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(54) Title: LAVATORY BOWL RIM BLOCK HOLDER WITH PIVOTING HOOK

(57) Abstract: A toilet-cleaning device comprises a suspension member (30) and a basket portion (20), wherein one end of said suspension member is a ring-shaped hook (67) with an opening, said basket portion comprises a plurality of chambers for accommodating the toilet-cleaning blocks, the top end of said basket portion comprises a roller portion (62), and the ring-shaped hook (67) of said suspension member is for installation on said roller portion (62) so as to be rotatable around said roller portion. Therefore, said toilet-cleaning device can be adaptive to suspension on the edge of toilets of various sizes and provide a variety of cleaning capabilities by means of the plurality of toilet-cleaning blocks.

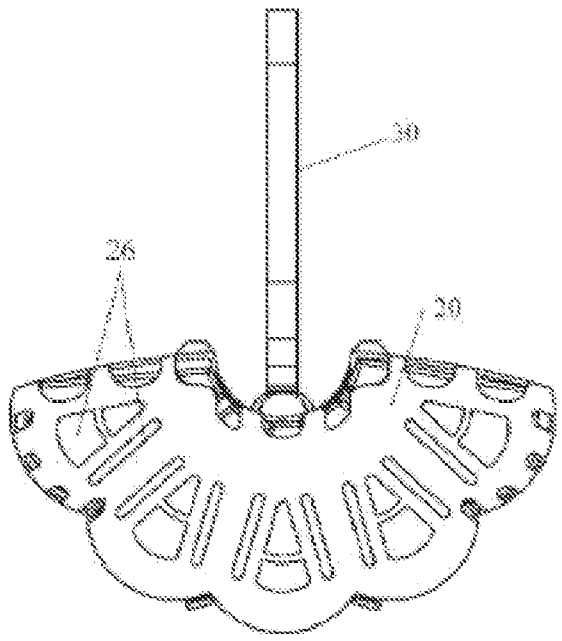


Fig. 1

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SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *of inventorship (Rule 4.17(iv))*

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LAVATORY BOWL RIM BLOCK HOLDER WITH PIVOTING HOOK

Field

The present disclosure relates to a toilet-cleaning device and toilet-cleaning blocks, and in particular to a toilet-cleaning device having a rotatable suspension member and toilet-cleaning blocks used on said toilet-cleaning device.

Background

Existing toilet-cleaning blocks (cleaning blocks) are disposed below the edge of a toilet or placed into a water tank to clean the toilet, produce cleaning foams in the toilet, disinfecting the toilet and/or removing odor while providing a fragrance. Suspension hooks of existing toilet-cleaning devices that are disposed on toilet edge for accommodating toilet-cleaning blocks are fixedly connected to the suspended baskets may not be adjusted. Therefore, such a connection method may not fit different toilets' internal curvatures, such that a suspended device may not be able to be tightly attached to the internal wall below the toilet edge, consequently making it harder to use or even impossible to work with the toilet. In addition, existing toilet-cleaning devices can typically accommodate one or two toilet-cleaning blocks, making it harder for such toilet-cleaning devices to simultaneously have a variety of cleaning capabilities. As a result, it may be desired to have a toilet-cleaning device that is adaptive to different toilet sizes, more smoothly attached to the internal wall of a toilet, more beautiful and furthermore, can provide more cleaning capabilities to meet the demand of different users.

Summary

In light of the above demand, an example toilet-cleaning device and toilet-cleaning blocks thereof that can be adaptive to more toilet shapes and to provide more cleaning capabilities is disclosed herein.

The present disclosure provides a toilet-cleaning device, characterized in that it comprises a suspension member and a basket portion, wherein one end of said suspension member is a ring-shaped hook with an opening, said basket portion comprises a plurality of chambers for accommodating toilet-cleaning blocks, the top end of said basket portion comprises a roller portion, and the ring-shaped hook of said suspension member is for installation on said roller portion so as to be rotatable around said roller portion.

With respect to the toilet-cleaning device according to one example, the suspension member thereof is provided with ribs on the external side of the ring-shaped hook, said basket portion further comprises a baffle plate disposed at one side of said roller portion and an opening at the bottom of said roller portion, said opening accommodates said ribs on the external side of the ring-shaped hook when said suspension member is installed to said basket portion, and said baffle plate and said ribs prevent a user from installing the suspension member in a wrong direction.

With respect to a toilet-cleaning device according another example, the basket portion thereof is provided with wall ribs therein for separating a plurality of chambers and preventing water from flowing among the chambers. In one example, the basket portion thereof comprises five shell-shaped chambers and each chamber comprises openings for water to flow in and out. The basket portion is formed by locking two parts, and the two parts are connected by means of hooks (buckles) and are mutually positioned by means of a pin.

The present disclosure further provides toilet-cleaning blocks used on the above toilet-cleaning device, the toilet-cleaning blocks may include the following one or more components: an ionic surfactant (e.g. alkylbenzene sulphonic acid), a non-ionic surfactant, a filling agent (e.g. sodium sulfate), a chelating agent, a dye and a fragrance. The toilet-cleaning block can be made through extruding at 50 to 150°C using an extruding machine.

Brief Description of the Drawings

To more clearly describe examples of the present disclosure, the accompanying drawings of the examples will be briefly described below. Apparently, the drawings described below only relate to a few examples of the present disclosure, rather than limiting the present disclosure.

Fig. 1 illustrates the back of the toilet-cleaning device according to an embodiment of the present disclosure;

Fig. 2 illustrates the bottom of the toilet-cleaning device according to the embodiment shown in Fig. 1;

Fig. 3 illustrates the top and the front of the toilet-cleaning device according to the embodiment shown in Fig. 1;

Fig. 4 illustrates an embodiment of the connection structure between the hook and the basket of the toilet-cleaning device;

Fig. 5 illustrates the inside of the basket of the toilet-cleaning device according to the embodiment shown in Fig. 1;

Fig. 6 illustrates that water flows through each chamber of the basket of the toilet-cleaning device according to the embodiment shown in Fig. 1;

Fig. 7 illustrates an embodiment of the hook according to the present disclosure;

Fig. 8 illustrates an embodiment of the toilet-cleaning block according to the present disclosure.

Detailed Description

The present disclosure provides a toilet-cleaning device that is disposed on toilet edge and toilet-cleaning blocks thereof. Examples of the present disclosure will be described below with reference to the accompanying drawings. The illustration and description of these examples are for the purpose of description, rather than for limiting the present disclosure in any way.

An exemplary embodiment of the present disclosure is shown in Fig. 1. The toilet-cleaning device comprises a toilet-cleaning block 10 (see Fig. 8), a basket 20 for accommodating toilet-cleaning blocks and a suspension member 30 (e.g. a hook). The toilet-cleaning block shown in Fig. 8 may comprise one or more of the following components: an ionic surfactant (e.g. alkylbenzene sulphonic acid), a non-ionic surfactant, a filling agent (e.g. sodium sulfate), a chelating agent, a dye and a fragrance. The toilet-cleaning block may be made through extruding at certain temperature (e.g. 50 ~ 150°C) using an extruding machine.

The basket 20 in Fig. 1 has a shape similar to a shell, including 5 chambers for accommodating toilet-cleaning blocks. Of course, the number of chambers may vary as needed. Fig. 1 shows the back of the basket 20, and said back may be a surface curved to certain degree for better adapting to the inner surface of the toilet. That is because the inner surface of a toilet is typically curved, and the inner surfaces of different toilets are usually different and irregular. Moreover, it can be seen from Fig. 1 that the back of the basket 20 is further formed with a plurality of holes 26 for water to flow through. These holes may be of various shapes, such as triangular, round, rectangular, elongated, etc.

The hook 30 is for suspension at a toilet edge. The hook has a claw structure at one end thereof (see Fig. 4), which can be installed to a corresponding axis on the basket such that the hook rotates around said axis, thereby being adaptive to the inner surfaces of different toilets.

Fig. 2 illustrates the bottom of the basket. As shown in the figure, the basket bottom comprises a plurality of holes (21), and the sizes of these holes may be designed to allow a certain amount of water to flow through as needed, for example, the hole size may be 3 mm or other appropriate sizes. In addition, the basket bottom may comprise a connection portion (22), which may be in the form of a hook or buckle, to tightly connect two parts of the basket.

Fig. 3 illustrates the top and the front of the basket. As shown in the figure, the basket top comprises a plurality of holes, these holes may be formed to be bigger than the holes on the basket bottom for allowing water to flow through during toilet flushing. These holes are formed to be sufficiently big that each chamber of the basket has a sufficient amount of water entering and flowing through. In addition, Fig. 3 illustrates a hinge disposed at the basket top. Fig. shows 2 hinges 61, and two parts of the basket; the front and the back, can rotate around the hinges.

As shown in Fig. 3 and Fig. 4, there is a roller portion 62 in the central portion of the basket top, said roller portion 62 may be used as the axis of the hook 30, and the hook 30 may rotate around it. There is a stop block 65 by said roller portion, said stop block may have a semi-circular shape or other shapes to prevent a user from installing the hook in a wrong direction and ensure the correct installation during use. As shown in Fig. 4, the end of the hook 30 connecting to the basket 20 may be a ring-shaped hook 67 with an opening, which may have about three quarters of a ring for rotating around the roller portion 62. To further prevent a user from installing the hook in a wrong direction, small ribs 69 may be disposed on the external edge of the ring-shaped hook. To accommodate said ribs, an opening 63 may be formed under the basket's roller portion 62, and said opening may be rectangular or have other shapes. Said opening provides space for the ribs on the hook 30, such that the hook may rotate around said roller portion in a larger range.

As shown in Fig. 3, moreover, the example is that said basket comprises five chambers for accommodating toilet-cleaning blocks, the basket has 5 chambers with protruding surfaces, which is similar to the surface shape of a shell, and the 5 chambers have a similar shape. There is an outlet for water to flow out on the surface of these five chambers, respectively. In Fig. 3,

these outlets are triangular, which may also be designed to have other shapes. As a result, it ensures that water can flow out therefrom and at the same time, keeps the appearance beautiful.

Fig. 5 illustrates the inside of the basket in Fig. 3. The inside of the basket may be separated into five chambers by means of four wall ribs 52 such that water flushed into the chambers cannot flow among the chambers. Such a design is to enable the toilet-cleaning blocks to be used almost equally under their respective water flows. Generally speaking, water will flow to lower chambers (chambers closer to the center herein) without the separating wall ribs. In such a way, the toilet-cleaning blocks in the center will disappear more rapidly than other toilet-cleaning blocks, while the toilet-cleaning blocks at the two ends may be used up the latest. On the other hand, a basket formed with wall ribs ensures that 5 toilet-cleaning blocks can be used evenly as much as possible through the holes formed on the basket. Fig. 5 further illustrates an internal fixing part (e.g. a pin) 54 of one of the two parts of the basket, which may be disposed at the corners of two ends of the basket and fix the relative position between the two parts when the two parts are closed with each other. In addition to the provision of a basket with wall ribs, the even use of five toilet-cleaning blocks can also be ensured by adjusting the sizes of water inlets and outlets, which will be described with reference to Fig. 6.

Fig. 6 illustrates that water flows through the basket shown in Fig. 5 when the basket shown in Fig. 5 is used. The same numerals indicate a water flow entering and exiting the same chamber. It can be seen from Fig. 6 that for the toilet-cleaning blocks on both sides, more water would flow into chambers on the outer sides relative to the chambers on the inner sides closer to the center during every flush, as the water inlets of inside chambers are smaller than those on outside chambers and the outlets are substantially the same for all chambers. In such a way, the dissolution rate is even for all toilet-cleaning blocks, which can be used up substantially at the same time.

Fig. 7 illustrates an embodiment of the hook. As described above, one end of the hook is configured to be installed onto the roller portion of the basket for rotating around the roller portion. The length of the b side of the hook is set to match the height of the straight section of the toilet edge, the relative lengths of a and b sides and the angles at two sides are all set to be better adaptive to more different toilets, wherein the angle of a and b sides are obtuse angles greater than 90 degrees. In such a way, the size and shape of the hook are configured to be adaptive to more toilets to allow the basket to be better disposed under the toilet edge. In addition, the connection between the hook and the basket may further adjust the position of the

basket in the toilet. For example, the b side of the hook can be designed between 60 mm and 70 mm, the a side can be designed to be about one half of the b side, while the angle between a and b is designed to be greater than 100 degrees, for example, between 110 degrees and 120 degrees.

Fig. 8 illustrates an embodiment of the toilet-cleaning block suitable for use on the basket shown in Fig. 3. A plurality of blocks (for example five) placed into one basket may have the same shape, which is the shape of a shell, while the top surface and the bottom surface may be flat. These five blocks may have different components, thereby providing different cleaning experiences to users, such as cleaning, producing cleaning foam, disinfecting toilets and/or removing odor while providing a fragrance.

The basket of a shell shape according to the present disclosure can more smoothly adapt to edges and inner sides of various toilets, and offer a good and attractive appearance. The suspension member can be adaptive to toilet edges of various shapes and sizes, and can be used on toilet inner walls with different slopes through the design of a rotatable suspension member. In addition, the use of a baffle plate can prevent incorrect installation by a user.

Industrial Applicability

The disclosure herein provides a toilet-cleaning device and toilet-cleaning blocks thereof that can be adaptive to various toilet shapes and provide additional cleaning capabilities.

Apparently, those skilled in the art may make all kinds of modifications and variations on the present disclosure without departing from the spirit and scope of the present disclosure. If such modifications and variations of the present disclosure fall into the scope of the claims and equivalent technologies thereof, the present disclosure will also intend to encompass these modifications and variations.

CLAIMS

1. A toilet-cleaning device, characterized in that it comprises a suspension member and a basket portion, wherein one end of said suspension member is a ring-shaped hook with an opening, said basket portion comprises a plurality of chambers for accommodating toilet-cleaning blocks, the top end of said basket portion comprises a roller portion, and the ring-shaped hook of said suspension member is for installation on said roller portion so as to be rotatable around said roller portion.

2. The toilet-cleaning device as set forth in Claim 1, characterized in that said suspension member is provided with ribs on the external side of the ring-shaped hook, said basket portion further comprises a baffle plate disposed at one side of said roller portion and an opening at the bottom of said roller portion, said opening accommodates said ribs on the external side of the ring-shaped hook when said suspension member is installed to said basket portion, and said baffle plate and said ribs prevent a user from installing the suspension member in a wrong direction.

3. The toilet-cleaning device as set forth in Claim 1, characterized in that said basket portion is provided with wall ribs therein for separating a plurality of chambers and preventing water from flowing among the chambers.

4. The toilet-cleaning device as set forth in Claim 1, characterized in that said basket portion comprises five shell-shaped chambers and each chamber comprises openings for water to flow in and out.

5. The toilet-cleaning device as set forth in Claim 1, characterized in that said basket portion is formed by locking two parts, and the two parts are connected by means of hooks and are mutually positioned by means of a pin.

6. A toilet-cleaning block used on the toilet-cleaning device as set forth in Claim 1, characterized in that said toilet-cleaning block comprises the following one or more components: an ionic surfactant, a non-ionic surfactant, a filling agent, a chelating agent, a dye and a fragrance.

7. The toilet-cleaning block as set forth in Claim 6, characterized in that said toilet-cleaning block is made through extruding at 50°C to 150°C using an extruding machine.

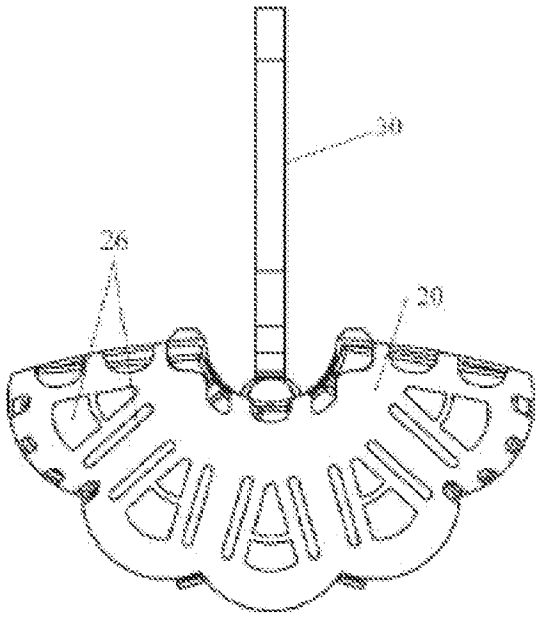


Fig. 1

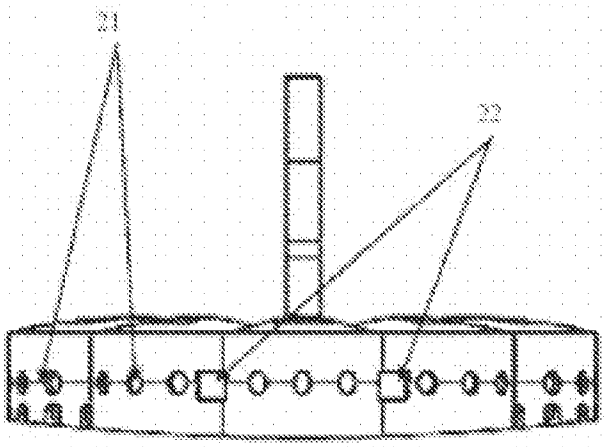


Fig. 2

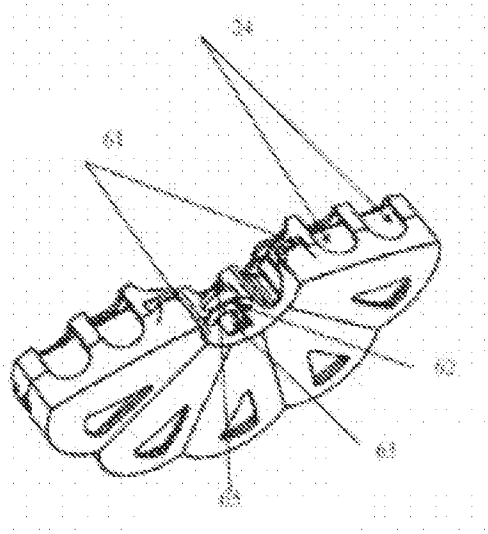


Fig. 3

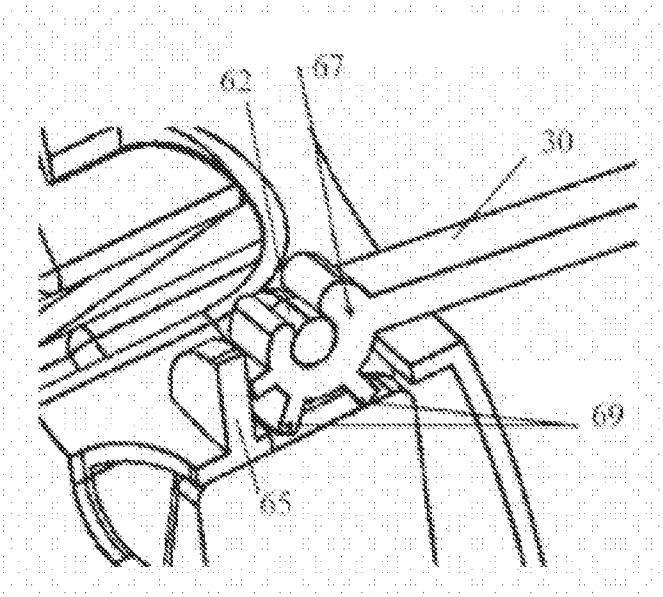


Fig. 4

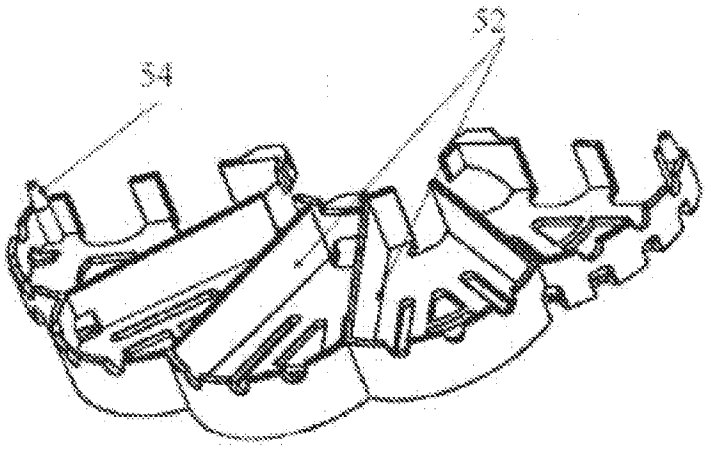


Fig. 5

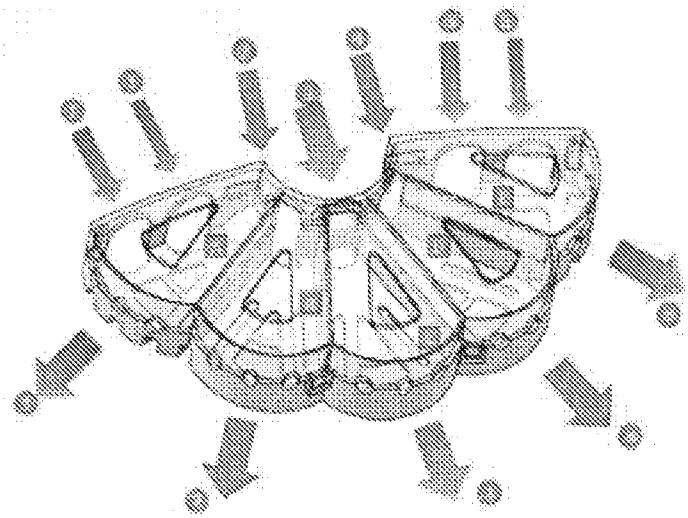


Fig. 6

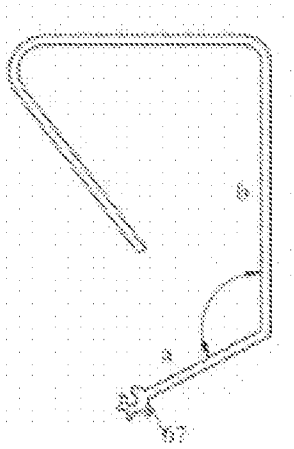


Fig. 7

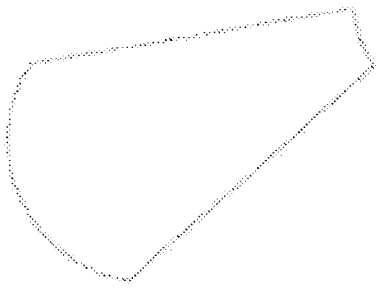


Fig. 8

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2014/058071

A. CLASSIFICATION OF SUBJECT MATTER
INV. E03D9/03
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)
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)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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A	figures 1,2	2

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
13 November 2014	24/11/2014

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Geisenhofer, Michael

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INTERNATIONAL SEARCH REPORT

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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