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[Continued on next page]

(54) Title: RETROFIT AUTOMATIC TOILET FLUSH APPARATUS

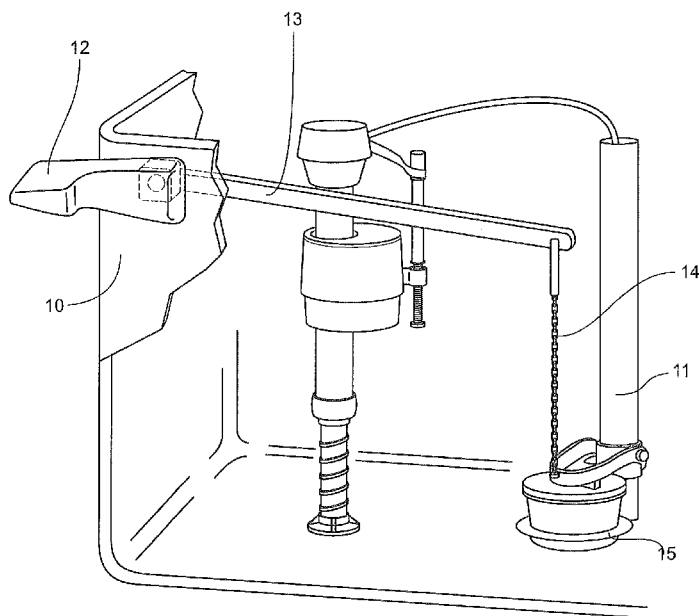


Fig. 1
Prior Art

(57) Abstract: An automatic flush apparatus for converting a manual flush toilet to an automatic flush toilet, and including a sensor for being mounted on an exterior wall of a tank of the toilet for detecting a condition predetermined to initiate a flush operation of the toilet. A signal transmitter conveys a signal indicating the occurrence of the condition, and a motor is provided for being positioned in the tank for receiving an electric current indicative of the condition from the signal transmitter. A flush valve is positioned proximate a bottom wall of the tank and is operatively connected to the motor for being opened by the motor upon receipt by the motor of the electric current.



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

— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

Declarations under Rule 4.17:

— of inventorship (Rule 4.17(iv))

(88) Date of publication of the international search report:

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— with international search report (Art. 21(3))

A. CLASSIFICATION OF SUBJECT MATTER***E03D 5/10(2006.01)i, E03D 1/30(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 5/10; E03D 1/00; E03D 1/0/0; E03D 1/14

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: toilet, automatic, motion sensor, signal transmitter motor and flush valve

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5901384 A (SIM, JAE K.) 11 May 1999 See column 3 line 9 - column 4 line 7 and figures 2, 5, 6.	1-3, 5-9, 12-14 , 16-21
Y		4, 10, 11, 15
Y	US 2008-0086805 A1 (BUSH, SHAWN D.) 17 April 2008	4, 10, 11, 15
A	See paragraph 0066 and figure 10.	1-3, 5-9, 12-14 , 16-21
A	US 2008-0072369 A1 (FUNARI, MICHAEL A. et al.) 27 March 2008 See paragraphs 0032, 0037 and figures 1, 2, 4.	1-21
A	KR 10-2010-0127500 A (PARK, SANG-TAE) 06 December 2010 See paragraphs 0077-0081 and figures 1-3.	1-21
A	KR 20-1990-0003862 Y1 (LEE, JONG-GU) 03 May 1990 See claim 1 and figure 1.	1-21



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 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

14 DECEMBER 2012 (14.12.2012)

Date of mailing of the international search report

18 DECEMBER 2012 (18.12.2012)

Name and mailing address of the ISA/KR

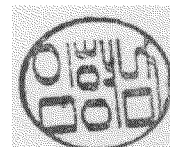
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2012/040358**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Group I, claims 1-11 drawn to an automatic flush apparatus for conceiving a manual flush toilet to an automatic flush toilet;
Group II, claims 12-20 drawn to an automatic flush toilet comprising a toilet bowl, a sensor, a signal transmitter, a motor, and a flush valve;
Group III, claim 21 drawn to an automatic flush toilet comprising a toilet bowl, a motion sensor, a signal transmitter, a motor, and a gear train.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2012/040358

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5901384 A	11.05.1999	None	
US 2008-0086805 A1	17.04.2008	US 2006-0010591 A1 US 7322054 B2 US 7500277 B2	19.01.2006 29.01.2008 10.03.2009
US 2008-0072369 A1	27.03.2008	None	
KR 10-2010-0127500 A	06.12.2010	None	
KR 20-1990-0003862 Y1	03.05.1990	None	