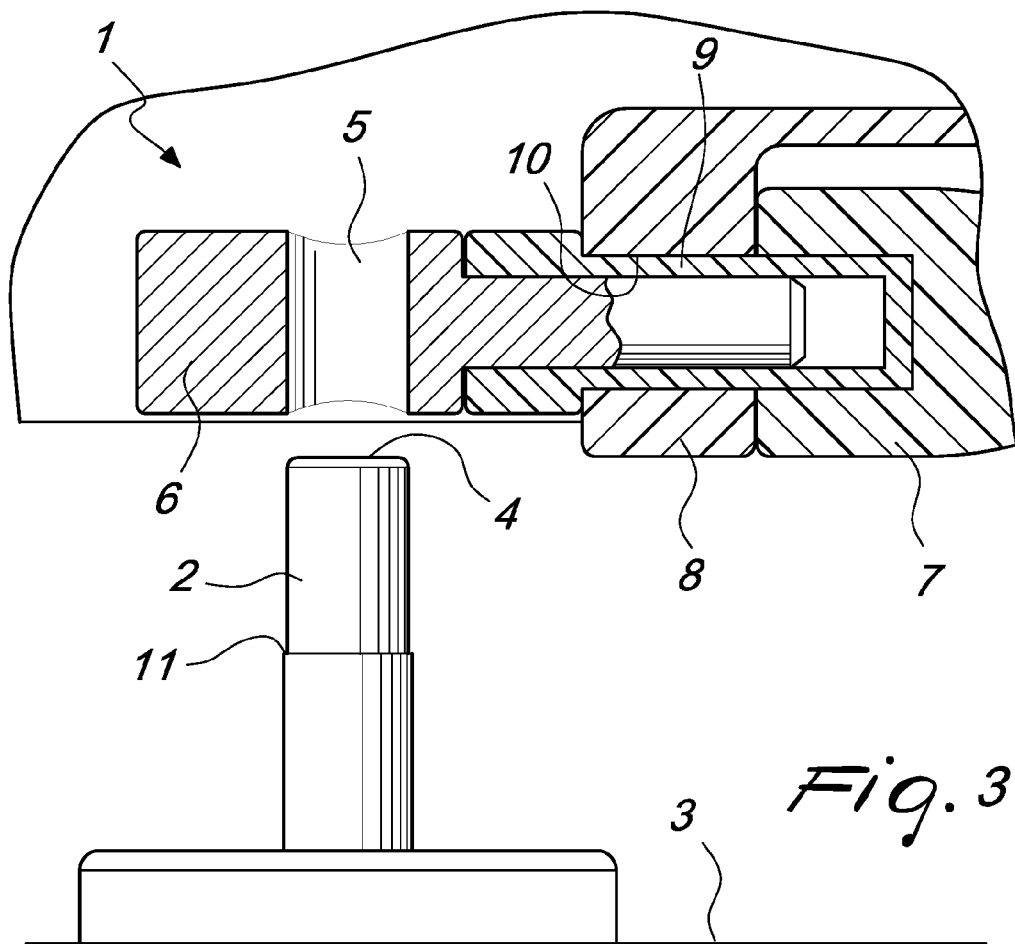
[0032] The disclosures in Italian Patent Application No. 102017000014760 (UA2017A000855) from which this application claims priority are incorporated herein by reference.

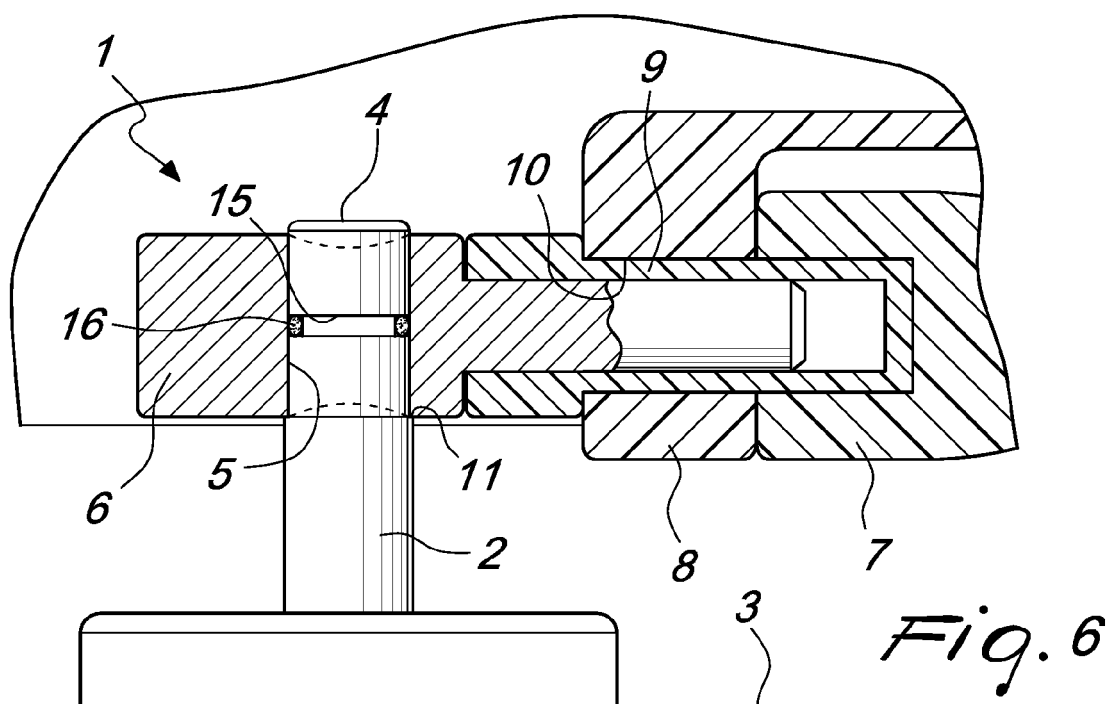
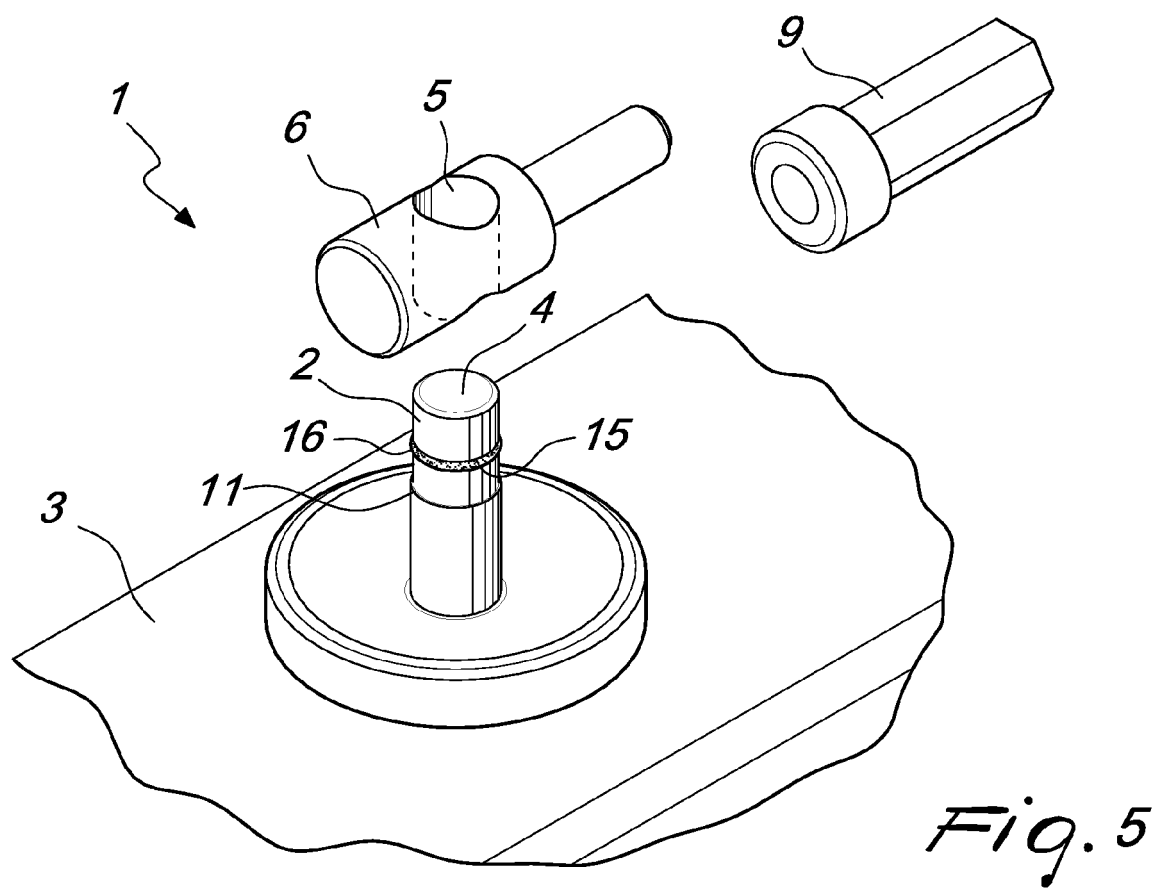
[0033] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

10 Claims

1. A coupling device (1), particularly for fixing a seat assembly to a sanitary fixture, comprising a pivot (2) which can be fixed to a sanitary fixture (3) and is provided with a head (4) adapted to accommodate in a seat (5) of a transverse pivot (6) which forms an element for pivoting between a lid (7) and a ring (8) of said seat assembly, **characterized in that** said seat (5) is constituted by a through hole (5).
2. The coupling device according to claim 1, **characterized in that** said pivot (2) is provided with a circumferential protrusion (11) that is adapted to allow the resting of said transverse pivot (6) when said pivot (2) is coupled within said through hole (5) of said transverse pivot (6).
3. The coupling device according to claim 1 or 2, **characterized in that** the uncoupling between said transverse pivot (6) and said pivot (2) occurs only following a vertical translational motion of said transverse pivot (6) with respect to said pivot (2).
4. The coupling device according to claim 1, **characterized in that** said pivot (2) is provided with at least one groove (15) adapted to accommodate a gasket (16).
5. A sanitary fixture, **characterized in that** it comprises at least one coupling device (1) according to one or more of the preceding claims.
6. The sanitary fixture according to claim 5, **characterized in that** it comprises a pair of coupling devices according to one or more of claims 1 to 4.









EUROPEAN SEARCH REPORT

 Application Number
 EP 18 15 5679

5

10

15

20

25

30

35

40

45

50

55

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 20 2014 101077 U1 (BESTTER XIAMEN TECHNOLOGY INC [CN]) 4 June 2014 (2014-06-04) * paragraph [0029]; figure 13 *	1-6	INV. A47K13/26
X	DE 10 2014 105342 A1 (WENKO WENSELAAR GMBH [DE]) 15 October 2015 (2015-10-15) * paragraph [0026] - paragraph [0034]; figures 1,2 *	1-6	
X	CN 201 767 898 U (ZHOU YUJIA) 23 March 2011 (2011-03-23) * claims; figures *	1,2,5,6	
			TECHNICAL FIELDS SEARCHED (IPC)
			A47K
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		5 June 2018	Fordham, Alan
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			

 1
 EPO FORM 1503 03.02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 18 15 5679

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

05-06-2018

10

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 202014101077 U1	04-06-2014	DE 202014101077 U1	04-06-2014
		EP 2907433 A1	19-08-2015

DE 102014105342 A1	15-10-2015	NONE	

CN 201767898 U	23-03-2011	NONE	

15

20

25

30

35

40

45

50

55

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- EP 0853916 A [0004]
- EP 1800585 A [0006]
- IT 102017000014760 [0032]
- IT UA2017000855 A [0032]