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(72) Inventor; and

(71) Applicant: **DEFRANCESCO, Jason** [US/US]; 12 Nelson Ridge Rd., Princeton, NJ 08540 (US).

(72) Inventors: **MAIRE, David**; 822 Bentley Green Circle, Winter Springs, FL 32708 (US). **DEFRANCESCO, Nataliya**; 12 Nelson Ridge Rd., Princeton, NJ 08540 (US).

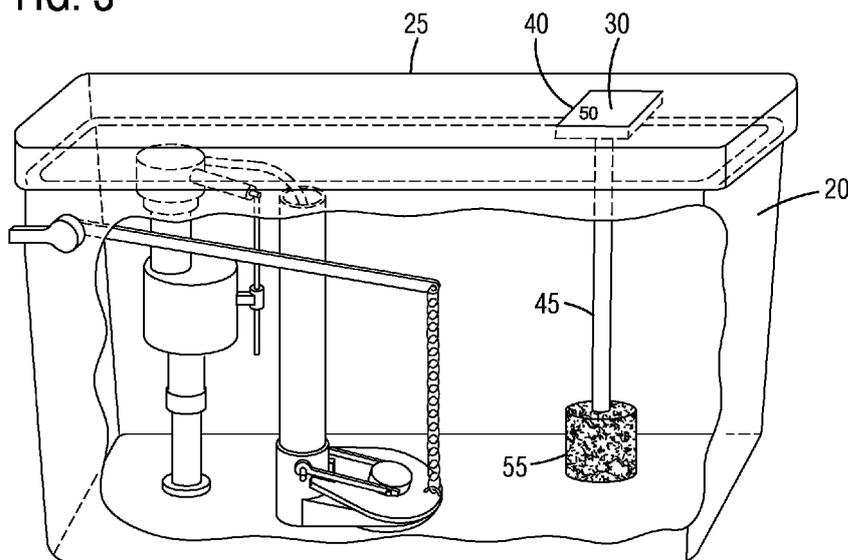
(74) Agent: **DEFRANCESCO, Jason**; 12 Nelson Ridge Rd., Princeton, NJ 08540 (US).

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(54) Title: TOILET BOWL HAVING INTEGRATED IMPLEMENT

FIG. 3



(57) Abstract: The instant invention provides an improved toilet 10 that promotes ease and convenience of cleaning and promotes simplicity without clutter, by providing easy access to implements housed by the toilet. An example provides an access port 40 formed through a toilet wall, such as a cover 25 that allows passage of an implement, i.e., a toilet brush 55, stored within the toilet.



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## TOILET BOWL HAVING INTEGRATED IMPLEMENT

### I. Background

#### A. Field of Invention

[0001] The present invention generally relates to toilet bowls. In particular, the present invention relates to an improved toilet that has an access port formed through it, to allow containment and passage of an implement.

#### B. Description of the Related Art

[0002] A toilet is a well-known piece of sanitary hardware used for collection and disposal of human waste. Toilets can be with or without flushing water and can be arranged in a sitting or squatting posture. Generally, a toilet that flushes comprises a bowl which receives waste; a tank that houses flushing components and holds water that transitions to the bowl when flushed; and a removeable cover for the tank which allows access to the tank interior. A toilet is typically located in a washroom and requires regular cleaning and maintenance to avoid growth of bacteria and mold and the promulgation of other harmful organisms and viruses that may cause illness to humans.

[0003] It is not uncommon for a toilet, particularly the bowl, to be cleaned using bleaching preparations and a cleaning implement such as a toilet brush or wand. Improvements in the industry have led to dissolvable bleaching tablets that can be put inside a tank. While the

bleach generally aides in sanitation, a toilet brush is still required to remove dirt, including film formed inside the tank and on bowl surfaces. A brush is generally stored away along with chemicals conveniently nearby the toilet, either alone or by use of a stand. The brush or stand however may be considered unsightly in aesthetics, the cause of unwanted clutter, a source of odor or harmful illness if not fully cleaned and disinfected after each use. One such cleaning implement is a toilet scrubber sold by the 3M Home Care Division under the brand name Scotch-Brite<sup>®</sup>, and it includes a wand for holding a disposable foam scrubber and a caddy for storing the wand and scrubber refills.

[0004] In order to cure the unsightliness and clutter, it has been known to create a trap door in a wall nearby a toilet that houses and conceals a toilet brush. This approach however requires cutting a wall and assembling hardware and related components, and does not resolve the sanitation problem. Wherefore, there is a need in the industry to provide a toilet cleaning implement that is conveniently located, concealed and requires minimal sanitary maintenance, if any.

## **II. Summary**

[0005] In one embodiment, the instant invention is a toilet modified to store an implement, such as a toilet brush. In an embodiment, the brush may be stored inside a tank of the toilet and accessed through a port formed through a wall of the toilet, namely the tank or cover. A retainer may further be provided to releasably secure the implement inside the tank during when not in use. The brush may be exposed to water in the tank, and therefore is cleaned when the tank is flushed and refilled with new water. Another embodiment includes a housing that

extends from the cover, for example, inside the tank and in direct communication with the access port formed on the cover. The housing can be waterproof or it may comprise openings or a mesh that act as a filter to dirt or waste and allows the housing to fill with water so as not to displace the volume of liquid in the tank. In another embodiment, a portion of the cover extends beyond the tank. The extended portion has an access port formed therethrough and may further provide a housing extending therefrom that is exterior to the tank.

### **III. Brief Description of the Drawings**

[0006] The invention may take physical form in certain parts and arrangement of parts, some embodiments of which will be described in the specification and illustrated in accompanying drawings which form a part hereof, wherein, like components are numbered consistently in various drawings. When referring to the drawings, the inventor identifies the following components thereto,

[0007] FIG. 1 is an example of a prior art flushable toilet;

[0008] FIG. 2 is a break away view of a tank providing an embodiment of the invention, wherein an implement passes through a tank wall;

[0009] FIG. 3 is a break away view of a tank and cover providing another embodiment of the invention, wherein an implement passes through the cover;

[0010] FIG. 4 is a break away view of a tank and cover providing an embodiment of the invention, wherein a housing is disposed in the tank;

[0011] FIG. 5 is a break away view of the tank and cover of FIG. 4 providing another embodiment of the invention, wherein housing is disposed in tank and a cleaning implement is disposed in the housing;

[0012] FIG. 6 is a break away view of a tank and cover providing an embodiment of the invention, wherein the cleaning implement passes through the cover and extends outside the tank;

[0013] FIG. 7a is top view of an example of a retainer disposed in a port of a cover;

[0014] FIG. 7b is a break away side view of the device of FIG. 7a showing a retained cleaning implement;

[0015] FIG. 8a is an example of a cleaning implement in accordance with an embodiment;

[0016] FIG. 8b is another example of a cleaning implement including a grab handle;

[0017] FIG. 9 is a side break away view of a cover providing another embodiment a retained cleaning implement;

[0018] FIG. 10 is a side break away view of an embodiment of the invention showing a housing and brush with a pop-up mechanism;

[0019] FIG. 11 is an exploded view of an embodiment of FIG. 10, whereby the housing self-anchors in port;

[0020] FIG. 12 is a break away side view of FIG. 11, with the housing anchored in the port with brush in its storage position;

[0021] FIG. 13 illustrates an embodiment of a cleaning implement including a brush and a chamber holding a cleaning treatment; and,

[0022] FIG. 14 illustrates a cleaning system for a toilet including a cleaning implement stored in a wet region of the tank and a plurality of replacement cleaning elements stored in a dry region of the tank.

#### IV. Detailed Description of the Invention

[0023] FIG. 1 is an example of a prior art flushable toilet 5 that generally consists of a bowl 15, a tank 20 and a cover 25. Housed within the tank is the fill valve, flush valve and other components which are shown in broken lines in FIG 1 are collectively and generally referred to herein as guts 121. Improvements to the art in accordance with the present invention are illustrated beginning with FIG. 2, which is a break away view of a tank 20 providing an embodiment of the invention, wherein a cleaning implement 30 passes through tank 20 wall through port 40. FIG. 3 is a break away view of a tank 20 and cover 25 providing another embodiment of the invention, wherein an implement 30 passes through port 40 on cover 25. As shown in FIGS. 2 and 3, port 40 is sized and shaped such that it has a complimentary configuration to anchor implement 30 or handle 50, and sufficient to allow a remainder of an implement, like a brush 55 to pass therethrough. It is within the scope or purpose of the invention to conceal an implement, wherefore the handle 50 in an embodiment looks level or true with cover 25 so as to appear the same as the remainder of cover 25 or it can have a metallic appearance to disguise as a flush.

[0024] FIG. 4 is a break away view of a tank 20 and cover 25 providing an embodiment of the invention, wherein housing 35 extends below cover 25. Access port 40 formed through cover 25 communicates directly with opening of housing 35, the interior of

which may be shallow or deep and be sealed from water in the tank, or not sealed in order to allow water to pass therethrough. The housing 35 may be formed as a single part of cover 25 or assembled to cover 25 after manufacture of the components. In an embodiment, base of housing 35 connects to base of tank 20.

**[0025]** FIG. 5 is a break away view of a tank 20 and cover 25 providing another embodiment of the invention, wherein housing 35 is disposed in tank 20 and further provides for implement 30 being contained therein. FIG. 6 is a break away side view of a tank 20 and cover 25 providing an embodiment of the invention, wherein the implement 30 passes through a portion 60 of cover 25 that extends beyond tank 20 such that water in the tank does not contact the implement 30.

**[0026]** FIG. 7a is top view of an example of a retainer 65 that is a detent extending from cover 25 within port 40 to secure a handle 50. In this embodiment, the shape of the handle 50 is complimentary to the shape of the port 40 so that it is flush with the surface of the cover 25. FIG. 7b provides an example where the handle 50 is shaped like a puck and has a diameter almost equal, but less than diameter of port 40 so that minimal amount of retainer 65 shall be necessary. The detent retainer 65 may include equally opposed rigid teeth that extend from the cover 25 across port 40 opening as shown. FIG. 7b is a break away side view of FIG. 7a showing a retained handle 50. Detent 65 are shown engaged with the underside of cover 25 and may include connection means such as adhesive.

**[0027]** FIG. 8a is an example of an implement (30, being a toilet brush) which consists of a handle 50 that has a grab 75 thereon, an arm 45 and brush 55. Creation of handle 50 is within the scope of this invention, in that it may be manufactured during the process when port 40 is burrowed in cover 25. Alternately, handle 50 may be created to be substantially identical to

the void of a created port 40, which as shown is therefore a puck. As shown, the puck, handle 50 has a side wall 70 and a diameter of the upper portion being substantially the same as the lower portion, as shown in FIG. 7b. The figure also provides that the inner wall 80 of a corresponding port 40 has a diameter at the upper portion of wall 80 that is substantially the same as the diameter of lower portion of wall 80.

**[0028]** FIG. 8b is another example of a grab 75 for an implement which may include a pull or peg type extension that can additionally comprise means to releasably attach to other elements. For example, the peg may have threading and connect to ornaments.

**[0029]** FIG. 9 is a side break away view of a cover 25 providing another embodiment of a retainer mechanism where the puck, handle 50 has a side wall 70 and the diameter of the upper portion is greater than the diameter of the lower portion. The figure also provides that the inner wall 80 of port 40 has a diameter at the upper portion of wall 80 that is greater than the diameter of lower portion of wall 80. It is understood that the implement 30 when retained may not be stable for example, by raising and lowering of water level in tank 20 based on buoyancy of implement 30 therein. This challenge can be overcome by weighing down a portion of implement 30 for example by adding weight to brush 55, arm 45 or handle 50, which leads to another embodiment of the invention (not illustrated, but referring to FIG. 9) whereby walls (70, 80) are threaded to ensure a tight fit and increase stability without added weights. With further reference to securing implement 30, detent 65 in FIG. 7a can be removed and walls (70, 80) may have magnets disposed thereon to keep implement 30 secure.

**[0030]** FIG. 10 is a side break away view of an embodiment of the invention showing an arrangement of housing 35 and implement 30 along with a device 90 which is within the scope of the invention to comprise means to secure implement 30 for example as consisting of a

magnet that attracts a magnet disposed about brush 55 and/or to consist of a pop-up mechanism to allow ease of grabbing handle 50. As shown, wall of the housing 35 is porous or has holes that allows water to flow therethrough and may also function as a filter for water in tank 20. The pop-up mechanism 90 is generally known, for example, when pressed down, it locks in a condensed state until pressed down again, in which it locks in an expanded state.

**[0031]** FIG. 11 is an exploded view of an embodiment of FIG. 10, with configuration of FIG. 9 to provide an embodiment that shows housing 35 as cylindrical and has an opening that anchors in port 40. In this embodiment housing 35 has a top portion that has an outer side sized and shaped to anchor within port 40. In this embodiment, the inner side of the top portion can be modified according to the geometry of implement 30, for example, as based on geometry of handle 50. The housing 35 may also be secured by threading within port 40, adhesive, or friction and/or can stand on floor of tank 20 as shown in FIG. 10. FIG. 12 is a break away side view of FIG. 11, with housing 35 anchored in port 40 with implement 30.

**[0032]** FIG. 13 illustrates an embodiment of an implement in the form of a brush having a chamber 110 containing a treatment composition 155, such as a cleaning, bleaching and/or sanitizing agent. Immersion of the brush into water facilitates the release of the treatment composition 155 into the water, for example to aid in the cleaning action of the brush and/or to provide a time-release action for minimizing the formation of deposits onto surfaces in contact with the water and/or for maintaining the water free of organisms and/or odors.

**[0033]** FIG. 14 illustrates a tank 100 of a toilet in accordance with an embodiment of the invention. Tank 100 defines an interior enclosing a typical prior art flushing mechanism (guts 121) which admit a volume of water 105 to be stored within the tank 100. The stored water 105 establishes a water level 110 within the tank 100. A removable lid 115 may enclose the top

of the tank 100. An access port 120 is provided into the interior to facilitate the storage and removal of a cleaning implement 125 within the tank 100. The cleaning implement 125 may be removable supported within the tank 100 on a bracket 130. A housing 135 may be provided within the tank 100 to separate a dry storage region 140 from the water storage region 145. The bracket 130 may support the cleaning implement 125 in the dry storage region 140 (not shown), or alternatively as illustrated, in the water storage region 145. The cleaning implement 125 may include an arm 150 and a replaceable cleaning element 155, for example the brush of FIG. 13. Storage of the cleaning element 155 below the water level 110 may facilitate the release of a treatment composition 155 into the water, as discussed with respect to FIG. 13. A plurality of replacement cleaning elements 160 may be stored in the dry storage region 140. The access port 120 may be covered with a cover 165 that is easy to open/close for access to the cleaning implement 125 and/or replacement cleaning elements 160.

**[0034]** While various embodiments of the present invention have been shown and described herein, it will be obvious that such embodiments are provided by way of example only. Numerous variations, changes and substitutions may be made without departing from the invention herein. Accordingly, it is intended that the invention be limited only by the spirit and scope of the appended claims.

## CLAIMS:

1. A toilet assembly comprising, a bowl, a tank and a cleaning implement, wherein the tank and cleaning implement are cooperatively configured for storage of the cleaning implement within the tank.

2. The toilet assembly of claim 1, wherein the tank and cleaning implement are configured for storage of the cleaning implement with a handle end of the cleaning implement above a water level in the tank and with a distal end of the cleaning implement below the water level in the tank.

3. The toilet assembly of claim 1, wherein an interior of the tank comprises a water storage region and a dry region, and the tank and cleaning implement are configured for storage of the cleaning implement in the dry region.

4. The toilet assembly of claim 3, wherein the dry region is defined by a housing disposed within the interior of the tank.

5. The toilet assembly of claim 1, wherein the cleaning implement comprises an arm with a replaceable scrubbing element removably affixed proximate an end of the arm, the toilet assembly further comprising a plurality of replacement scrubbing elements.

6. The toilet assembly of claim 5, wherein the tank comprises a water storage region and a dry region, and the tank and cleaning implement are configured for storage of the cleaning implement in the water storage region and for storage of the replacement scrubbing elements in the dry region.

7. The toilet assembly of claim 1, further comprising an access port formed in the tank for passage of the cleaning implement.

8. The toilet assembly of claim 7, wherein the access port is formed in a lid of the tank.

9. The toilet assembly of claim 8, further comprising a retainer disposed in the access port, the retainer configured to releasably engage the cleaning implement.

10. The toilet assembly of claim 9, further comprising a housing disposed within the tank and defining a dry region within the tank for the storage of the cleaning implement.

11. The toilet assembly of claim 7, further comprising a pop-up mechanism disposed in the tank for engaging the cleaning implement when passed into the tank through the access port.

12. A cleaning system for a toilet, the toilet including a bowl and a tank, the cleaning system comprising:

a cleaning implement comprising an arm;

a cleaning element removably attached to the arm;

an access port allowing passage of the cleaning implement into an interior of the tank for storage therein.

13. The cleaning system of claim 12, wherein the cleaning implement is configured such that the cleaning element is disposed below a water level of the tank when the cleaning implement is stored in the tank.

14. The cleaning system of claim 12, further comprising a plurality of replacement cleaning elements each removably attachable to the arm.

15. The cleaning system of claim 14, further comprising a housing defining a dry region within the tank for storage of the plurality of replacement cleaning elements.

16. The cleaning system of claim 12, wherein the cleaning element further comprises a treatment composition.

17. A method of cleaning a toilet, the method comprising:

providing a cleaning implement;

using the cleaning implement to clean a toilet; and

storing the cleaning implement within a tank of the toilet when not in use.

18. The method of claim 17, wherein the cleaning implement comprises a replaceable cleaning element, the method further comprising:

providing a plurality of replacement cleaning elements; and

storing the replacement cleaning elements within the tank of the toilet until use.

19. The method of claim 18, further comprising:

storing the cleaning implement within a wet region of the tank; and

storing the replacement cleaning elements within a dry region of the tank.

FIG. 1

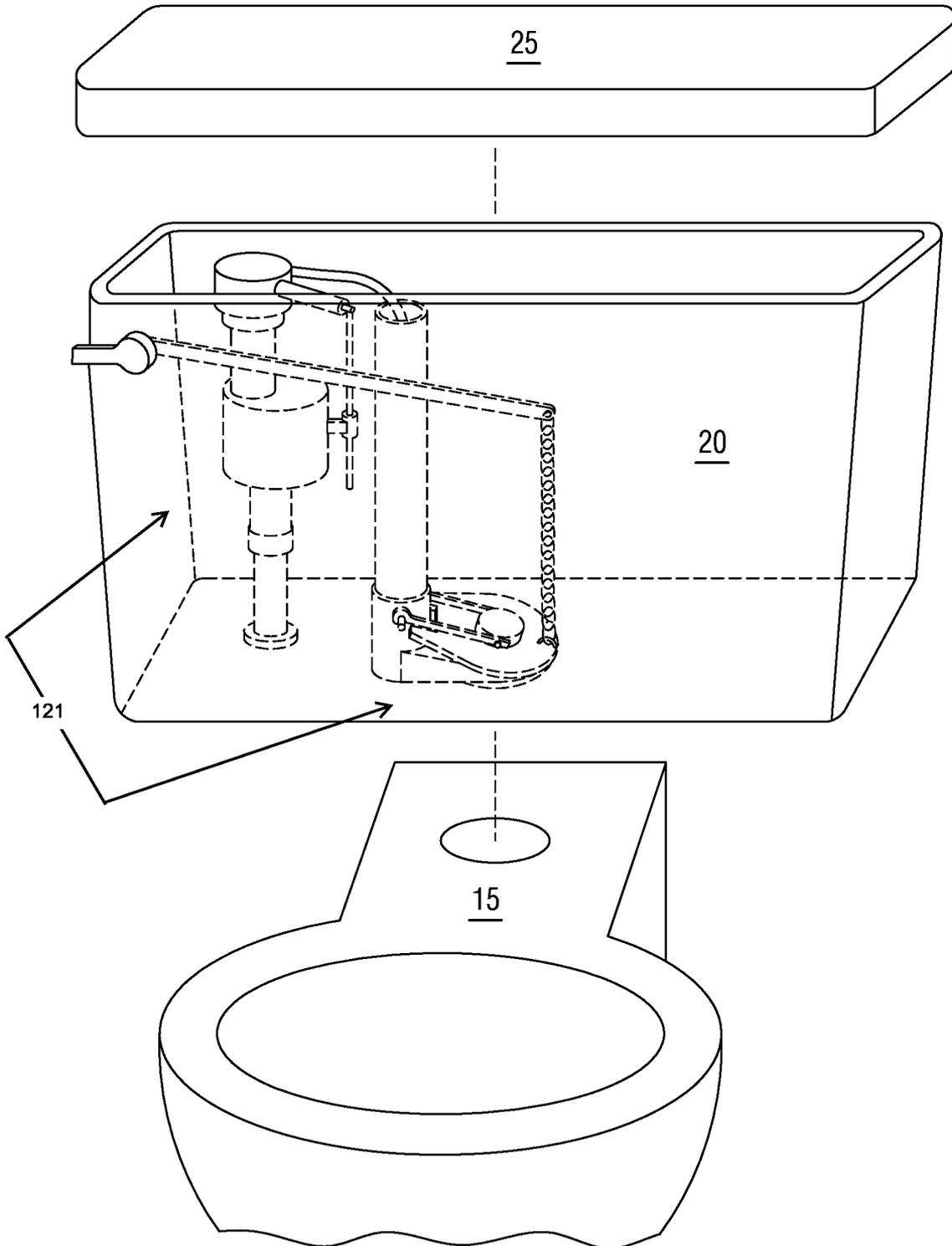


FIG. 2

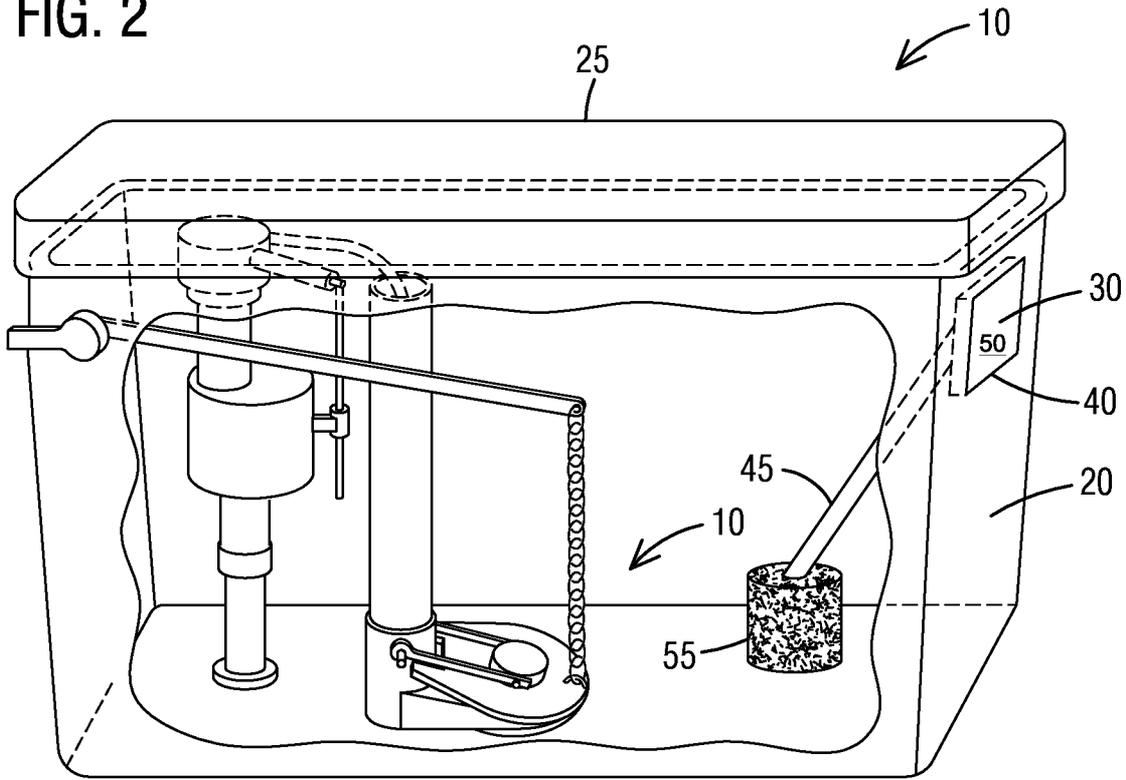
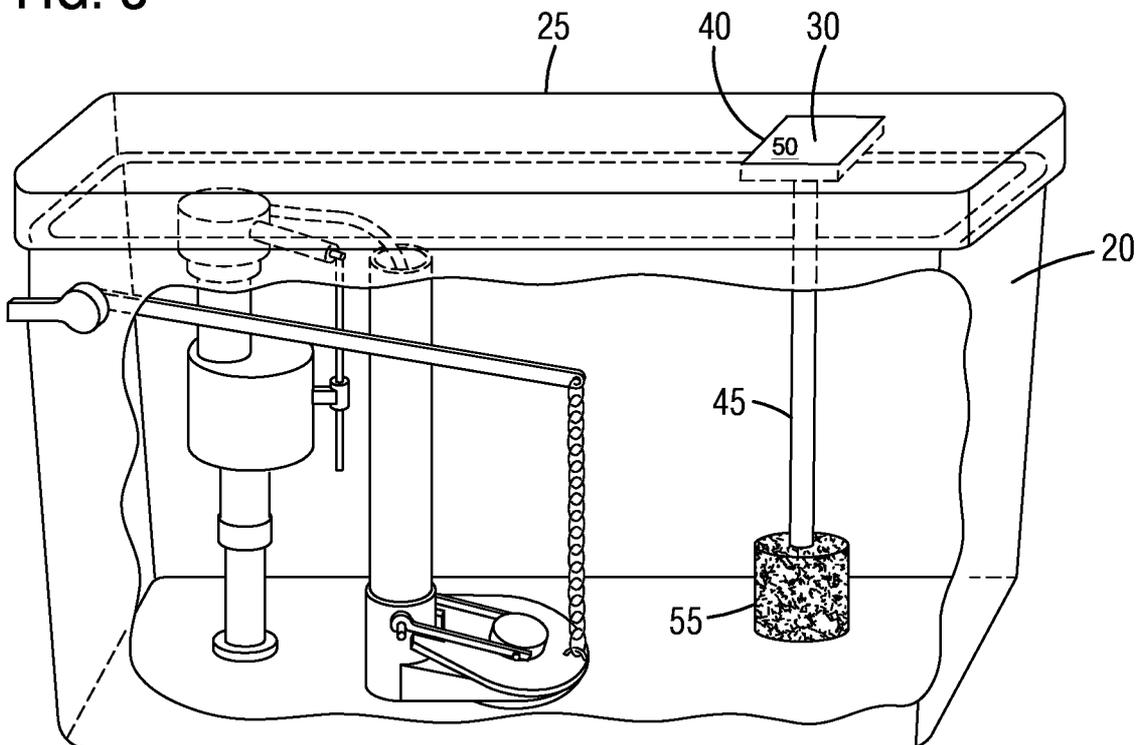


FIG. 3



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FIG. 4

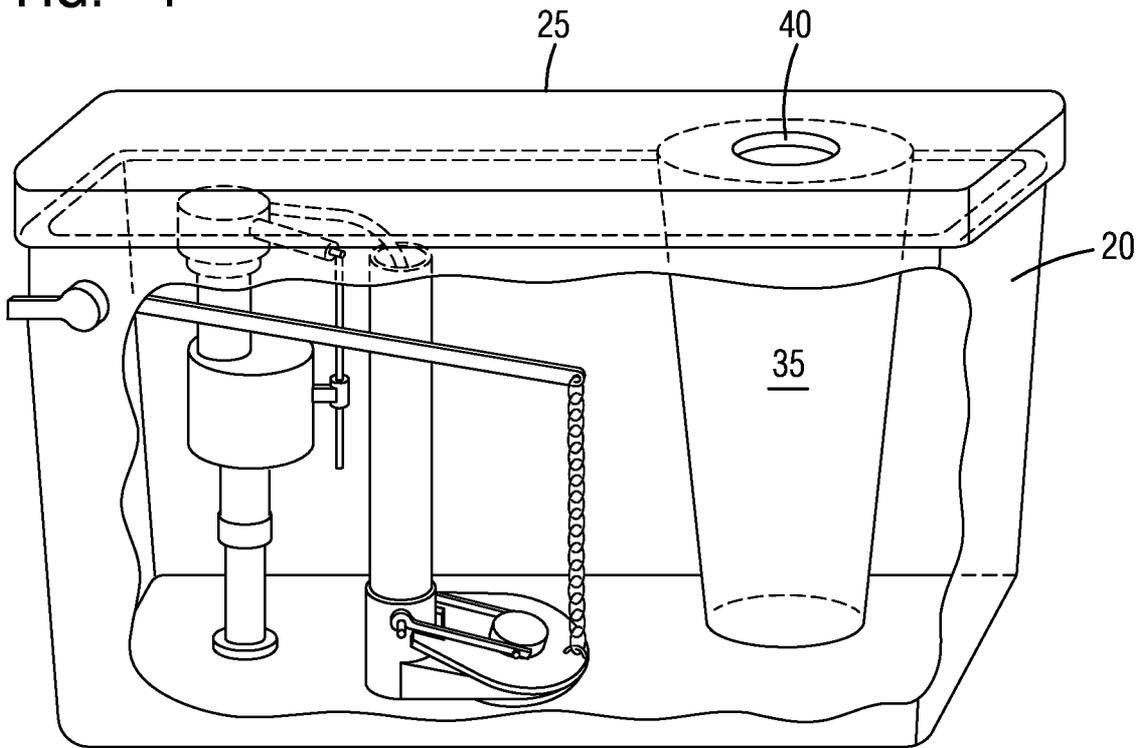


FIG. 5

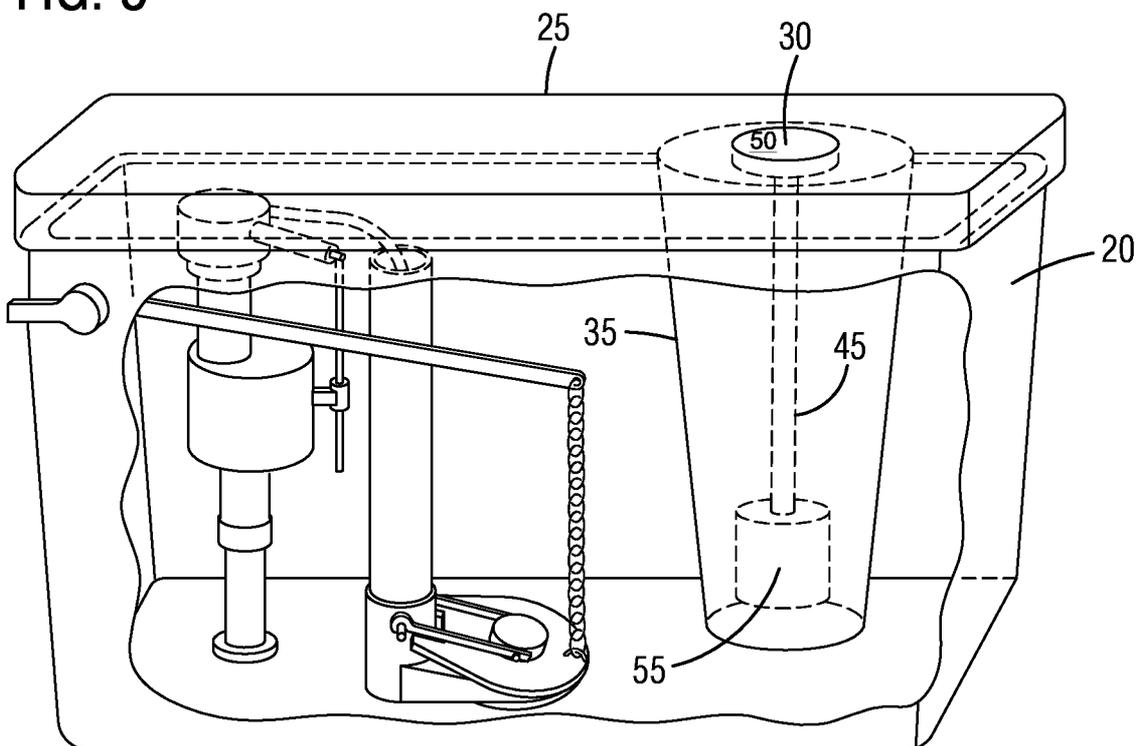


FIG. 6

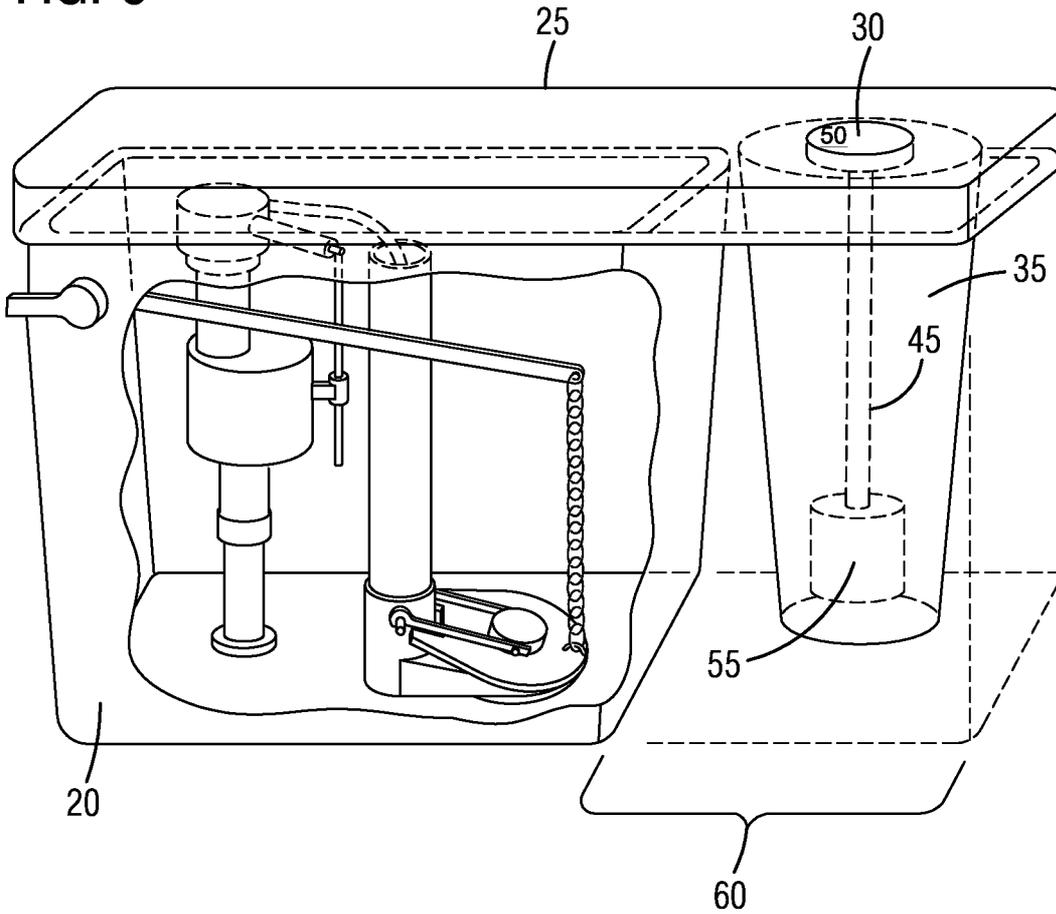


FIG. 7a

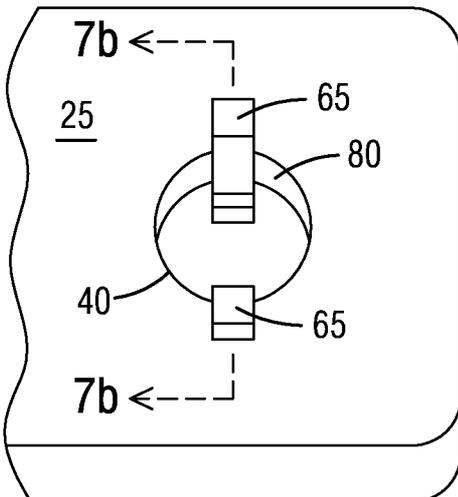


FIG. 7b

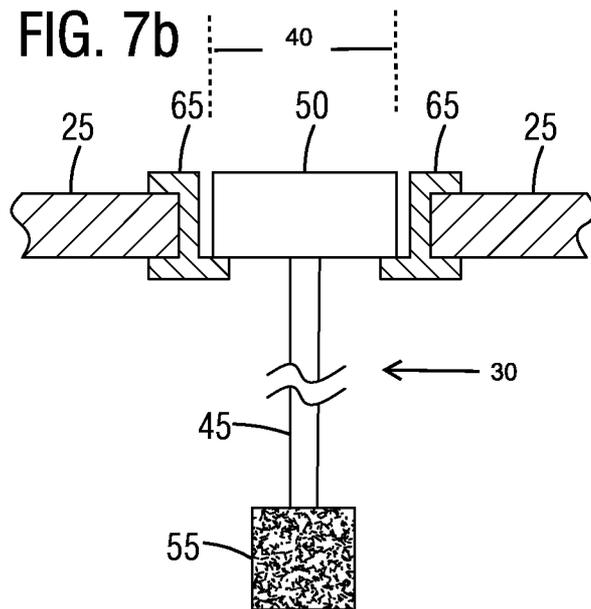


FIG. 8a

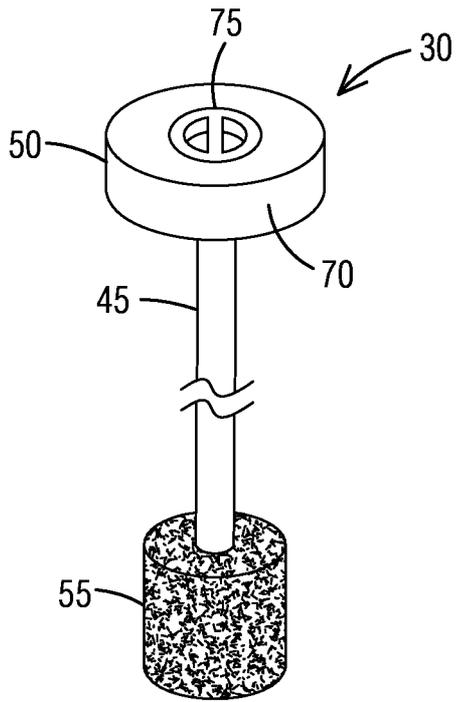


FIG. 8b

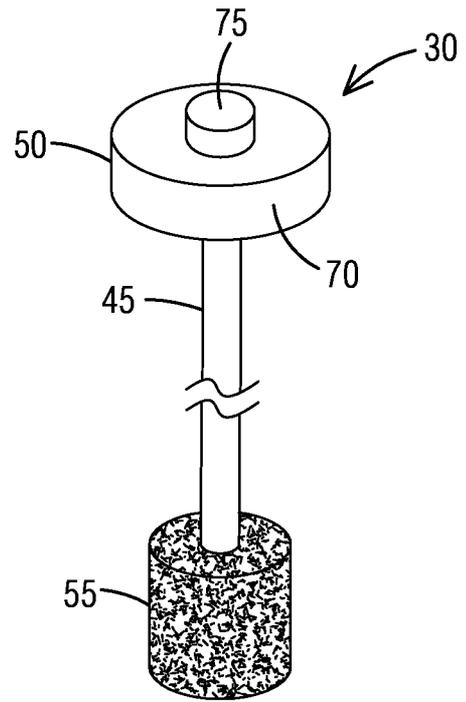
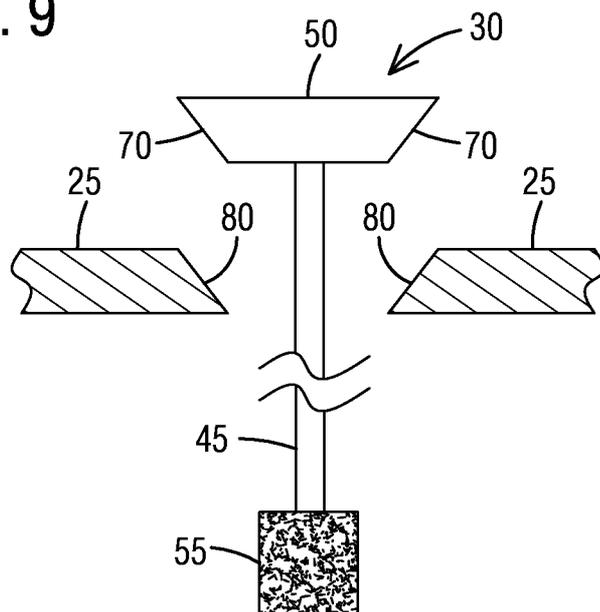


FIG. 9



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FIG. 10

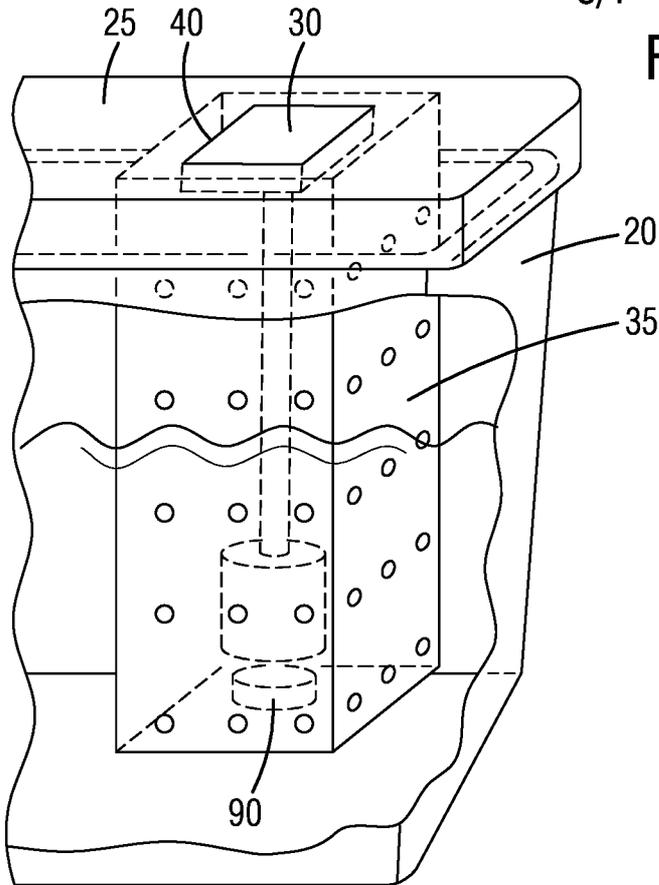


FIG. 11

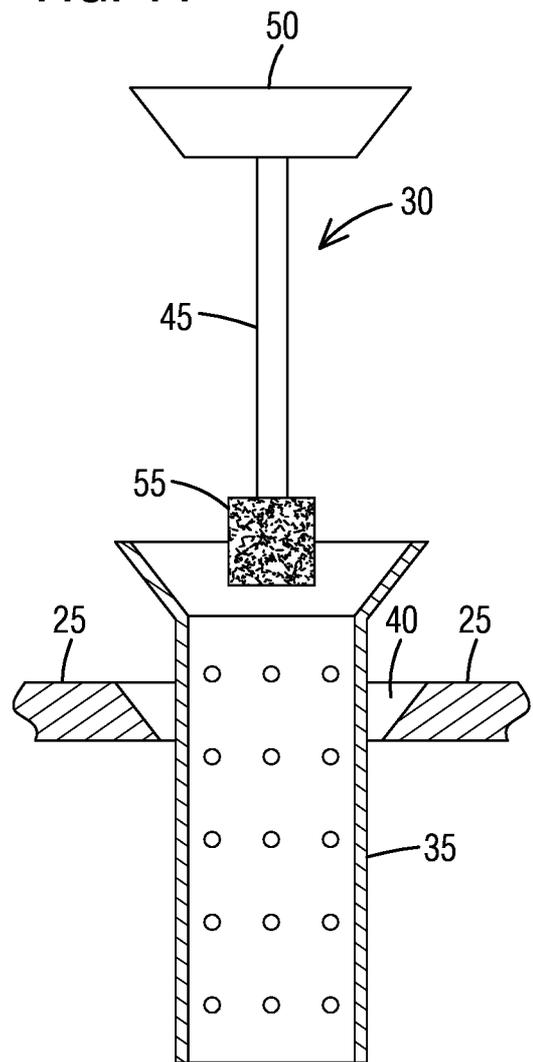


FIG. 12

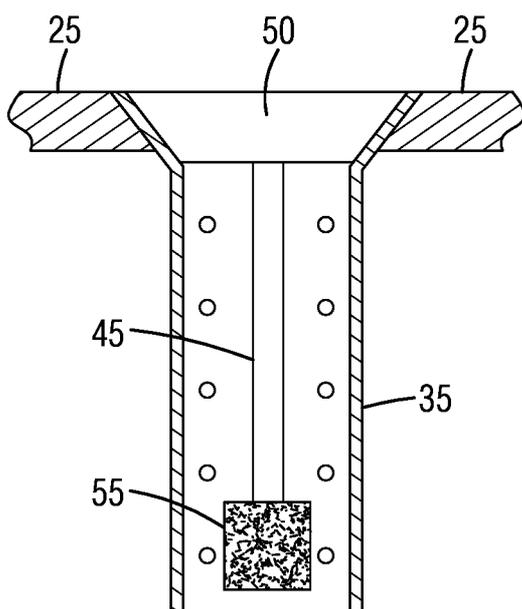


FIG. 13

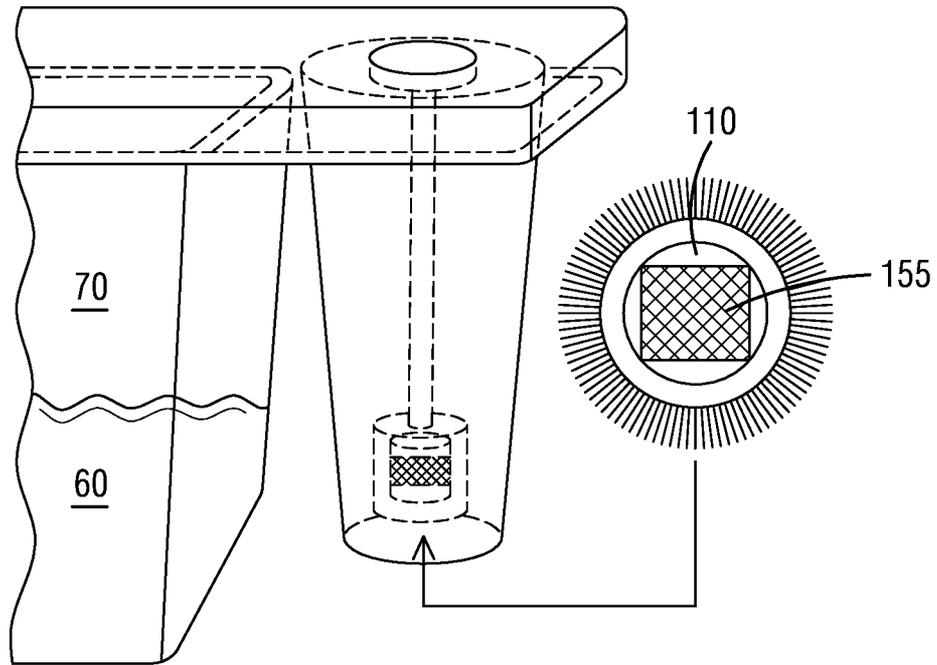
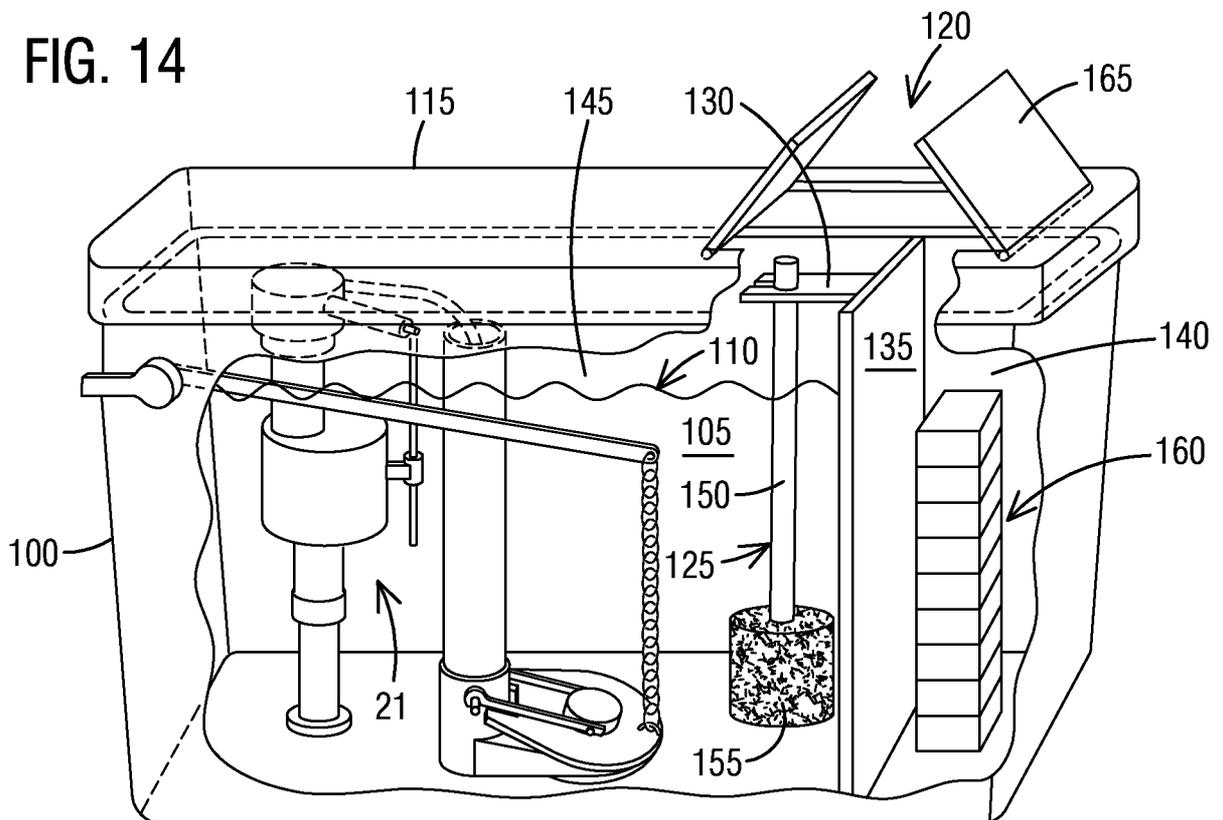


FIG. 14



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 21/39632

## A. CLASSIFICATION OF SUBJECT MATTER

IPC - E03D 9/06, A47K 11/10, E03D 9/00, E03D 1/00, A47K 11/00 (2021.01)

CPC - E03D 9/06, A47K 11/10, E03D 9/00, E03D 1/00, A47K 11/00

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)

See Search History document

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

See Search History document

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

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## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 20090106922 A1 (Groendahl) 30 April 2009 (30.04.2009), entire document, especially Fig. 1, 11, 12, 13, 14; para[0033]; para[0032]; para[0043]; para[0047]; para[0031];	1-2, 5, 7-9, 11-14, 17 ----- 6-10, 15-16, 18-19
X --- Y	US 4,918,769 A (Gandini) 24 April 1990 (24.04.1990), entire document, especially Fig. 1, 2, 3; col 2, ln 10-29; col 2, ln 61-68;	1, 3-4 ----- 6-10, 15, 18-19
Y	US 2013/0192011 A1 (Gill) 01 August 2013 (01.08.2013), entire document, especially	16
A	US 5,640,722 A (Bui) 24 June 1997 (24.06.1997), entire document	1-19
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A	US 2004/0117900 A1 (Pierce) 24 June 2004 (24.06.2004), entire document	1-19
A	US 2009/0070924 A1 (Montgomery) 19 March 2009 (19.03.2009), entire document	1-19

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

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Date of the actual completion of the international search

03 September 2021 (03.09.2021)

Date of mailing of the international search report

OCT 01 2021

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