(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 944 730 A1**

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
18.11.2015 Bulletin 2015/47

(21) Application number: **13895872.3**

(22) Date of filing: **24.12.2013**

(51) Int Cl.:
E03D 11/02 *(2006.01)* ***E03D 11/17*** *(2006.01)*

(86) International application number:
PCT/CN2013/090278

(87) International publication number:
WO 2015/058451 (30.04.2015 Gazette 2015/17)

(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

(30) Priority: **24.10.2013 CN 201310514276**

(71) Applicant: **Foshan Royalking Sanitary Ware Co., Ltd.**
Foshan, Guangdong 528061 (CN)

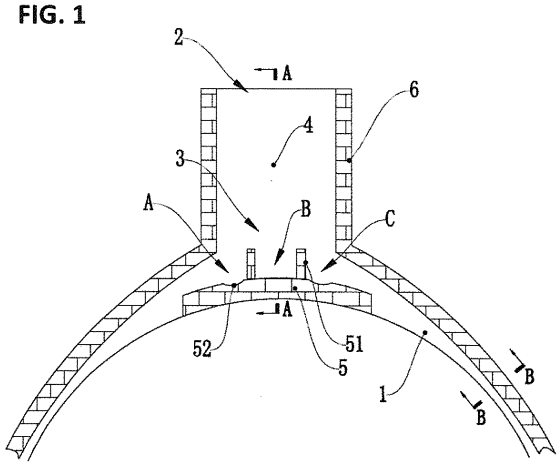
(72) Inventors:
- **HUO, Chengji**
  Foshan
  Guangdong 528061 (CN)
- **LI, Chunhua**
  Foshan
  Guangdong 528061 (CN)

(74) Representative: **Viering, Jentschura & Partner**
Patent- und Rechtsanwälte
Grillparzerstrasse 14
81675 München (DE)

(54) CLOSESTOOL BASE

(57) The present invention discloses a closestool base. The closestool base comprises a water draining channel (1), a water flowing pipe (6), a water storage cavity (4) and a water baffle plate (5), wherein the water draining channel (1) is formed in the upper part of the inner wall (7) of the closestool base in an encircling way; a water inlet (2) of the water flowing pipe (6) is communicated with a water tank and is arranged in the back of the closestool base; a water outlet (3) of the water flowing pipe (6) faces to the inner wall (7) of the closestool base; the water storage cavity (4) is arranged between the water outlet (3) of the water flowing pipe (6) and the water inlet (2) of the water flowing pipe (6), and the water draining capability of the water inlet (2) is higher than that of the water outlet (3); the water baffle plate (5) for covering the water outlet (3) is arranged at the upper part of the closestool base, a gap is formed between the left end and the right end of the water baffle plate (5) and the water draining channel (1), and a gap is formed between the lower end of the water baffle plate (5) and the inner wall (7) of the closestool base; two vertical ribs (51) are arranged at the back of the water baffle plate (5), the vertical ribs (51) face to the water outlet (3), and the water baffle plate (5), the vertical ribs (51) and the water storage cavity (4) are integrally formed in a firing way with the closestool base respectively.

FIG. 1



EP 2 944 730 A1

Description

FIELD OF THE INVENTION

[0001] The present invention relates to the field of sanitary fittings, in particular to a closetool base.

BACKGROUND OF THE INVENTION

[0002] Closestools are sanitary appliances with which modern people have to be in contact everyday, and the sanitary requirement for the closestools is also higher and higher along with the improvement of the living quality of people. At the beginning, a closestool has the effects of defecating and flushing only, namely water in a water tank directly flushes an excretion inlet of an excretion pipeline directly passing through a water outlet of a closestool base, but the inner wall of the closestool base cannot be automatically cleaned. More or less excreta may adhere to the inner wall of the closestool base during defecation, and thus the excreta has to be manually cleaned.

[0003] For this problem, those skilled in the art have invented a closestool (as shown in FIG. 5), with an effect of automatically cleaning the inner wall of the closestool base, of which the patent number is 200320100838.5, a water draining passage is formed in the upper edge of the inner wall of the closestool base, and water enters into the water draining passage from the water tank and then flows out from a washing water outlet hole, so that the effect of automatically cleaning the inner wall of the closestool base is realized. However, in a long-term use condition, water stains are easily generated on the lower edge of the washing water outlet hole, and the water stains are difficult to be cleaned; when no water exists, dirt is easily hidden in the water draining passage, for example, insects such as cockroaches and centipedes can climb in the water draining passage from the washing water outlet hole, which is frightening and insanitary. Moreover, the washing water outlet hole is usually hidden in the inner side of the water draining passage for aesthetics, so that the closestool is more difficult to be cleaned.

SUMMARY OF THE INVENTION

[0004] In order to solve the above technical problem, the present invention provides a closestool base which is convenient to clean, simple in structure, durable and low in manufacturing cost, and the inner wall of the closestool base can be automatically cleaned.

[0005] The closestool base comprises a water draining channel, a water flowing pipe, a water storage cavity and a water baffle plate, wherein the water draining channel is arranged in the upper part of the inner wall of the closestool base in an encircling way; a water inlet of the water flowing pipe is arranged in the back of the closestool base and is communicated with a water tank; a water outlet of the water flowing pipe faces to the inner wall of the closestool base; the water storage cavity is arranged between the water outlet of the water flowing pipe and the water inlet of the water flowing pipe, and the water draining capability of the water inlet is higher than that of the water outlet; the water baffle plate for covering the water outlet is arranged at the upper part of the closestool base, a gap is formed between the left end and the right end of the water baffle plate and the water draining channel, and a gap is formed between the lower end of the water baffle plate and the inner wall of the closestool base; two vertical ribs are arranged at the back of the water baffle plate, the vertical ribs face to the water outlet, and the water baffle plate, the vertical ribs and the water storage cavity are integrally formed in a firing way with the closestool base respectively.

[0006] The water outlet is semicircular, and the upper half thereof is in a semicircular hollow shape.

[0007] The water inlet is circular, and the diameter of the water outlet and the diameter of the water inlet are the same.

[0008] The lower edge of the water outlet is higher than the bottom wall of the water storage cavity.

[0009] The vertical ribs of the water baffle plate run through the upper end and the lower end of the whole water baffle plate, and divide the water baffle plate into three parts, namely a left area, a middle area and a right area.

[0010] Dents are formed in the lower parts of the left area and the right area of the water baffle plate. The lower ends of the two vertical ribs are connected with the inner wall of the closestool base. The lower edge of the water baffle plate is positioned below the lower edge of the water outlet. The diameters of the water inlet and the water outlet are 4-6 cm.

[0011] The vertical ribs are 0.3-0.8 cm in thickness, 1-2 cm in height and 5-8 cm in length.

[0012] According to the closestool base of the present invention, the water baffle plate is integrally formed with the closestool in a firing way, thereby which has a simple structure and is durable; an open water draining channel is adopted for taking the place of a closed water draining passage, so that the closestool is convenient to clean, and insect pests such as cockroaches cannot be hidden in the closestool.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] The drawings further illustrate the present invention, but the contents in the drawings do not constitute any restriction for the present invention.

FIG. 1 is a sectional view of the closestool base in one embodiment of the present invention;

FIG. 2 is a sectional view along A-A of FIG. 1 and a water flow direction diagram of a water flowing pipe and the B area of the water baffle plate;

FIG. 3 is a schematic diagram of the water baffle

plate in one embodiment of the present invention;
FIG. 4 is a water flow direction diagram of the water flowing pipe and the A area and the C area of the water baffle plate in one embodiment of the present invention;
FIG. 5 is a schematic diagram in the prior art;
FIG. 6 is a sectional view along B-B of FIG. 1, and illustrates the structures of the water draining channel and the inner wall.

[0014] Reference numbers in accompanying drawings:

water draining channel 1; water inlet 2; water outlet 3; water storage cavity 4; water baffle plate 5; vertical rib 51; dent 52; water flowing pipe 6; inner wall 7; left area A; middle area B; right area C; annular channel 33; washing water outlet hole 330.

DESCRIPTION OF EMBODIMENTS

[0015] A closestool base in the embodiment as shown in FIG. 1 comprises a water draining channel 1, a water flowing pipe 6, a water storage cavity 4 and a water baffle plate 5; the water draining channel 1 (FIG. 6) is arranged in the upper part of the inner wall 7 of the closestool base in an encircling way, and the two ends of the water draining channel 1 are connected with a water outlet 2; a water inlet 2 of the water flowing pipe 6 is arranged in the back of the closestool base and is communicated with a water tank; a water outlet 3 of the water flowing pipe 6 faces to the inner wall 7 of the closestool base; the water storage cavity 4 is arranged between the water outlet 3 of the water flowing pipe 6 and the water inlet 2 of the water flowing pipe 6, and the water draining capability of the water inlet 2 is higher than that of the water outlet 3; the water baffle plate 5 for covering the water outlet 3 is arranged at the upper part of the closestool base, a gap is formed between the left end and the right end of the water baffle plate 5 and the water draining channel 5, and a gap is formed between the lower end of the water baffle plate 5 and the inner wall 7 of the closestool base; two vertical ribs 51 running through the upper end and the lower end of the whole water baffle plate 5 are arranged at the back of the water baffle plate 5 as shown in FIG. 3, the water baffle plate 5 is divided into three parts, namely a left area A, a middle area B and a right area C, and the vertical ribs 51 face to the water outlet 3. The water baffle plate 5, the vertical ribs 51 and the water storage cavity 4 are integrally formed in a-firing way with the closestool base respectively.

[0016] During water flushing of the closestool base in the embodiment, as shown in FIG. 2 and FIG. 4, water in the water tank firstly enters into the water storage cavity 4 from the water inlet 2 of the water flowing pipe 6 and then flows out from the water outlet 3, and a water flow is divided into three water flows after encountering the two vertical ribs 51 of the water baffle plate 5; as shown by arrows in FIG. 4, the water flows divided to the left area A and the right area C of the water baffle plate 5 are guided into the water draining channel 1 for cleaning the inner wall 7 of the closestool base; as shown by arrows in FIG. 2, the water flow divided to the middle area B of the water baffle plate 5 directly flows into the inner wall 7 of the closestool base positioned below the water baffle plate and is used for flushing dirt. Therefore, the effect of automatically cleaning the inner wall of the closestool is realized, and the water draining passage inside the ring of the closestool base does not need to be set, so that the problem that accumulated dirt in the water draining passage is difficult to clean is avoided, and people do not worry about the cockroaches climbing in the closestool; a ceramic structure is integrally formed in the firing way, the closestool is simple to assemble and durable, and the vertical ribs not only realize the effect of water distribution and pressure reduction but also can strengthen the structural strength of the water baffle plate.

[0017] Preferably, the water outlet 3 is semicircular, the upper half thereof is in a semicircular hollow shape, and the lower edge of the water outlet 3 is higher than the bottom wall of the water storage cavity 4; the water inlet 2 is circular, and the diameter of the water outlet 3 and the diameter of the water inlet 2 are the same. The semicircular structure is simple and easily formed in the firing way; the diameter of the water inlet 2 is the same as that of the water outlet 3 while the water outlet 3 is semicircular, the water draining capability of the water inlet 2 is twice of that of the water outlet 3, thus firstly, most of the water entering into the water flowing pipe 6 is temporarily stored in the water storage cavity 4 and then gradually flows out from the water outlet 3, so that the speed of the water flow is reduced and a better water distribution effect is realized; moreover, a portion of water is stored in the water storage cavity 4 all the time, and thus some insect pests such as cockroaches and centipedes cannot be hidden in the water inlet 3.

[0018] Preferably, dents 52 are formed in the lower parts of the left area A and the right area C of the water baffle plate 5. The dents 52 can adjust the moving direction of the water flow to form a small eddy, so that the water flow moves towards the direction of the water draining channel 1.

[0019] Preferably, the lower ends of the two vertical ribs 51 are connected with the inner wall 7 of the closestool base. On one hand, the effect of water distribution is further realized, and on the other hand, the structural strength of the water baffle plate 5 can also be further strengthened.

[0020] Preferably, the lower edge of the water baffle plate 5 is positioned below the lower edge of the water outlet 3. Such arrangement can enable the water flow to be sufficiently blocked by the water baffle plate 5, and thus the water flow can enter into the interior of the closestool base after being distributed by the water baffle plate 5.

[0021] Preferably, the diameters of the water inlet 2 and the water outlet 3 are 4-6 cm, and the vertical ribs 51 are 0.3-0.8 cm in thickness, 1-2 cm in height and 5-8 cm in length. The size is appropriate, 4-6 liters of water is consumed for flushing every time and is just the water volume for completing once flushing, so that the use of flushing water is effectively saved; a portion of water passes through the inner wall 7 and then flows into a discharge pipeline during flushing and dirt discharging, and the water flow enters the inlet of the discharge pipeline in all directions, so that the capacity of flushing and dirt discharging is greatly strengthened. Experiments show that the flushing work can be completed by needing only 2.7 liters of water during urine flushing and the flushing work can be competed by needing only 4.5 liters of water during defecate flushing, so that the using amount of the flushing water is greatly reduced.

[0022] The closestool base has the beneficial effects as follows. Firstly, an open water draining channel 1 is adopted for taking the place of a closed water draining passage, so that the purposes of automatically cleaning the inner wall 7 of the closestool base is realized, and the problems that dirt is hidden in the water flowing passage and the water flowing passage is inconvenient to clean are solved; secondly, the water baffle plate 5, the vertical ribs 51 and the closestool base are integrally formed in the firing way, and the structure is durable and reliable; thirdly, the water baffle plate 5 is simple in structure and convenient to produce; fourthly, the water flowing pipe 6 is provided with the water storage cavity 4, and thus some insect pests such as cockroaches and centipedes cannot be hidden in the water inlet 2; fifthly, a portion of water passes through the inner wall 7 and then flows into the discharge pipeline during flushing and dirt discharging, and the water flow enters the inlet of the discharge pipeline in all directions, so that the capacity of flushing and dirt discharging is greatly strengthened, and thus the using amount of the flushing water is reduced, and the effect of flushing and dirt discharging can be realized by needing only 4.5/2.7 liters (defecate/urine)of water amount.

[0023] Finally, it should be noted that the above-mentioned embodiments are only used for illustrating the technical solution of the present invention but not restricting the scope of protection of the present invention; although the present invention is described in detail by reference to preferable embodiments, those skilled in the art should understand that the technical solution of the present invention can be amended or equally substituted without departing from the spirit and scope of the technical solution of the present invention.

Claims

1. A closestool base, **characterized in that** which comprises a water draining channel, a water flowing pipe, a water storage cavity and a water baffle plate, wherein
the water draining channel is arranged in the upper part of the inner wall of the closestool base in an encircling way;
a water inlet of the water flowing pipe is arranged in the back of the closestool base and is communicated with a water tank;
a water outlet of the water flowing pipe faces to the inner wall of the closestool base;
the water storage cavity is arranged between the water outlet of the water flowing pipe and the water inlet of the water flowing pipe, and the water draining capability of the water inlet is higher than that of the water outlet;
the water baffle plate for covering the water outlet is arranged at the upper part of the closestool base, a gap is formed between the left end and the right end of the water baffle plate and the water draining channel, and a gap is formed between the lower end of the water baffle plate and the inner wall of the closestool base; two vertical ribs are arranged at the back of the water baffle plate, the vertical ribs face to the water outlet, and the water baffle plate, the vertical ribs and the water storage cavity are integrally formed in a firing way with the closestool base respectively.

2. The closestool base according to claim 1, **characterized in that** the water outlet is semicircular, and the upper half thereof is in a semicircular hollow shape.

3. The closestool base according to claim 2, **characterized in that** the water inlet is circular, and the diameter of the water outlet and the diameter of the water inlet are the same.

4. The closestool base according to claim 2, **characterized in that** the lower edge of the water outlet is higher than the bottom wall of the water storage cavity.

5. The closestool base according to claim 2, **characterized in that** the vertical ribs of the water baffle plate run through the upper end and the lower end of the whole water baffle plate, and divide the water baffle plate into three parts, namely a left area, a middle area and a right area.

6. The closestool base according to claim 5, **characterized in that** dents are formed in the lower parts of the left area and the right area of the water baffle plate.

7. The closestool base according to claim 1, **characterized in that** the lower ends of the two vertical ribs are connected with the inner wall of the closestool base.

8. The closestool base according to claim 1, **characterized in that** the lower edge of the water baffle plate is positioned below the lower edge of the water outlet.

9. The closestool base according to claim 1, **characterized in that** the diameters of the water inlet and the water outlet are 4-6 cm.

10. The closestool base according to claim 1, **characterized in that** the vertical ribs are 0.3-0.8 cm in thickness, 1-2 cm in height and 5-8 cm in length.

FIG. 1

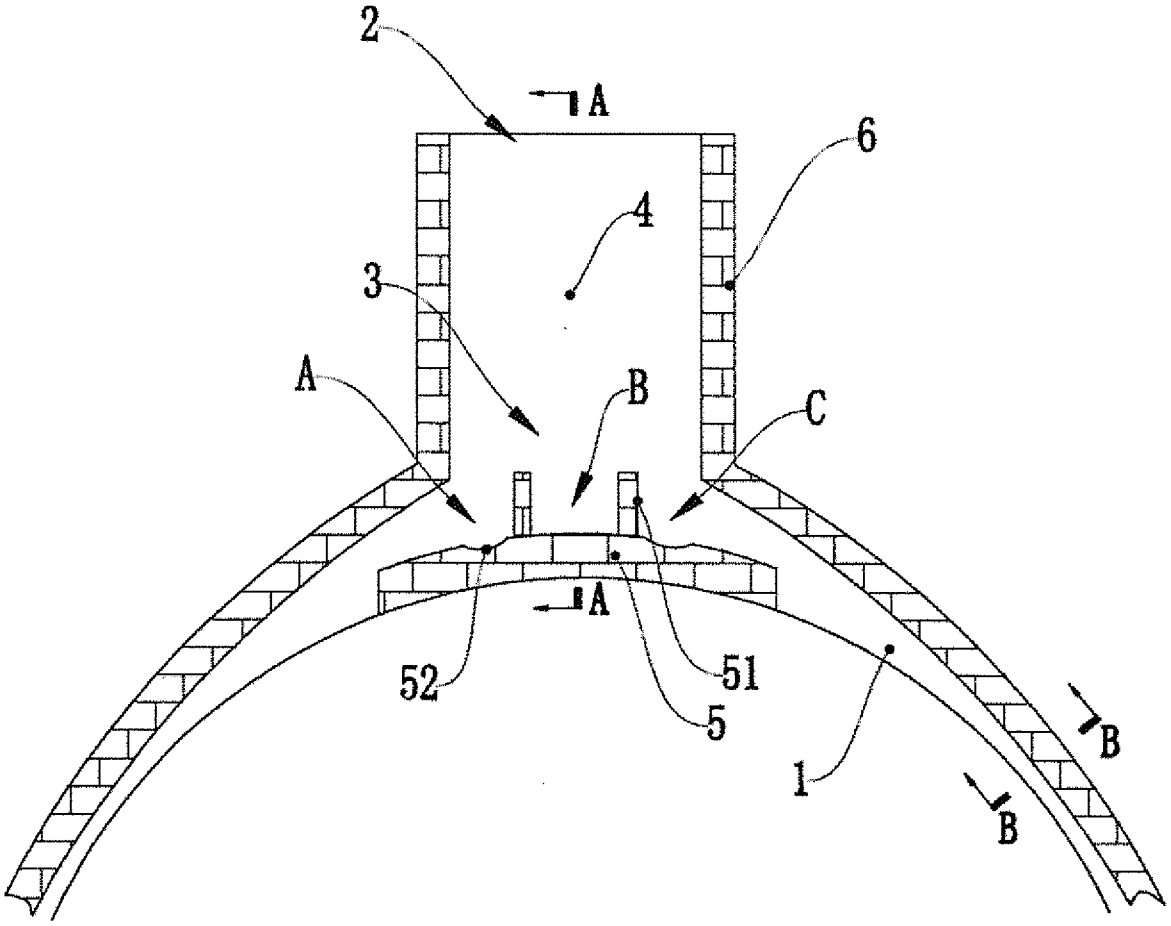


FIG. 2

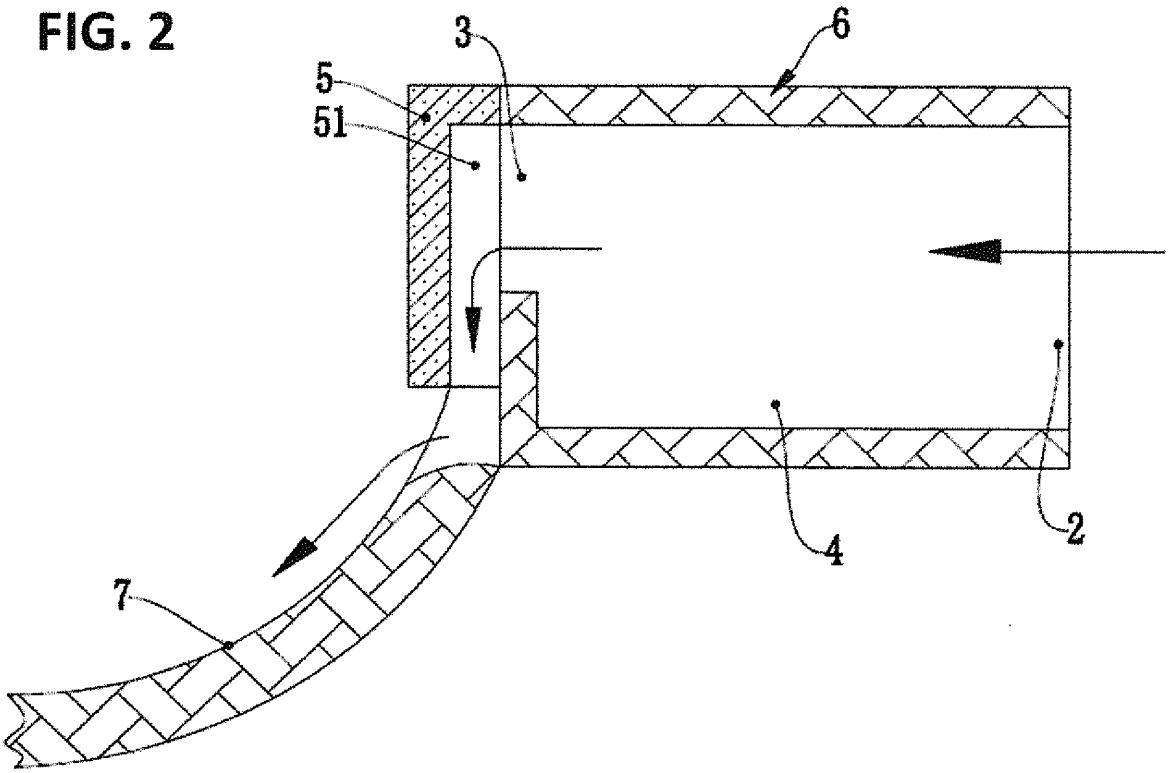


FIG. 3

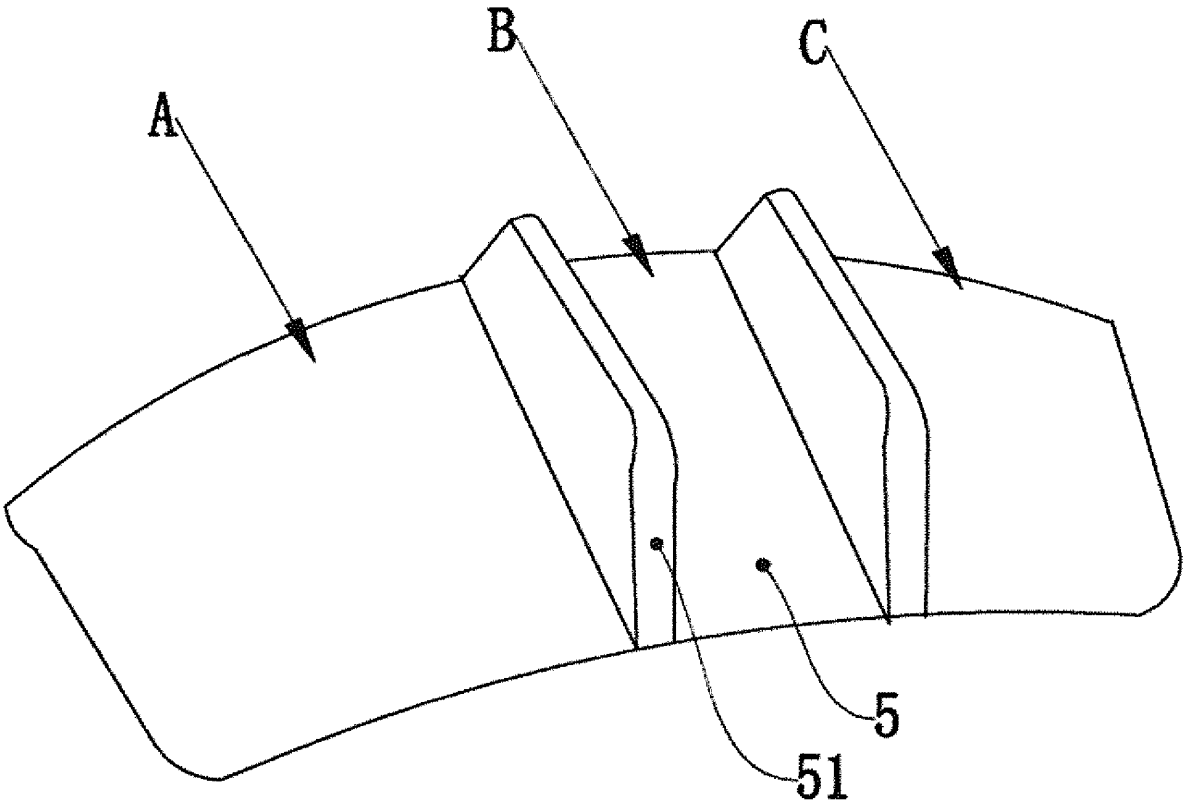


FIG. 4

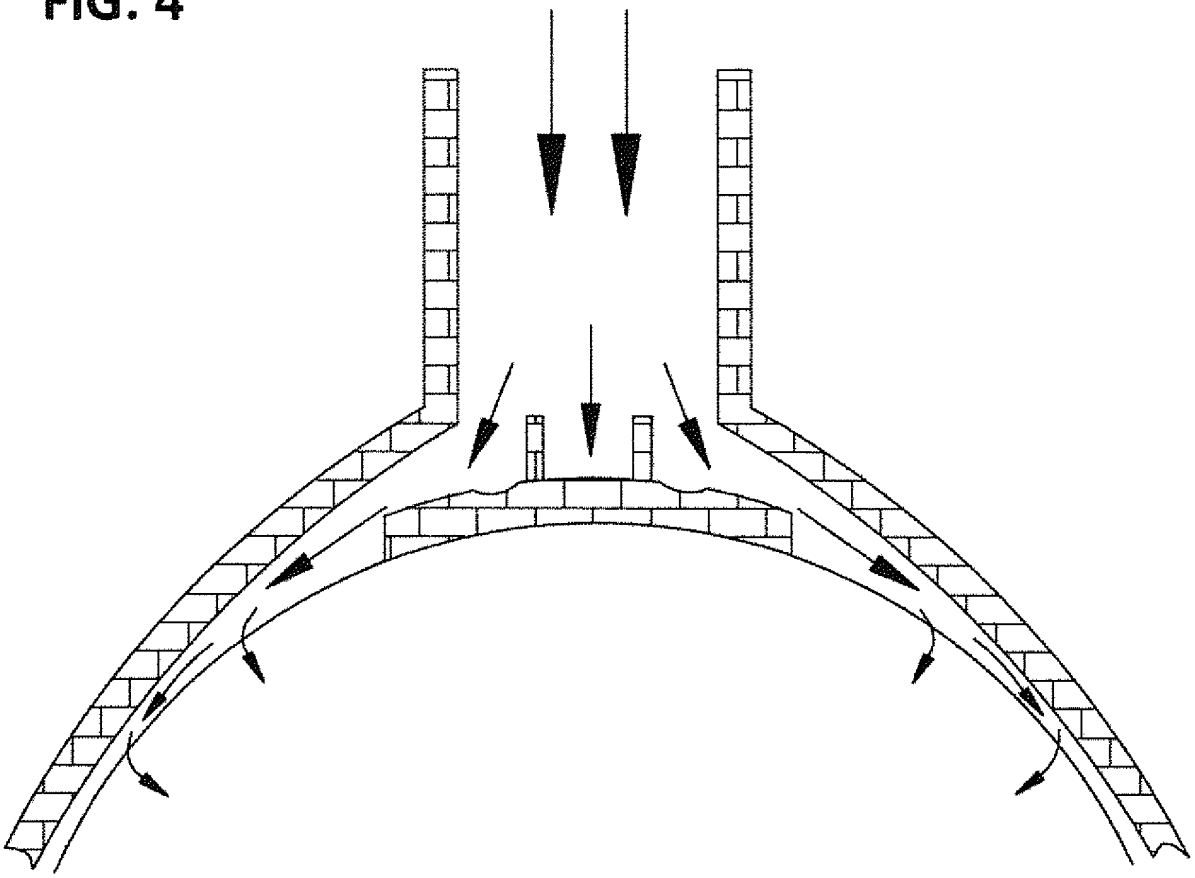


FIG. 5

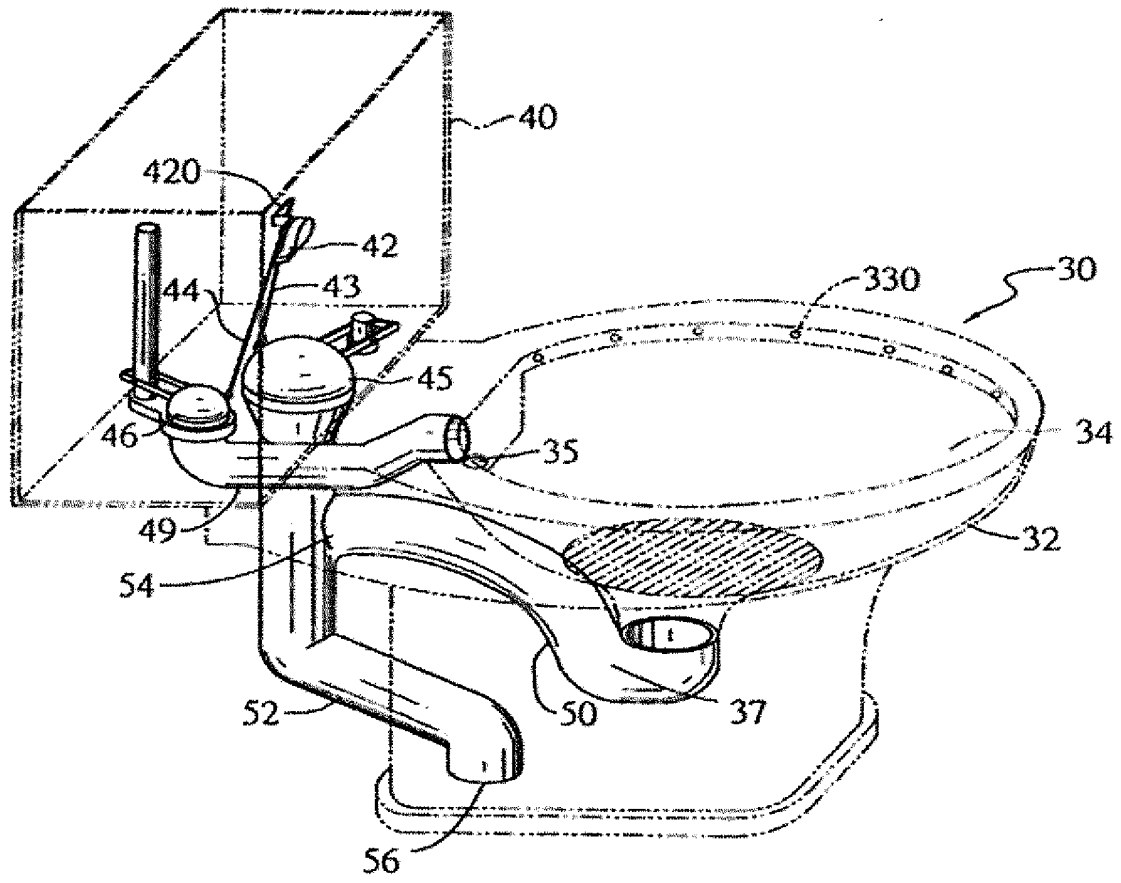
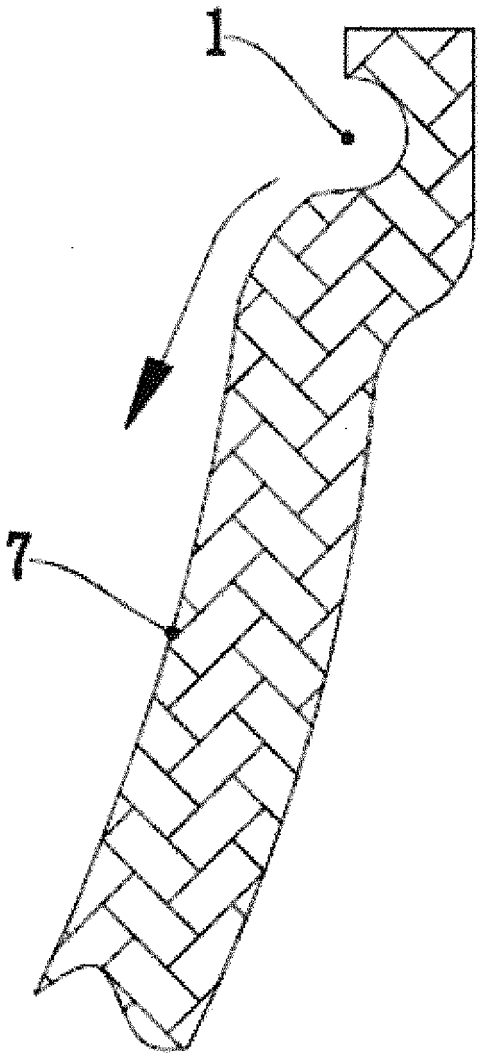


FIG. 6



INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2013/090278

A. CLASSIFICATION OF SUBJECT MATTER

E03D 11/02 (2006.01) i; E03D 11/17 (2006.01) i
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)

E03D 11/-

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)

CNPAT, WPI, EPODOC: FOSHAN SSWW ROYALKING SANITARY WARE CO LTD, toilet w bowl, water, flush, flow+, guid+, distribut+, baffle?, weir?, dam, inner+ w surface, inner+ w wall, circumferent+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	CN 203498975 U (FOSHAN SSWW ROYALKING SANITARY WARE CO., LTD.) 26 March 2014 (26.03.2014) claims 1-10, description, paragraphs [0005] to [0031], figures 1-4, 6	1-10
X	CN 101835945 A (IDEAL STANDARD INT BVBA) 15 September 2010 (15.09.2010) description, paragraphs [0041] to [0058], figures 2-8	1-10
A	CN 202324136 U (YU, Jiwei et al.) 11 July 2012 (11.07.2012) the whole document	1-10

☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
03 July 2014	31 July 2014
Name and mailing address of the ISA State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088, China Facsimile No. (86-10) 62019451	Authorized officer SONG, Weihua Telephone No. (86-10) 62413099

Form PCT/ISA /210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2013/090278

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 203022101 U (SHENZHEN GLOBE UNION IND CORP.) 26 June 2013 (26.06.2013) the whole document	1-10
A	CN 102995730 A (YU, Jiwei et al.) 27 March 2013 (27.03.2013) the whole document	1-10
A	CN 202500204 U (YU, Jiwei et al.) 24 October 2012 (24.10.2012) the whole document	1-10

Form PCT/ISA /210 (continuation of second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2013/090278

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 203498975 U	26 March 2014	None	
CN 101835945 A	15 September 2010	GB 2453319 A	08 April 2009
		EP 2203608 A1	07 July 2010
		WO 2009030904 A1	12 March 2009
		US 2012210505 A1	23 August 2012
		KR 20100049597 A	12 May 2010
CN 202324136 U	11 July 2012	None	
CN 203022101 U	26 June 2013	US 2014130246 A1	15 May 2014
		CA 2820726 A1	13 May 2014
		TW M472723 U	21 February 2014
		EP 2730707 A1	14 May 2014
CN 102995730 A	27 March 2013	None	
CN 202500204 U	24 October 2012	None	

Form PCT/ISA /210 (patent family annex) (July 2009)

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

- WO 200320100838 A **[0003]**