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(54) **WALL-MOUNTED TOILET**

(57) The present application discloses a wall-mounted toilet, including a toilet seat. A rear end of the toilet seat is used for hanging on a wall, the toilet seat has a toilet cavity and a blow-off pipe, the blow-off pipe is connected to a bottom of the toilet cavity, the toilet seat is provided with a water tank behind the toilet cavity, a top of the toilet cavity has a first nozzle, a side of the bottom of the toilet cavity has a second nozzle, the first nozzle and the second nozzle are respectively connected to the water tank, the first nozzle is used for forming vortex water on the top of the toilet cavity to clean a surface of the toilet cavity, and the second nozzle is used for feeding water to the vortex water on the side of the bottom of the toilet cavity to flush the bottom of the toilet cavity. The blow-off pipe is a straight flushing side discharge pipe. According to the wall-mounted toilet, the water tank is arranged behind the toilet cavity, and the toilet is flushed with the cooperation of the first nozzle and the second nozzle, so that the water saving ability is stronger, and the installation and maintenance costs are significantly reduced.

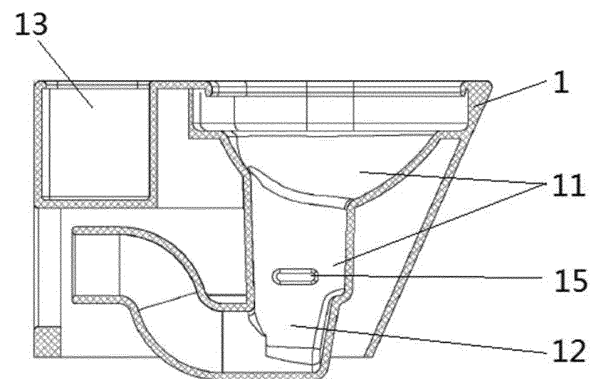


FIG. 1

Description

Technical Field

[0001] The present application relates to the technical field of sanitary wares, and in particular, to a wall-mounted toilet.

Background

[0002] A water tank of a wall-mounted toilet is fixed above the toilet through a water tank bracket and hidden in a wall, and the toilet is fixedly hung on the wall, so this type of toilet is also referred to as an in-wall toilet.

[0003] The wall-mounted toilet is visually attractive and fashionable, but the installation project is very cumbersome. The installer needs to make a fake wall, place the water tank bracket and the water tank inside the wall, then hang the toilet seat on the fake wall, and finally lay tiles or paste wallpaper on the fake wall or paint the wall. During future use, once the water tank is damaged or the pipe leaks, the maintenance personnel has to remove the fake wall to repair the water tank or pipe, and to rebuild and repaint the wall after the repair is completed, so the repair and maintenance are also very inconvenient. On the other hand, drain pipes of most existing wall-mounted toilets are "S"-shaped, which consumes a lot of water when the toilet is flushed, so such toilets are less water-saving.

Summary

[0004] The present application provides a wall-mounted toilet, which can solve the problems that the existing wall-mounted toilets are inconvenient to install and maintain and are not water-saving.

[0005] In order to achieve the above objective, the present application adopts the following technical solution:

A wall-mounted toilet includes a toilet seat, a rear end of the toilet seat is used for hanging on a wall, the toilet seat has a toilet cavity and a blow-off pipe, the blow-off pipe is connected to a bottom of the toilet cavity, wherein the toilet seat is provided with a water tank behind the toilet cavity, a top of the toilet cavity has a first nozzle, a side of the bottom of the toilet cavity has a second nozzle, the first nozzle and the second nozzle are respectively connected to the water tank, the first nozzle is used for forming vortex water on the top of the toilet cavity to clean a surface of the toilet cavity, and the second nozzle is used for feeding water to the vortex water on the side of the bottom of the toilet cavity to flush the bottom of the toilet cavity; the water tank is equipped with a flush button and valves, the valves are used for water intake and drainage, the valves are connected to the first nozzle and the second nozzle respectively, and the flush button can pneumatically control the valves and enable the first nozzle and the second nozzle to clean the toilet cavity; and the

blow-off pipe is a straight flushing side discharge pipe.

[0006] Further, a top of the water tank is flush with the top of the toilet cavity.

[0007] Further, the valves include a first valve and a second valve, the flush button is pneumatically connected to the first valve and the second valve respectively, a bottom of the first valve is connected to an external water pipe to pump water into the water tank, a top of the first valve is connected to the first nozzle, and the second valve is connected to the second nozzle.

[0008] Further, the top of the first valve has a water outlet, an air inlet and a pneumatic control assembly, the water outlet is connected to the first nozzle, the air inlet is disposed beside the water outlet, and the air inlet is connected to the flush button;

[0009] Further, the pneumatic control assembly is located in the air inlet and the water outlet, and is used to control the water outlet to discharge or stop water.

[0010] Further, the blow-off pipe has a U-shaped structure.

[0011] The beneficial effects of the present application are:

- 1) The existing hidden water tank and bracket thereof are relatively high-cost, and are less water-saving. The water tank on the toilet cavity in the present application replaces the conventional arrangement, which can significantly reduce the costs of installation and maintenance, and can achieve the advantages of attractive appearance, space saving, etc.
- 2) The water tank is arranged behind the toilet cavity, the toilet cavity has a first nozzle and a second nozzle, the first nozzle sprays water on the top of the toilet cavity, and by means of the curved surface structure of the toilet cavity, vortex water is formed when the water flows down to clean the surface of the toilet cavity; the second nozzle sprays a water column on the side of the bottom of the toilet cavity, and the water column flows out from the side of the bottom to increase the velocity and pressure of the vortex water, so as to quickly flush dirt into the blow-off pipe; the cooperation of the two nozzles can flush the toilet more thoroughly with less water.
- 3) The blow-off pipe is a straight flushing side discharge pipe, which has a large vortex adsorption force and can easily flush dirt thoroughly, so it has the characteristics of water saving, non-clogging, strong flushing force, etc.

Brief Description of the Drawings

[0012]

FIG. 1 is a schematic structural diagram of a toilet seat of a wall-mounted toilet;
FIG. 2 is a schematic structural diagram illustrating that the toilet seat is installed on a wall according to an embodiment;

FIG. 3 is a three-dimensional diagram of the toilet seat according to an embodiment;
 FIG. 4 is a top view of a wall-mounted toilet;
 FIG. 5 is a side sectional view of the wall-mounted toilet.

Detailed Description of the Embodiments

[0013] The present application will be further described in detail below through specific embodiments in conjunction with the accompanying drawings.

[0014] Water tanks of wall-mounted toilets currently on the market are hidden behind the wall. Such toilets are very inconvenient to install and maintain, and the existing wall-mounted toilets are less water-saving. The present application provides a wall-mounted toilet, which does not require an additional water tank bracket, does not require to build a wall, and is convenient to install and maintain and is water-saving.

[0015] As shown in FIGS. 1-5, a wall-mounted toilet includes a toilet seat 1, the rear end of the toilet seat 1 is a fixed end, and the fixed end of the toilet seat 1 is used for hanging and installing on a wall. The toilet seat 1 has a toilet cavity 11 and a blow-off pipe 12, one end of the blow-off pipe 12 is connected to a bottom of the toilet cavity 11, and the other end thereof is connected to a domestic sewage pipe on the wall. The toilet seat 1 is provided with a water tank 13 behind the toilet cavity 11, a top of the toilet cavity 11 has a first nozzle 14, and a side of the bottom of the toilet cavity 11 has a second nozzle 15. After the first nozzle 14 sprays water, the water can flow along the surface and inner wall of the toilet cavity 11 to the bottom, to form vortex water, which flushes dirt on the surface of the toilet cavity. The dirt referred to in this embodiment includes human excrement. The second nozzle is located on a side of the bottom of the toilet cavity, and the bottom of the toilet cavity is generally a sealing water line of the toilet. When the vortex water flows to the bottom of the toilet cavity 11, the water from the second nozzle is sprayed out from the side and feeds

water to the vortex water, thereby increasing the velocity and pressure of the vortex water, to quickly flush the vortex water and dirt into the blow-off pipe 12.

[0016] The first nozzle 14 and the second nozzle 15 respectively generate and accelerate the vortex water. The vortex water can flush the wall-mounted toilet of the present application more thoroughly with less water, and the water tank 13 of the present application can thus be miniaturized. The miniaturized water tank saves the space occupied by the entire wall-mounted toilet, and also enables the wall-mounted toilet to be coordinated and attractive after installation.

[0017] As shown in FIG. 4, a flush button 2 is installed on a side of the water tank 13 to facilitate users' pressing operation when using the toilet. Valves are installed inside the water tank 13 for water intake and drainage, the valves are connected to the first nozzle 14 and the second nozzle 15, and the flush button 2 is pneumatically con-

nected to the valves, so that the flush button 2 can control the valves, which then control the first nozzle 14 and the second nozzle 15 to clean the toilet cavity 11. The pneumatic flush button 2 replaces the conventional mechanical button, and the water output of the first nozzle 14 and the second nozzle 15 is adjusted by a pressing force.

[0018] As shown in FIGS. 1 and 2, the blow-off pipe 12 is a straight flushing side discharge pipe, and the tail end of the blow-off pipe 12 is connected to a domestic sewage pipe on the wall. The straight flushing pipe has a simple structure. After the vortex water flushes dirt into the blow-off pipe 12, the dirt directly enters the domestic sewage pipe on the wall from the blow-off pipe 12. The blow-off pipe 12 of the present application is different from an inverted S-shaped pipe of a siphon toilet, and does not have a tortuous pipe path. The blow-off pipe 12 can discharge dirt in the shortest distance, so more water can be saved. In this embodiment, the blow-off pipe 12 includes a trap pipe with a similar U-shaped structure. After the dirt enters the blow-off pipe 12 from the toilet cavity 11, it is discharged to the domestic sewage pipe on the side wall through the U-shaped trap to prevent bad smell.

[0019] Further, the valves include a first valve 31 and a second valve 32. As shown in FIG. 4, the flush button 2 is pneumatically connected to the first valve 31 and the second valve 32 respectively, a bottom of the first valve 31 is connected to a water pipe, and a top of the first valve 31 is connected to the first nozzle 14. Therefore, the first valve 31 can not only pump tap water into the water tank 13, but also spray water into the toilet cavity 11 through the connected first nozzle 14. Correspondingly, the second valve 32 is connected to the second nozzle 15. After the second nozzle 15 and the second valve 32 drain the water in the water tank 13 to a remaining water level, the bottom of the first valve 31 starts to pump water automatically, and the water is stopped when the water tank 13 reaches a designated working water level.

[0020] Further, as shown in FIG. 4, the top of the first valve 31 has a water outlet 311, an air inlet 312 and a pneumatic control assembly, the water outlet 311 is connected to the first nozzle 14, the air inlet 312 is disposed beside the water outlet 311, and the air inlet 312 is connected to the flush button 2. The pneumatic control assembly is located in the air inlet 312 and the water outlet 311, and the pneumatic control assembly controls the water outlet 311 to discharge or stop water.

[0021] In one embodiment, as shown in FIG. 2, the top of the water tank 13 is flush with the top of the toilet cavity 11, and the top of the toilet cavity 11 is provided with a toilet ring 4, that is, the top of the water tank 13 is flush with the toilet ring 4, so that when the water tank 13 is located behind the toilet cavity 11, the water tank 13 is inconspicuous and visually more attractive, and a toilet lid can be turned back conveniently.

[0022] According to the wall-mounted toilet, the water tank is arranged behind the toilet cavity, and the first nozzle

zle and the second nozzle 15 cooperate with each other, so that the toilet cavity can be flushed thoroughly with a small amount of water. The water tank of the present application replaces the arrangement of the water tank in the wall, which is easy to install and maintain with low cost, and has the effects of attractive appearance and space saving. In addition, the flush button is pneumatic, and it controls the first valve and the second valve by means of changes in air pressure to discharge water and stop water. The larger the pressing force is, the more the water is discharged. The smaller the pressing force is, the less the water is discharged. Therefore, the water output can be easily controlled, and more water can be saved.

[0023] On the other hand, the blow-off pipe is a straight flushing side discharge pipe, which has a large vortex adsorption force and can easily flush dirt thoroughly, so it has the characteristics of water saving, non-clogging, strong flushing force, etc.

[0024] The above are further detailed descriptions of the present application in combination with specific embodiments, and the specific embodiments of the present application are not limited to these descriptions. Many simple deductions or substitutions may also be made for those of ordinary skill in the art without departing from the inventive concept of the present application.

Claims

1. A wall-mounted toilet, comprising a toilet seat, wherein a rear end of the toilet seat is used for hanging on a wall, the toilet seat has a toilet cavity and a blow-off pipe, the blow-off pipe is connected to a bottom of the toilet cavity, wherein the toilet seat is provided with a water tank behind the toilet cavity, a top of the toilet cavity has a first nozzle, a side of the bottom of the toilet cavity has a second nozzle, the first nozzle and the second nozzle are respectively connected to the water tank, the first nozzle is used for forming vortex water on the top of the toilet cavity to clean a surface of the toilet cavity, and the second nozzle is used for feeding water to the vortex water on the side of the bottom of the toilet cavity to flush the bottom of the toilet cavity; the water tank is equipped with a flush button and valves, the valves are used for water intake and drainage, the valves are connected to the first nozzle and the second nozzle respectively, and the flush button can pneumatically control the valves and enable the first nozzle and the second nozzle to clean the toilet cavity; and the blow-off pipe is a straight flushing side discharge pipe.
2. The wall-mounted toilet according to claim 1, wherein a top of the water tank is flush with the top of the toilet cavity.
3. The wall-mounted toilet according to claim 1, wherein the valves comprise a first valve and a second valve, the flush button is pneumatically connected to the first valve and the second valve respectively, a bottom of the first valve is connected to an external water pipe to pump water into the water tank, a top of the first valve is connected to the first nozzle, and the second valve is connected to the second nozzle.
4. The wall-mounted toilet according to claim 3, wherein the top of the first valve has a water outlet, an air inlet and a pneumatic control assembly, the water outlet is connected to the first nozzle, the air inlet is disposed beside the water outlet, and the air inlet is connected to the flush button; the pneumatic control assembly is located in the air inlet and the water outlet, and is used to control the water outlet to discharge or stop water.
5. The wall-mounted toilet according to any one of claims 1-4, wherein the blow-off pipe has a U-shaped structure.

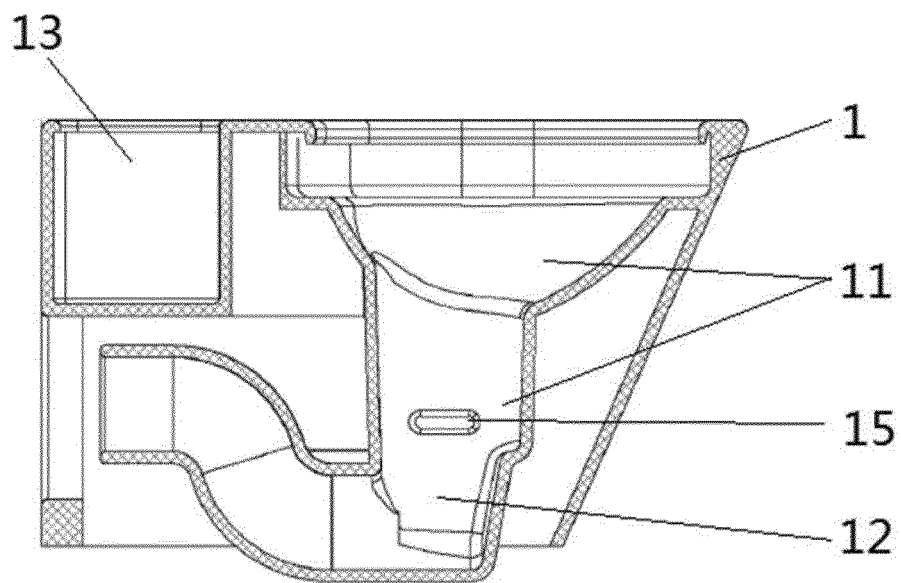


FIG. 1

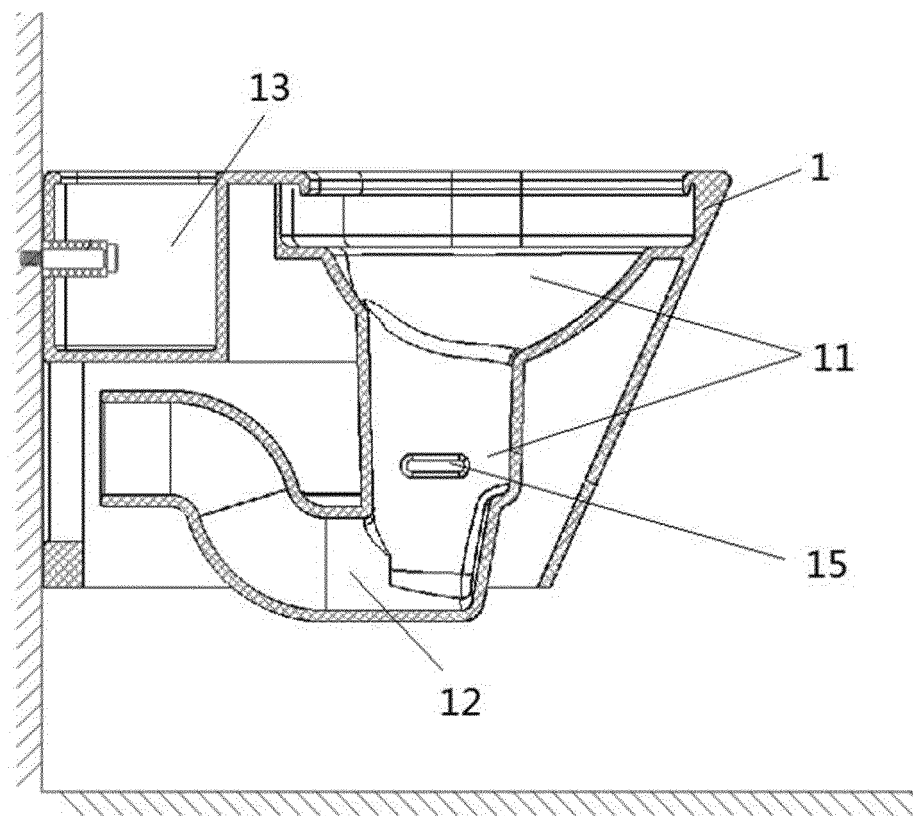


FIG. 2

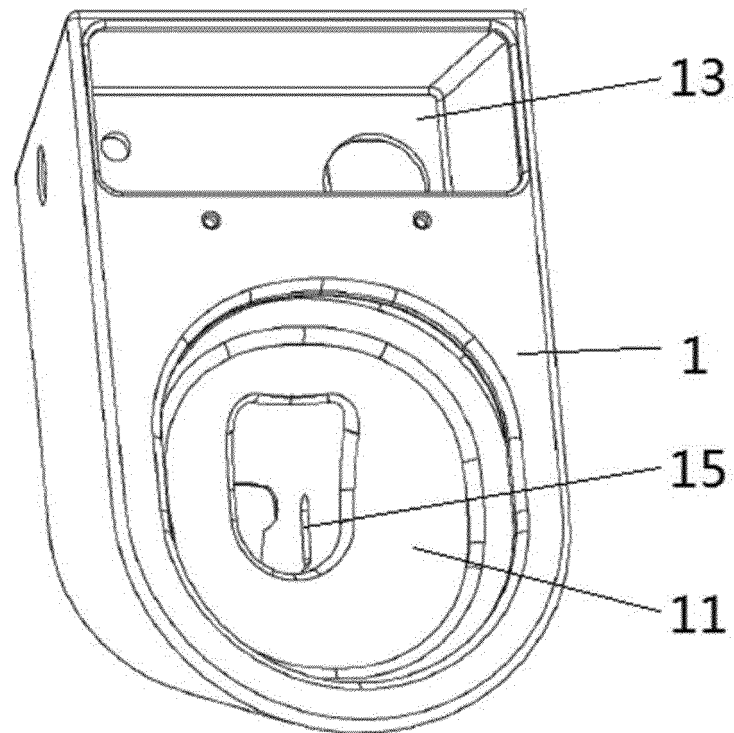


FIG.3

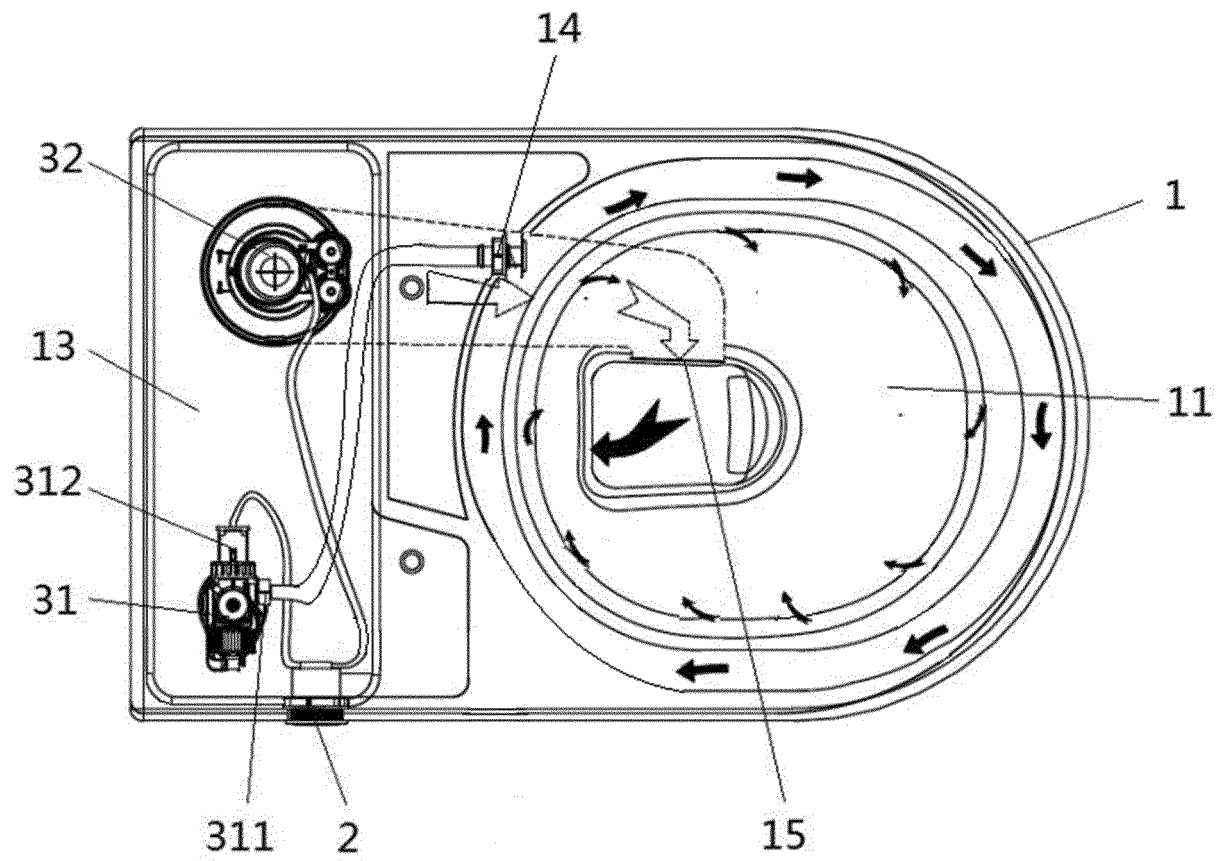


FIG. 4

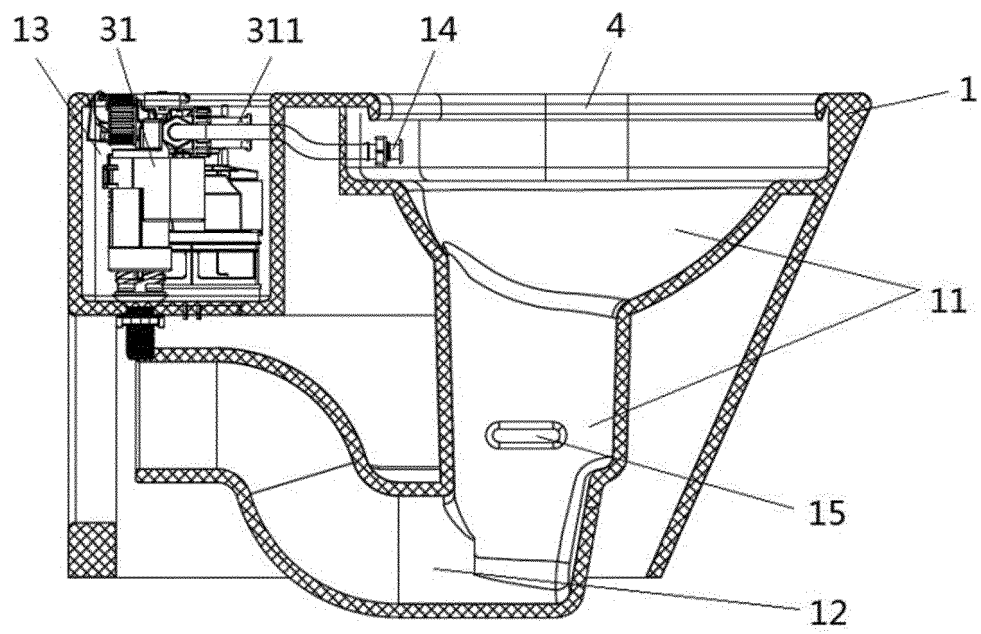


FIG. 5

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2020/089986

5	A. CLASSIFICATION OF SUBJECT MATTER		
	E03D 11/14(2006.01)i; E03D 11/08(2006.01)i; E03D 1/012(2006.01)i		
	According to International Patent Classification (IPC) or to both national classification and IPC		
10	B. FIELDS SEARCHED		
	Minimum documentation searched (classification system followed by classification symbols) E03D		
	Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
15	Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) CNABS, CNTXT, CJFD, VEN: 马桶, 悬挂, 壁挂, 墙, 水箱, 旋流, 涡流, toilet, hang, hung, hanging, wall, tank, circle, eddy, evortex, whirlpool, flow		
	C. DOCUMENTS CONSIDERED TO BE RELEVANT		
20	Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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	☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
40	* 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
45	Date of the actual completion of the international search 17 July 2020		Date of mailing of the international search report 28 July 2020
50	Name and mailing address of the ISA/CN China National Intellectual Property Administration (ISA/CN) No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088 China		Authorized officer
55	Facsimile No. (86-10)62019451		Telephone No.

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

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