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(54)

TOILET WITH AUTOMATIC TILTING OF THE SEAT TOWARD THE COVER

(57)

A toilet that comprises a bowl, a lid, and a seat, wherein the seat is attached to the bowl by a first hinge, while the lid is attached to the seat by a second hinge, this second hinge presenting the possibility of turning with respect to the first hinge. The possibility of automatically tilting the seat towards the lid when the lid is raised and the seat separated from the lid is achieved by arranging the second hinge in a position that is set back with respect to the first hinge, and with the lid producing a torque with respect to the first hinge, that is greater than the opposing torque of the seat with respect to the first hinge, causing the seat to tilt towards the lid automatically.

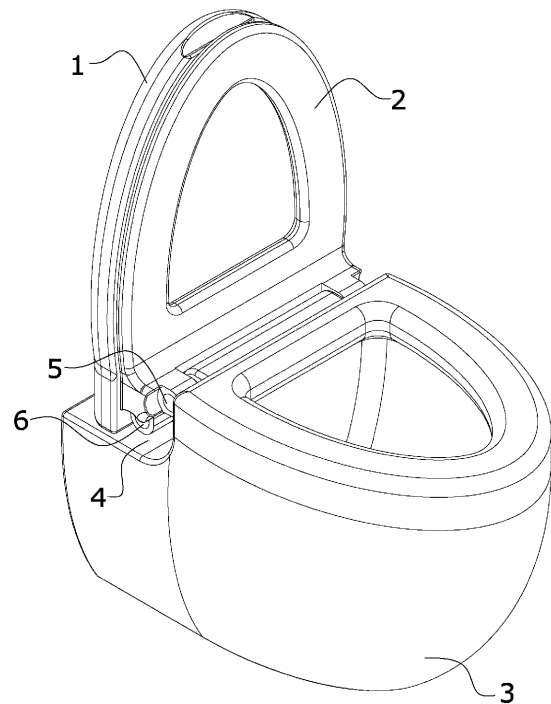


FIG.1

## Description

### OBJECT OF THE INVENTION

**[0001]** As the title indicates, the object of the present invention is a toilet with automatic tilting of the seat towards the lid, a toilet being understood as a sanitary fixture used to collect and discharge human excrement and urine to the sewage installation, and that prevents the release of unpleasant odors from the sewers to inhabited spaces by means of a trap system filled with clean water.

**[0002]** The present invention is characterized in that the seat can be separated from the lid by a force that separates them, and that if the force in question is no longer applied, the seat swings automatically to the current position of the lid, thus ensuring that the seat is always in a position pressed towards the lid, unless a force is applied in the other direction, and that when men urinate from the standing position, the seat will be pressed towards the lid, therefore maintaining the hygiene of the seat.

**[0003]** The present invention therefore falls within the scope of toilets, and specifically the aspects related to the lid and the seat.

### BACKGROUND OF THE INVENTION

**[0004]** Toilets are generally equipped with a seat that is attached to the bowl or lower base by a hinge, and with a lid that is attached to the seat by a hinge, with each able to swing or turn independently from the other, in other words, the lid can be raised without moving the seat, and the seat can be lowered from the raised position without lowering the lid.

**[0005]** The aforementioned possibilities mean that when a man is going to urinate in a toilet from the standing position, he may leave the seat in the lowered position, thereby leaving traces of urine on the seat, with the consequent lack of hygiene for the next user.

**[0006]** This lack of hygiene generated by the incorrect positioning of the seat is what the object of the present invention seeks to resolve, but automatically, so that even in cases in which users forget to raise the seat when they are going to urinate from the standing position, the seat will automatically swing up towards the lid.

**[0007]** A toilet such as the one described below, and whose essential characteristics are included in claim one, was developed to achieve the aforementioned ends.

### DESCRIPTION OF THE INVENTION

**[0008]** The object of the present invention is a toilet with automatic tilting of the seat towards the lid.

**[0009]** The toilet such as the one that is the object of this invention comprises a bowl, a lid, and a seat, wherein the seat is attached to the bowl by a first hinge, while the lid is attached to the seat by a second hinge, with this second hinge presenting the possibility of turning with

respect to the first hinge.

**[0010]** The possibility of automatically tilting of the seat towards the lid when the lid is raised and seat is separated from the lid is achieved by arranging the second hinge in a position that is set back with respect to the first hinge, viewing the toilet from the front, and with the lid producing a torque with respect to the first hinge that is greater than the opposing torque of the seat with respect to the first hinge, causing the seat to swing up towards the lid automatically by the action of the torque generated by the assembly made up of the cover and the second hinge with respect to the first hinge.

**[0011]** In order to allow the rotation of the lid and the displacement of the second hinge with respect to the first hinge, the back of the bowl must have a cut-out or step such as to accommodate the lid and the second hinge in the open and closed position.

**[0012]** The lid is equipped with two double sets of perforated protrusions. The first set of perforated protrusions is under the seat and at the back, and serves to form the first set of hinges, which allows the seat to swing with respect to the bowl, while the second set of protrusions is positioned further back, and preferably, higher with respect to the first set of protrusions, although not limiting the invention, and serves to form the second hinge.

**[0013]** All of the aforementioned characteristics make it possible that when the seat is separated from the lid, by the action of the force of gravity of the weight of the lid with respect to the first hinge, a torque is generated on the first hinge such that the seat, despite the opposing torque, will automatically swing up towards the cover, ensuring that the hygiene of the toilet is maintained, even if the user forgets to raise the lid.

**[0014]** Unless otherwise indicated, the meanings of all of the technical and scientific elements used in this description are those normally understood by a normal person skilled in the art to which this invention belongs. Procedures and materials that are similar or equivalent to those described in this description may be used in the practical execution of the present invention.

**[0015]** Throughout the description and the claims, the word "comprises" and its variations is not intended to exclude other technical characteristics, additives, components, or steps. For experts on the subject, other objects, advantages, and characteristics of the invention will be drawn partly from the description and partly from the practical embodiment of the invention.

### EXPLANATION OF THE FIGURES

**[0016]** As a complement the description provided herein and for the purpose of helping to make the characteristics of the invention more readily understandable, in accordance with a preferred practical embodiment thereof, said description is accompanied by a set of drawings constituting an integral part of the same, which by way of illustration and not limitation represent the following.

Figure 1 shows a perspective view of a toilet in a possible embodiment

Figure 2 shows a representation of the seat

Figure 3 shows a representation of the lid.

Figure 4 shows the toilet with the seat and lid assembly in the horizontal position closing the bowl.

Figure 5 shows the seat and lid, the seat and lid assembly raised in the vertical position.

Figure 6 shows a side view in which the lid is in the vertical position, while the seat is in the horizontal position.

#### PREFERRED EMBODIMENT OF THE INVENTION

**[0017]** In light of the figures, the following section describes a preferred embodiment of the proposed invention.

**[0018]** Figure 1 shows a toilet such as that which is the object of the invention, and which comprises a bowl (3), a lid (1), and a seat (2), wherein the seat (2) is attached to the bowl (3) by means of a first hinge (5), while the lid (1) is attached to the seat by a second hinge (6) that allows the seat (2) to be hinged with respect to the base (1), with the specific result of the automatic tilting of the seat (2) towards the lid (1) when the seat (2) is separated from the lid (1) and no separation force is applied.

**[0019]** Where the first hinge (5), with the toilet viewed from the front, is in a lower position and shifted forward with respect to the second hinge (6), and the torque generated by the lid (1) with respect to the first hinge (5) is greater than the opposing torque generated by the seat (2) with respect to the first hinge (5).

**[0020]** The bowl (3), in the embodiment shown, has the specific characteristic of a step (4) at the back and on the top of the bowl (3), in order accommodate the second hinge (6) in its displacement, since the first hinge assembly (5) and the second hinge assembly (6) do not line up.

**[0021]** Figure 2 shows the seat (2) that is equipped with a first set of protrusions (7) arranged perpendicular to the horizontal plane defined by the seat (2), on the underside and on the back of the seat (2). Said first set of protrusions (7) has a central perforation to allow the passage of the hinge connection between the seat and lid and the bowl, configuring the first hinge (5).

**[0022]** On the seat (2), there is a second set of protrusions (8) arranged on the back of the seat (2), and positioned higher and further back with respect to the first set of protrusions (7) serving to make up the second hinge (6). The condition of this second set of protrusions (8) positioned higher with respect to the first set is not limiting; positioning it further back with respect to the first set shall suffice, since the purpose is to allow the second hinge (6) to swing by the action of the torque from the weight of the cover with respect to the first set of hinges.

**[0023]** This second set of protrusions (8) has a central perforation to allow the passage of the hinge connection between the lid (1) and seat (2), configuring the second

hinge (6), said second set of protrusions (8) being separated by a distance such that it allows housing a protrusion (9) (figure 3) found on the underside and at the back of the lid (1).

**[0024]** Figure 4, which shows a partial view of the toilet with the lid (1) and seat (2) closed, the first set of hinges (5) and the second set of hinges (6) can be seen housed in the step (4) defined on the upper back part of the bowl (3).

**[0025]** Figure 5 shows how the lid (1) and the seat (2) are in the vertical position and how the second set of hinges has shifted towards the lower part of the step (4). In this case, it is important to note that when the lid (1) is raised, due to the torque generated by the lid (1) with respect to the first hinge and that is greater than the opposing torque generated by the seat (2) with respect to said first hinge (5), this causes automatic tilting of the seat (2) towards the lid (1) through the action of the force of gravity and the generated torque.

**[0026]** Figure 6 shows the seat (2) lowered and supported on the bowl (3), while the lid (1) is raised, this position can only be maintained by exerting a force to hold it in that position that is greater than the force of the torque generated by the lid (1), either because the user is seated, or because it is being supported by the user's hand. The figure shows how the second set of hinges (6) has moved from the lower position to the upper position of the step (4).

**[0027]** Thanks to the described characteristics, the seat (2) is always pressed towards the lid (1) unless a greater retaining force is applied to the second set of hinges (6).

**[0028]** Having sufficiently described the nature of the present invention, as well as the ways of implementing it, it is stated that within its essential nature, it may be carried out in other embodiments that differ in detail from the one provided by way of example, and which are also covered by the requested protection, provided that they do not alter, change or modify its fundamental principle.

#### **Claims**

1. A toilet with automatic tilting of the seat towards the lid, which comprises a bowl (3), a lid (1), and a seat (2) wherein the seat (2) is attached by means of a hinge with respect to the bowl (3) by means of a first hinge (5), while the lid (1) is attached to the seat by means of a second hinge (6), which allows the seat (2) to swing with respect to the base (1), wherein the first hinge (5), with the toilet viewed from the front, is in a lower position and shifted forward with respect to the second hinge (6), and the torque generated by the lid (1) with respect to the first hinge (5) is greater than the opposing torque generated by the seat (2) with respect to the first hinge (5).

2. The toilet with automatic tilting of the seat towards

the lid, according to claim 1, **characterized in that** the bowl (3) has a step (4) arranged on the back and on the top thereof, that enables accommodating the second hinge (6) in its displacement.

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3. The toilet with automatic tilting of the seat towards the lid, according to claim 2, **characterized in that** the seat (2) is equipped with:

- A first set of protrusions (7) arranged perpendicular to the horizontal plane defined by the seat (2), and with a central perforation on the underside to allow the passage of the hinge connection between the seat and the bowl, configuring the first hinge (5).

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- A second set of protrusions (8) arranged on the back of the seat (2), and positioned higher and further back with respect to the first set of protrusions (7) serving to make up the second hinge (6).

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4. The toilet with automatic tilting of the seat towards the lid, according to claim 3, **characterized in that** the second set of protrusions (8) are separated by a distance such that it allows housing a protrusion (9) found on the underside and at the back of the lid (1).

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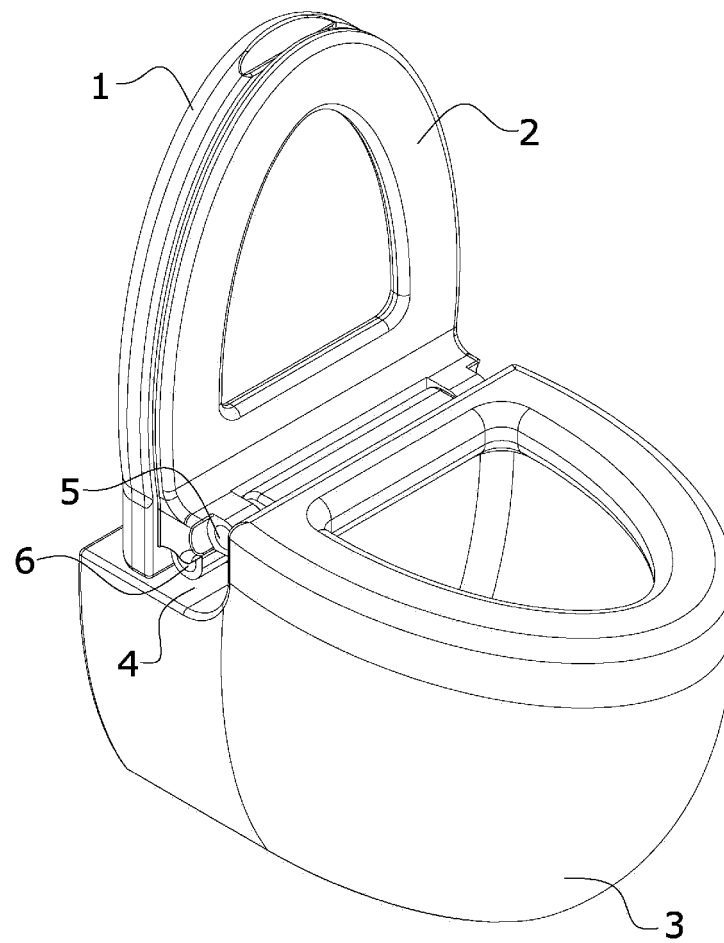


FIG.1

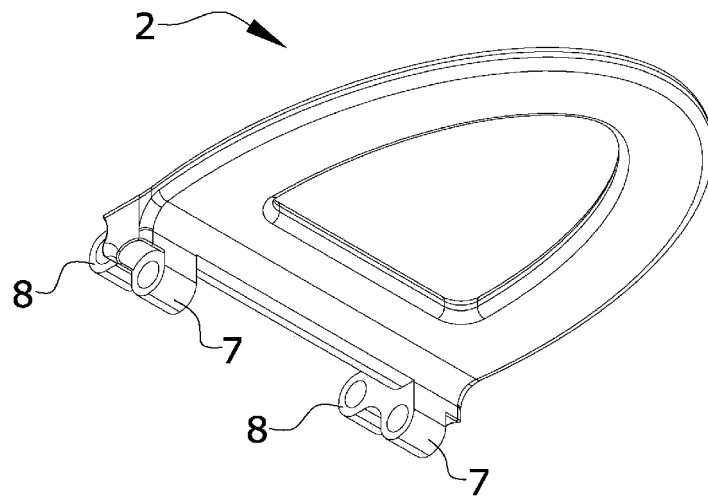


FIG. 2

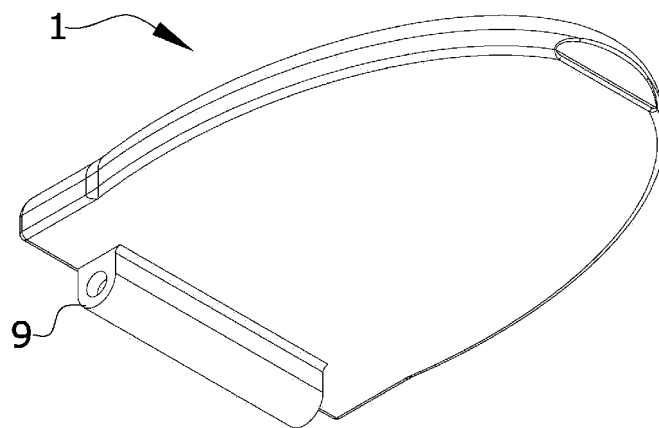


FIG. 3

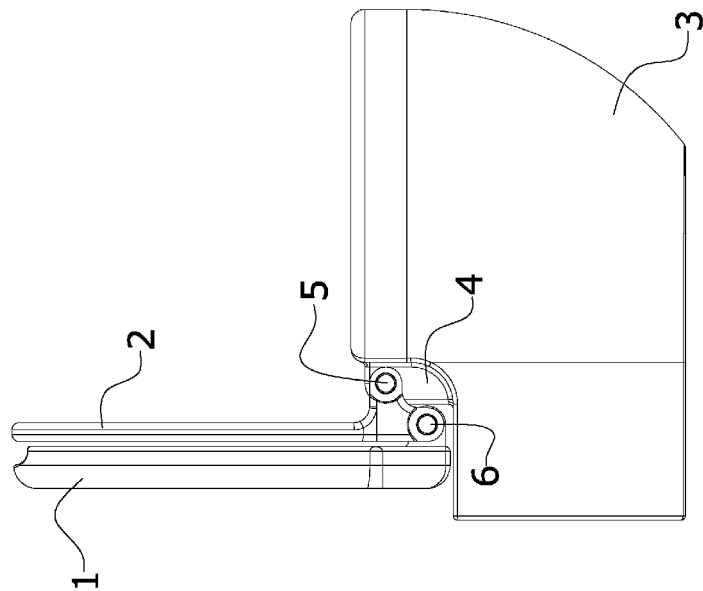


FIG.5

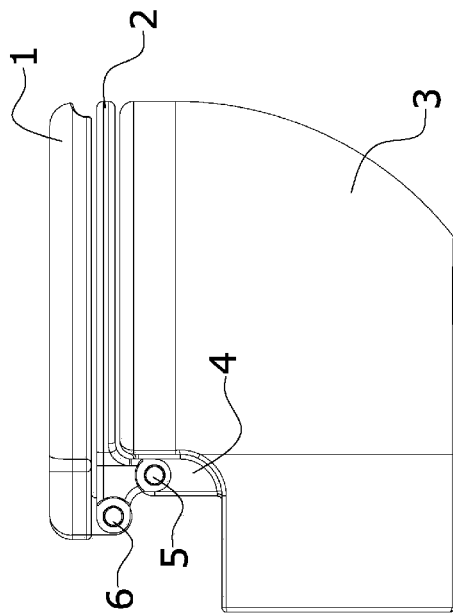


FIG.4

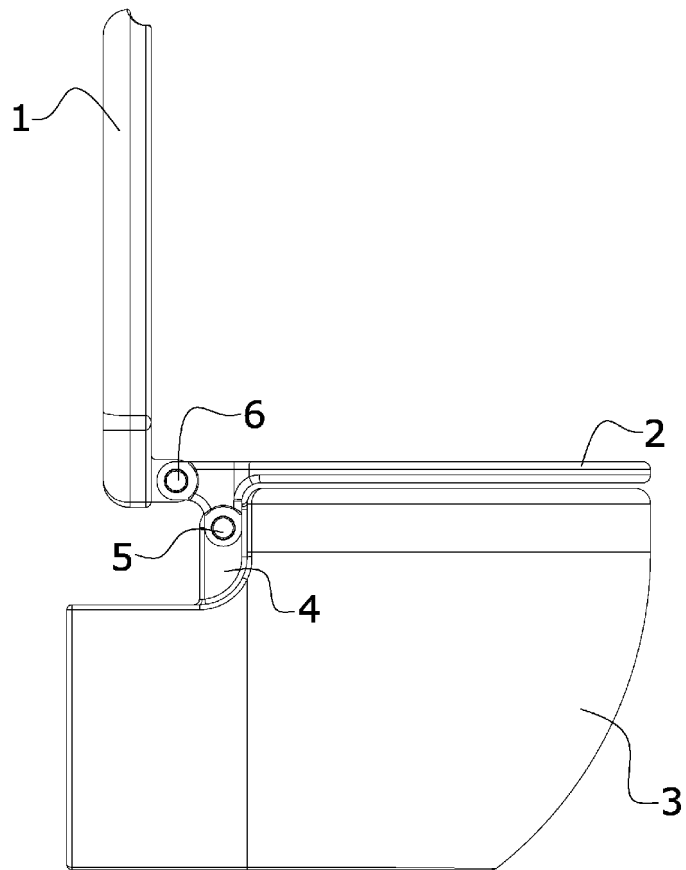


FIG. 6



## INTERNATIONAL SEARCH REPORT

International application No

PCT/ES2017/070399

## A. CLASSIFICATION OF SUBJECT MATTER

INV. A47K13/10 A47K13/12  
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A47K E03D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EP0-Internal, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2004/049840 A1 (BERRING JEFFREY J [US]) 18 March 2004 (2004-03-18) figures 2, 3, 4 -----	1-4
A	GB 829 981 A (GIOVANNI BATTISTA MENGHI) 9 March 1960 (1960-03-09) figure 5 -----	2-4
X	JP S55 116318 A (ANDO YOSHIO; ANDO SEIJI; SATO TAMIO) 6 September 1980 (1980-09-06) figures 1-6 -----	1-4



Further documents are listed in the continuation of Box C.



See patent family annex.

\* Special categories of cited documents :

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/ES2017/070399

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