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(71) Applicant (for all designated States except US):
ECZACIBASI YAPI GERECLERI SAN.TIC. A.S.
[TR/TR]; Yunus Tren Istasyonu Yani, Kartal, 81412
Turkey (TR).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **TEK, Caner**

[TR/TR]; Eczacibasi Yapi Gerecleri San.Tic. A.S., Yunus
Tren Istasyonu Yani, Kartal (TR). **ILERIYE, Pelin**
[TR/TR]; Eczacibasi Yapi Gerecleri San. Tic. A.S, Yunus
Tren Istasyonu Yani 81412, Kartal-Istanbul (TR).

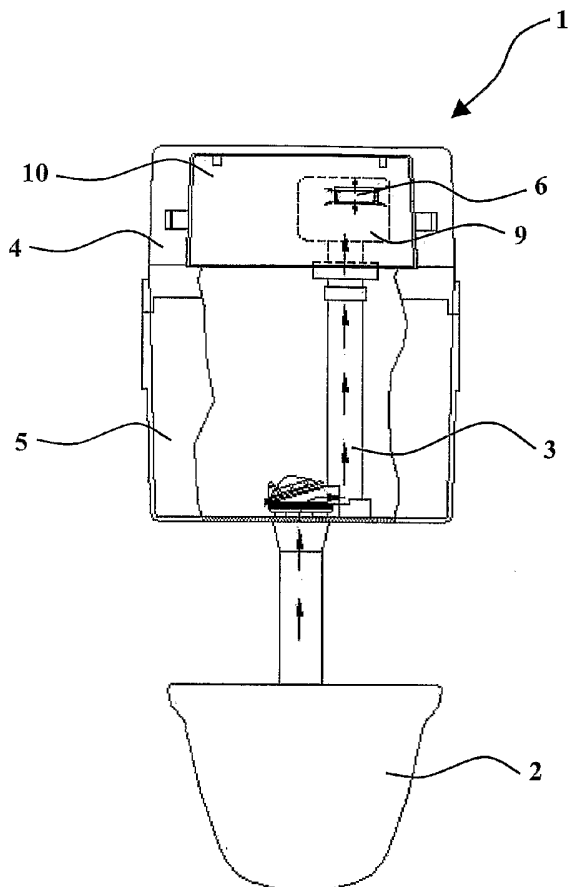
(74) Agent: **PARAGON CONSULTANCY INC.**; Koza Sokak
No. 60/6 GOP, Gop, 06700 Ankara (TR).

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(54) Title: ODORLESS CONCEALED CISTERN



(57) Abstract: This invention relates to a concealed cistern comprising the odour remove system to vacuum and filter the odour inside the bowl. The odour removing system, containing a fan and an air-cleaning filter is installed in a ventilating box. The ventilating box is covered by a protection box and installed on the fitting tube and said fitting tube is attached to the overflow tube of the standard flush mechanism. The fan blows the unfiltered vacuumed air to the filter; the odour air passes through the filter and leaves the concealed cistern passing through the slots provided on the both sides of panel cover.



ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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- *as to the identity of the inventor (Rule 4.17(i)) for the following designations* AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)
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KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

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ODOURLESS CONCEALED CISTERN

Field of the Invention

5 This invention relates to a concealed cistern comprising the odor removal system to vacuum and filter the odor inside the bowl.

Background of the Invention

10 Several air removal systems are known in the prior art. One of the systems present in the market is occurred by a fan to vacuum the odor from the toilet bowl while the user is relieving nature and delivers odor to the waste pipe. The system requires the fan to be installed in the wall. The other system contains a fan vacuuming the odor from the bowl while the user is relieving nature and blows back to the surrounding air. This system has two different models,
15 the first one is installed in a box attached to the wall and the second one is installed inside the wall.

However, none of the above mentioned systems are not useful enough. To install, to repair and to maintain the system inside the wall are difficult. Those installed the boxes attaching to the
20 wall are undesirable in aesthetic terms and occupy space in the bathroom.

To solve these problems, various types of toilet assemblies having an odor removal system are known in the art. An efficient way for odor removal from a water closet is by drawing odorous air from the toilet bowl through the overflow tube. Removal systems utilizing this air passage
25 have been disclosed in German Patent No 19752069; U.S. Patent Nos. 5325544, U.S. 4166298. A box comprising a fan and a filter is attached to the said overflow tube and a clean air tube is attached to the said box. The clean air tube has two open ends, one end is mounted to the box and the other end is mounted generally to the sidewall of the cistern. The fan blows the unfiltered vacuumed air to the filter; the odorous air passes through the filter, reaches to
30 the clean air tube and leaves the cistern from the sidewall of the cistern. This system can be installed in the cistern and eliminates the problems mentioned above but cannot be applied to the concealed cisterns.

Since the whole cistern is installed inside the wall, removing the cleaned air from the cistern is the main problem to be solved for the concealed cisterns. The prior art documents have not disclose any removal system that can be installed in the concealed cistern.

5 **Summary of the Invention**

The aim of this invention is to provide a concealed cistern installed inside the wall, comprising an odor removal system. More particularly, the aim is to remove the cleaned air from the concealed cistern to the surrounding without any reparation.

- 10 Another aim of this invention is to provide a concealed cistern comprising an odor removal system wherein the odorous air inside the toilet bowl is vacuumed through the overflow tube.

This invention relates to a concealed cistern comprising the odor removal system to vacuum and filter the odorous air inside the bowl. The odor removal system, containing a fan and an
15 air-cleaning filter is installed in a ventilating box. The ventilating box is covered by a protection cover and installed on the fitting tube and said fitting tube is attached to the overflow tube of the standard flush mechanism. The fan blows the unfiltered vacuumed air to the filter; the odorous air passes through the filter and leaves the concealed cistern passing through the slots provided on the both sides of panel cover.

- 20 The odorless concealed cistern of the invention will now described in detail.

Brief Description of the Drawings

- FIG 1. is a schematic drawing as installed the ventilating box to the overflow tube of the flush
25 mechanism inside the concealed cistern.

FIG. 2. is a schematic drawing of the layout of fan and filter inside the ventilating box.

FIG 3a. is a schematic drawing of the protection cover and the ventilating box.

FIG 3b. is a schematic side view of the protection cover and the ventilating box.

FIG 4a. is a front view of the panel.

- 30 FIG 4b. is a side view of the panel

DETAILED DESCRIPTION OF THE INVENTION

The odorless concealed cistern (1) according to the present invention having a lower part (5) and an upper part (4), comprises an odor removal system, wherein the odorous air is vacuumed from the toilet bowl (2) through the overflow tube (3), which is a part of conventional flush mechanism. The upper part (4) of the concealed cistern (1) is divided into front and back sections by a protection cover (10), which is used for different purposes in prior art.

The odor removal system comprising a fan (7) and an air-cleaning filter (8) is installed in a ventilating box (9) and mounted into the back section of the upper part (4) of the concealed cistern (1). This ventilating box (9) is provided with a hole on the bottom for the overflow tube (3) fixing and also with a vent (6) on at least one side of the box (9). The vent (6), which is constituted by an elongated body, allows the filtered air leave the ventilating box (9).

The protection cover (10), which divides the upper part (4) of the concealed cistern (1) into two sections, is provided with an aperture (11). The ventilating box (9) is positioned at a distance from the protection cover (10) and the elongated vent (6) of the said ventilating box (9) is fixed into the said aperture (11). The aperture (11) on the protection cover (10) allows the filtered air enter the front section of the upper part (4). Therefore a continuous airflow is provided from the back section to front section of the upper part (4).

According to the present invention the concealed cistern (1) also comprises a panel (12), which is used to cover front section of the upper part (4). This panel (12) comprises an electronically controlled sensor (15) or button to activate the flush mechanism. The edges of the said panel (12) are folded and said folded edges (14) are constituted by an elongated body. According to the present invention the at least one folded edge (14) and/or the front surface of the panel are provided with a slot (13). In one of the preferred embodiment, only the transverse folded edges are provided with slots (13). The size of the said folded edges (14) and slots (13) are suitable for the cleaned air exit.

To fix the overflow tube (3) to the ventilating box (9) a fitting tube is used. The fitting tube comprises discharge holes and a moveable safety float on it. The safety float rises when the water level goes higher than the utilization level. The second function of the overflow tube (3), discharging the water, is provided with the discharges holes and safety float.

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The operation of the concealed cistern (1) according to the invention is shown schematically in Figure 1. When a user sits on the toilet, electronically controlled sensor (15) sense the user and sends a signal to the main control unit. The main control unit switches on the fan (7). The fan (7) installed inside the ventilating box (9) vacuumed the odorous air from the toilet bowl (2) through the overflow tube (3) of the standard flush mechanism. Thus, the odorous air passes through the overflow tube (3), passes through the fitting tube installed between the overflow tube (3) and the ventilating box (9), which is installed inside the back section of the upper part (4) of the concealed cistern (1), and reaches the fan (7). The fan (7) installed inside the ventilating box (9) transfers the odorous air to the filter (8) installed inside the ventilating box (9). While the odorous air passes through the filter (8), its dirty and stenchy particles are kept by the filter (8), so that the odorous air is cleaned. The vacuumed air, cleaned after passing through the filter (8) leaves the ventilating box (9) through the vent (6), which is constituted by an elongated body. The vent (6) transfers the cleaned air from back section to the front section of the upper part (4) and prevents the transfer of cleaned air to the lower part (5) of the concealed cistern (1) where the water is stored for flushing. The cleaned air enters the front section through the aperture (11), which is provided on the protection cover (10), and leaves the concealed cistern (1) passing through the slots (13) provided on transverse edges (14) of panel (12). When the user stands up, the electronically controlled sensor (15) sends a signal to stop the system and to switch on the flushing system.

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The concealed cistern according to the invention is susceptible of numerous modifications and variations, all of which are within the scope of the inventive concept; all the details may further be replaced with other technically equivalent elements.

30

CLAIMS

1. A concealed cistern (1) having an upper part (4) and a lower part (5), wherein said upper part (4) comprises a protection cover (10) which divides the upper part (4) into front and back sections and a panel (12) which is used to cover front section of the upper part (4), said lower part (5) comprises an overflow tube (3) which is attached to the standard flushing mechanism, characterized by a ventilating box (9) comprising a fan (7) for vacuuming the odorous air from the toilet bowl (2) and a filter (8) for cleaning the odorous air is installed inside the back section of the upper part (4) and fixed to the overflow tube (3).
2. A concealed cistern (1) according to claim 1, characterized in that the ventilating box (9) is provided with at least one vent (6) which is suitable to prevent the transfer of cleaned air to the lower part (5) of the concealed cistern (5).
3. A concealed cistern (1) according to the claim 2, characterized in that said vent (6) is constituted by an elongated body.
4. A concealed cistern (1) according to one or more of the preceding claims, characterized in that the protection cover (10) is provided with an aperture (11) wherein the vent (6) can be fixed into it.
5. A concealed cistern (1) according to one or more of the preceding claims, characterized in that said panel (12) is folded at its edges, said folded (14) edges and the front surface of the panel are provided with a slot (13) to allow the removal of cleaned air from the concealed cistern (1).
6. A concealed cistern (1) according to claim 5, characterized in that the transverse folded edges (14) are provided with a slot (13).
7. A concealed cistern according to one or more of the preceding claims, characterized in that the fitting tube which is used to fix the ventilating box (9) to the overflow tube (3), comprises discharge holes and a safety float, wherein said safety float is moveable on said fitting tube.

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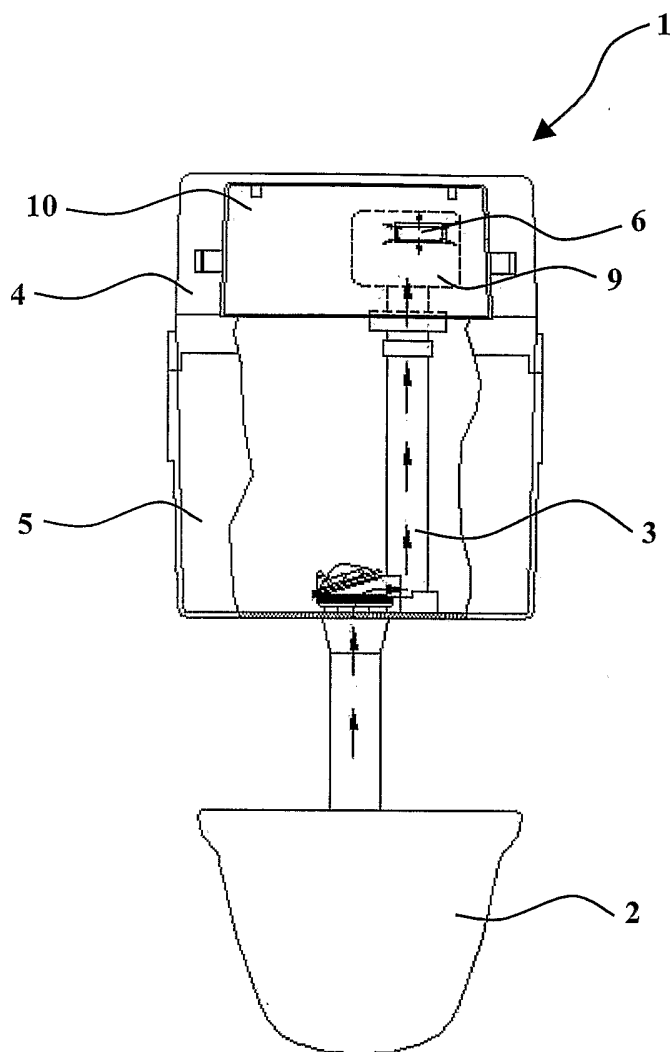


Figure 1

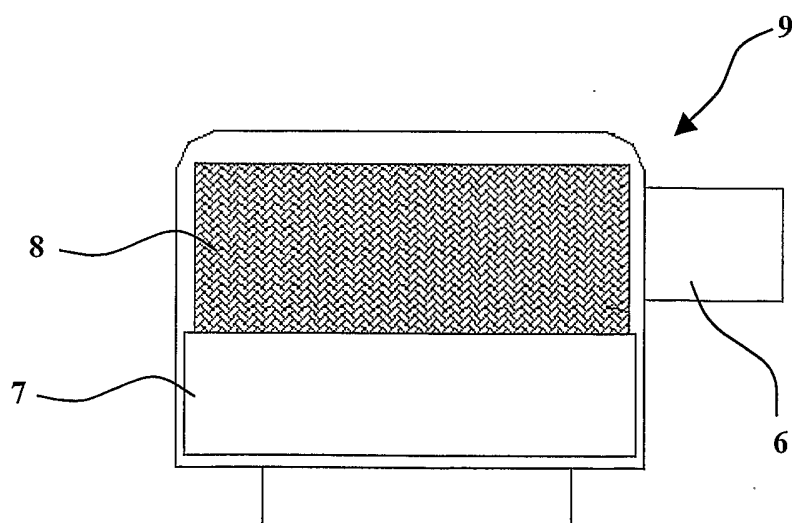


Figure 2

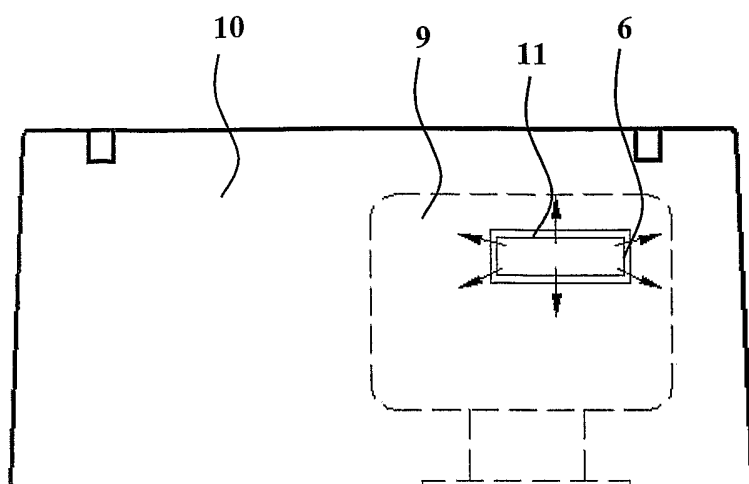


Figure 3a

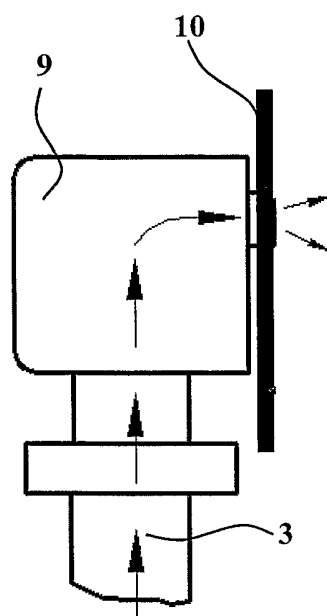


Figure 3b

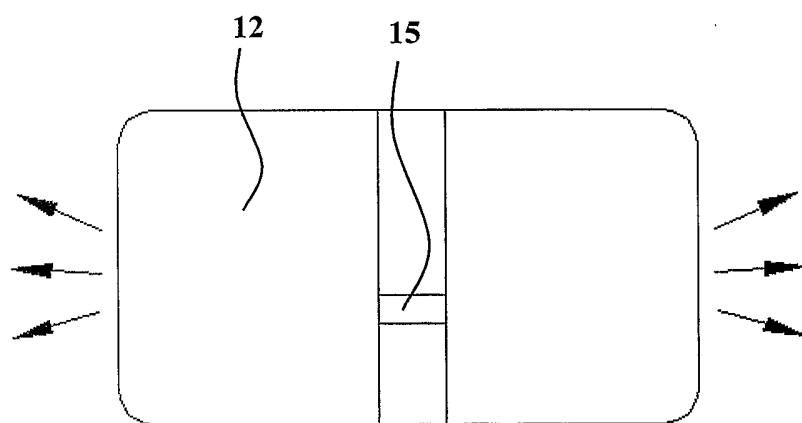


Figure 4a

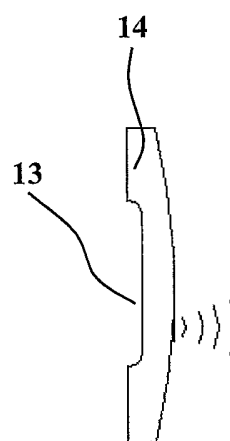


Figure 4b

INTERNATIONAL SEARCH REPORT

International Application No

CT/TR 03/00086

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 E03D9/052 E03D1/012

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)

IPC 7 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 practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	DE 299 01 268 U (BIERMANN HELMUT) 12 May 1999 (1999-05-12) claim 1; figure 3 ---	1-3,7
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A	DE 101 14 428 A (GROHMANN ERWIN ;MEPA PAULI UND MENDEN GMBH (DE)) 26 September 2002 (2002-09-26) figures -----	1



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

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- * & * document member of the same patent family

Date of the actual completion of the international search

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Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

Authorized officer

De Coene, P

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

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Patent document cited in search report		Publication date		Patent family member(s)	Publication date
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WO 03085214	A	16-10-2003	TR	200200994 A2	21-11-2003
			WO	03085214 A1	16-10-2003
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