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(54) **STENCH-FREE TOILET SYSTEM**

GERUCHSFREIE TOILETTENVORRICHTUNG

SYSTEME DE TOILETTES EXEMPT DE MAUVAISES ODEURS

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(56) References cited:
**DE-A- 19 752 069 GB-A- 2 237 825
US-A- 4 166 298 US-A- 5 325 544**

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Description

[0001] This invention relates to an air cleaning system to be installed inside the toilet tank.

[0002] Various deodorants or apparatuses that emit odors to eliminate the stench are used in toilet bowls. Deodorants have a certain service life, and must be replaced at regular intervals. Odorizing apparatuses, on the other hand, require the users to replace their deodorant perfumes or similar solutions at regular intervals. None of the methods described above remove the stench from the surrounding air. They just emit odors pleasant for the users in order not to let them disturbed by the stench.

[0003] To solve this problem various air-cleaning systems were developed. One of the systems available in the market contains a fan that sucks the stench from the toilet bowl while the user is relieving nature, and delivers it to the waste pipe. This system requires the fan to be installed in the wall. Another system contains a fan that sucks the stench from the toilet bowl while the user is relieving nature and delivers it to an elbow attached to the flush mechanism, so that the stench is filtered and delivered back to the surrounding air. This system is available in two models, the first one is installed in a box attached to the wall, and the second one is installed inside the wall.

[0004] However, none of the above mentioned systems are useful enough. Those installed inside the wall are difficult to install; it is also difficult to gain access to them for repair purposes. Those installed in a box attached to the wall are undesirable in aesthetic terms, and occupy space in the bathroom.

[0005] Also in prior art, the patent application DE19752069 discloses another system to eliminate stench from toilets. In said system, the flushing cistern has a stench eliminating device with a vent duct and an electric ventilation fan positioned above the water level in the flushing cistern and coupled to the bowl of the water closet via the flushing pipe and a coupling pipe, with the ventilation fan between the coupling pipe and the vent duct. The said system is manually operated and requires user selections for the operation of stench eliminating device and flushing system. However, the subject matter of invention disclosed below has sensors which senses the user and the water level and sends activating or deactivating signals to the main control unit.

[0006] This invention relates to a stench cleaning system installed inside the toilet tank, and solves the above mentioned and other problems. This invention is an apparatus comprising an air circulation fan (1) and an air-cleaning filter (2) installed in a box (5) connected to a clean air duct (4), and is put inside the toilet tank (9). The apparatus further contains a fixing tube (7) having discharge holes (6) on it, installed to both the overflow tube (3) and the said box (5). The said fixing tube (7) has its own movable safety float (8). The common aspects of the said fixing tube (7) and the movable safety float (8)

is that they ensure the overflow tube (3), which discharges the tank water only when the water level raises above its opening, to be used as a stench suction tube.

[0007] Another aspect of this invention is that the stench is sucked from the toilet bowl through the overflow tube (3) being a standard part of the conventional flush mechanism.

[0008] This invention is described in detail below with reference to the accompanying drawings, where:

Figure 1 is a schematic drawing of this invention's box as installed to the toilet tank.

Figure 2 is a schematic drawing of this invention's movable safety float, as the level of the tank water is raising in an uncontrolled manner.

Figure 3 is a schematic drawing of the layout of this invention's fan and litter as installed in the box.

Figure 4 is a schematic drawing of this invention's stench suction tube as connected to the overflow tube of the standard flush mechanism.

Figure 5 is a schematic drawing of the movable safety float of this invention's stench suction tube which is connected to the overflow tube of the standard flush mechanism, as the level of the tank water is raising in an uncontrolled manner.

Figure 6 is a schematic drawing of this invention as working with various different flush mechanisms.

[0009] When a user sits on the toilet, an electronically-controlled sensor senses the user and sends a signal to the main control unit. The main control unit switches on the fan. The fan (1) installed inside the box (5) sucks the stench from the toilet bowl through the overflow tube (3) of the standard flush mechanism. Thus the stench passes through the overflow tube (3), passes through the fixing tube installed between the overflow tube (3) and the box (5) containing the fan (1) and the filter (2), and reaches the fan(1). While the system is running, the movable safety float (8) closes the discharge holes (6) of the fixing tube (7) in order to prevent the stench from being sucked from inside the toilet tank (9) and to ensure it to be sucked only through the overflow tube (3) [as shown in Figure 1]. The fan (1) installed in the box (5) transfers the sucked stench to the filter (2) inside the box (5). While the stench passes through the filter (2), its dirty and stenchy particles are caught and kept by the filter (2), so that the stench is removed. The sucked air, now cleaned after passing through the filter (2) inside the box (5), returns to the surrounding air through the clean air duct (4). When the user stands up, the electronically-controlled sensor sends a signal to stop the system and to switch on the flushing system.

[0010] When the level of the water inside the toilet tank (9) raises above the utilization level, the movable safety float (8) is pushed up by the raising water, so that it raises above the discharge holes (6) [as shown in Figure 3], so that the raising water passes through the discharge holes (6), passes through the overflow tube (3), and discharges

into the toilet bowl. In this case a second electronically-controlled sensor senses that the water level is raising and sends a signal to the main control unit, so that the main control unit switches off the fan (1) inside the box (5).

[0011] Another application of this system [as shown in Figure 4] is that the fan (1) installed in the box (5) sucks the stench through the overflow tube (3) of the standard discharge mechanism of the toilet bowl, so that the stench passes through a dirty air suction duct (10) attached to the overflow tube (3), and reaches the box (5) containing the fan (1) and the filter (2). In this application, the movable safety float (8) closes the overflow tube (3) of the standard flush mechanism.

[0012] In the application described above, when the level of the water inside the toilet tank (9) raises above the utilization level, the movable safety float (8) is pushed up by the raising water, so that it raises above the overflow tube (3), passes through the overflow tube (3), and discharges into the toilet bowl [as shown in Figure 5].

[0013] As described above, this stench-free toilet system cleans the stench completely. It is also easy to install the system and to gain access to the system thanks to the fact that the system is installed in the toilet tank.

Claims

1. The stench cleaning system for installation into a toilet tank, the system comprising,
 - a box (5) which sucks the stench from the toilet bowl through an overflow tube (3) of a flush mechanism;
 - a fan (1) installed into said box (5) for the suction of stench;
 - a filter (2) installed into said box (5) for removing the stench transferred from said fan (1);
 - a clean air duct (4) discharging the cleaned air passing from the filter (2) to outside of the said tank;
 - characterized in that** the system further comprises;
 - discharge holes (6) provide to a fixing tube (7) installable to the overflow tube (3);
 - a movable safety float (8) which closes the discharge holes (6) in order to prevent suction from inside the toilet tank (9) and to ensure it to be sucked only through the overflow tube (3) while the fan (1) is running;
 - an electronically-controlled sensor which senses the user sitting on the toilet and sends a signal to a main control unit; or senses the user standing up and sends a signal to stop the system;
 - the main control unit which switches on the fan (1) or stops the system according to said signals coming from the electronically-controlled sensor; the main control unit also switching on the flushing system according to said signal sent to stop the system.
2. The system according to claim 1, wherein when the water inside the toilet tank (9) raises above the utilization level, the safety float (8) is pushed up by the

water and raises above the discharge holes (6).

3. The system according to claim 2, wherein when the water inside the toilet tank (9) raises above the utilization level, it passes through the discharge holes (6) and the overflow tube (3), and discharges into the toilet bowl.
4. The system according to claim 3, wherein it further comprises a second electronically-controlled sensor that senses the water level raise above the utilization level, and sends a signal to the main control unit, so that the main control unit switches off the fan (1) inside the box (5).

Patentansprüche

1. Geruchsreinigungssystem zum Einbau in einen Spülkasten, wobei das System umfasst:

einen Kasten (5), der den Geruch aus der Toilettenschüssel über ein Überlaufrohr (3) einer Spüleinrichtung absaugt;
 ein Gebläse (1), das in den Kasten (5) zum Absaugen von Geruch eingebaut ist;
 einen Filter (2), der in den Kasten zum Beseitigen des Geruchs eingebaut ist, der aus dem Gebläse (1) abgegeben wird;
 einen Reinluftkanal (4), der die gereinigte Luft, die aus dem Filter (2) kommt, nach außerhalb des Spülkastens leitet;
dadurch gekennzeichnet, dass das System darüber hinaus umfasst:

Abzugsöffnungen (6), die am Befestigungsrohr (7) vorgesehen sind, das am Überlaufrohr (3) angebracht werden kann;
 einen beweglichen Sicherheitsschwimmer (8), der die Abzugsöffnungen (6) schließt, um ein Ansaugen vom Inneren des Spülkastens (9) her zu vermeiden und sicherzustellen, dass nur durch das Überlaufrohr (3) angesaugt wird, wenn das Gebläse (1) läuft;
 einen elektronisch gesteuerten Sensor, der den auf der Toilette sitzenden Benutzer erfasst und ein Signal an eine Hauptsteuereinheit sendet; oder erfasst, dass der Benutzer aufsteht, und ein Signal zum Stoppen des Systems sendet;
 wobei die Hauptsteuereinheit, die das Gebläse (1) einschaltet oder das System entsprechend den Signalen, die vom elektronisch gesteuerten Sensor kommen, stoppt, auch das Spülsystem entsprechend dem Signal einschaltet, das zum Stoppen des Systems gesendet wird.

2. System nach Anspruch 1, wobei, wenn das Wasser im Inneren des Spülkastens (9) über den Nutzpegel steigt, der Sicherheitsschwimmer (8) durch das Wasser nach oben gedrückt wird und über die Abzugsöffnungen (6) steigt. 5
3. System nach Anspruch 2, wobei, wenn das Wasser im Inneren des Spülkastens (9) über den Nutzpegel steigt, es durch die Abzugsöffnungen (6) und das Überlaufrohr (3) läuft und in die Toilettenschüssel ausgeleitet wird. 10
4. System nach Anspruch 3, wobei es darüber hinaus einen zweiten elektronisch gesteuerten Sensor umfasst, der den Wasserpegelanstieg über den Nutzpegel erfasst und ein Signal an die Hauptsteuereinheit sendet, damit diese das Gebläse (1) im Inneren des Kastens (5) abschaltet. 15

Revendications

1. Système d'élimination des mauvaises odeurs destiné à être installé dans un réservoir de toilettes, le système comprenant : 25

- une boîte (5) qui aspire les mauvaises odeurs de la cuvette des toilettes par un tube de trop-plein (3) d'un mécanisme de chasse d'eau ;
- un ventilateur (1) installé à l'intérieur de ladite boîte (5) destiné à l'aspiration des mauvaises odeurs ;
- un filtre (2) installé à l'intérieur de ladite boîte (5) destiné à retirer les mauvaises odeurs transférées depuis ledit ventilateur (1) ; 30
- un conduit d'air propre (4) évacuant l'air nettoyé passant du filtre (2) vers l'extérieur dudit réservoir ; 35

caractérisé en ce que le système comprend de plus : 40

- des trous d'évacuation (6) disposés sur un tube fixe (7) pouvant être installé sur le tube de trop-plein (3) ; 45
- un flotteur de sécurité mobile (8) qui ferme les trous d'évacuation (6) de façon à empêcher l'aspiration à partir de l'intérieur du réservoir de toilettes (9) et à garantir qu'il ne soit aspiré que par le tube de trop-plein (3) lorsque le ventilateur (1) fonctionne ; 50
- un capteur commandé électroniquement qui détecte que l'utilisateur s'assoit sur la cuvette des toilettes et envoie un signal à l'unité de commande principale, ou détecte que l'utilisateur se lève et envoie un signal pour arrêter le système ; 55
- et
- l'unité de commande principale qui active le

ventilateur ou arrête le système selon lesdits signaux en provenance du capteur commandé électroniquement, l'unité de commande principale activant également le système de chasse d'eau selon ledit signal envoyé pour arrêter le système.

2. Système selon la revendication 1, dans lequel lorsque l'eau à l'intérieur du réservoir de toilettes (9) s'élève au-dessus du niveau d'utilisation, le flotteur de sécurité (8) est poussé vers le haut par l'eau et s'élève au-dessus des trous d'évacuation (6).
3. Système selon la revendication 2, dans lequel lorsque l'eau à l'intérieur du réservoir de toilettes (9) s'élève au-dessus du niveau d'utilisation, celle-ci passe par les trous d'évacuation (6) et le tube de trop-plein (3), et s'évacue dans la cuvette des toilettes.
4. Système selon la revendication 3, comprenant de plus un second capteur commandé électroniquement qui détecte l'élévation du niveau d'eau au-dessus du niveau d'utilisation, et envoie un signal à l'unité de commande principale, de façon à ce que l'unité de commande principale éteigne le ventilateur (1) à l'intérieur de la boîte (5).

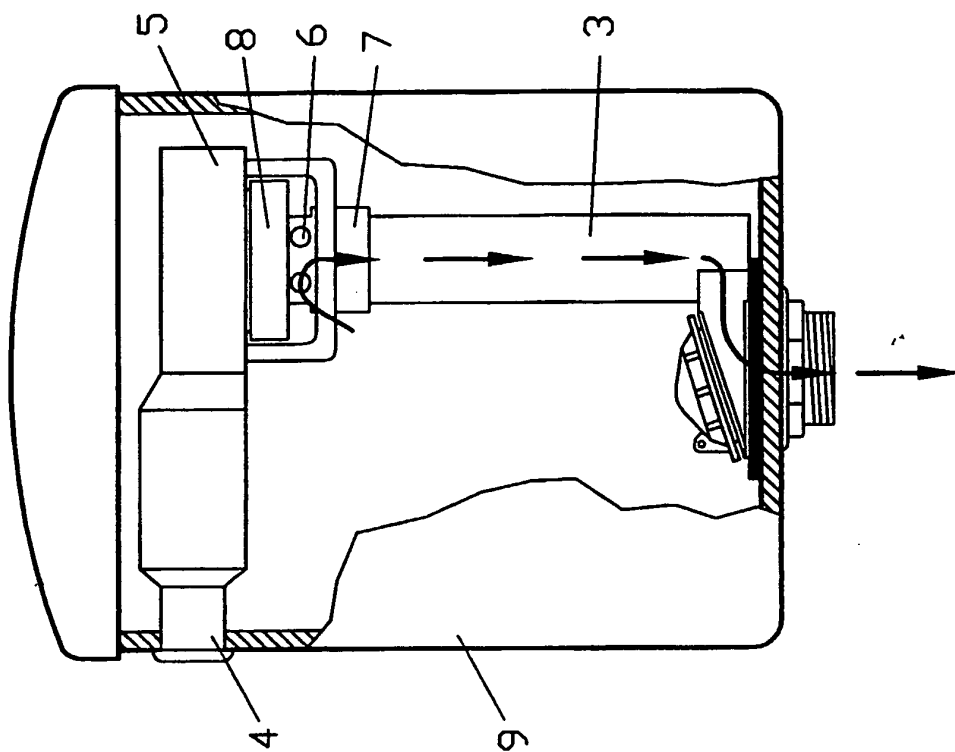


FIGURE-2

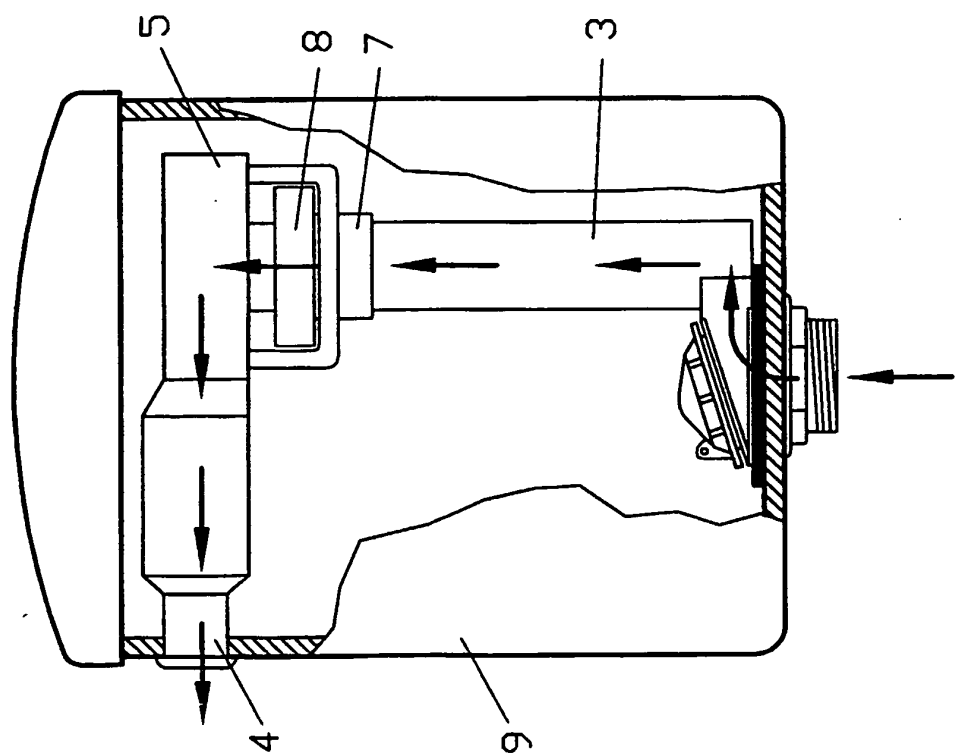


FIGURE-1

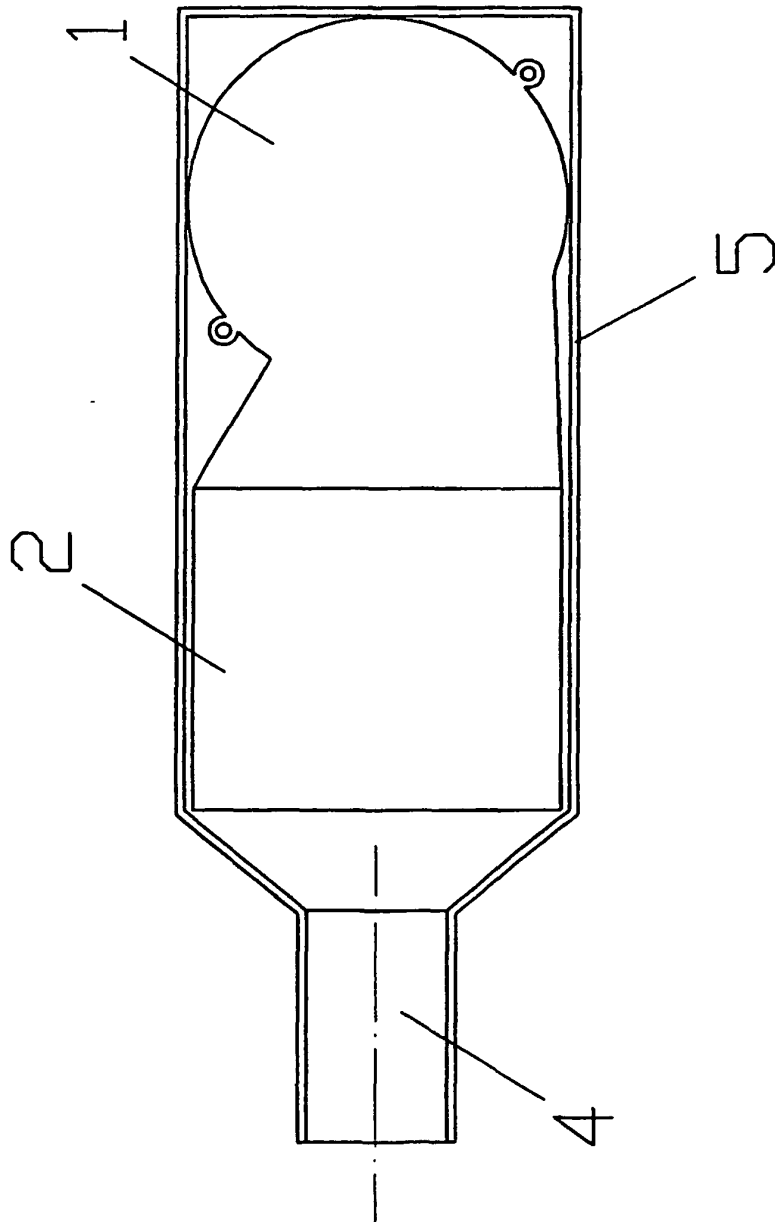


FIGURE-3

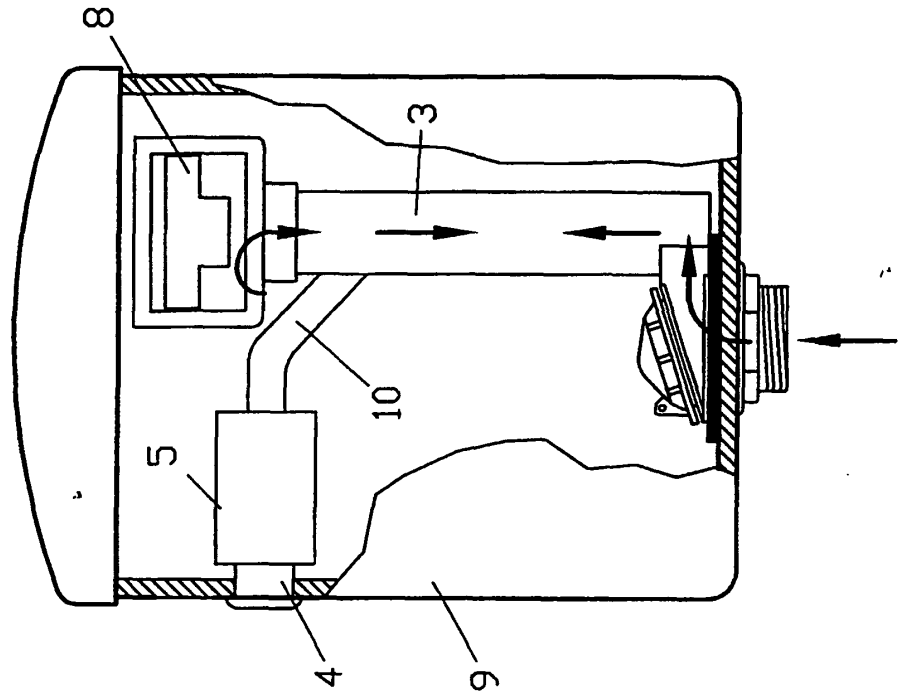


FIGURE-5

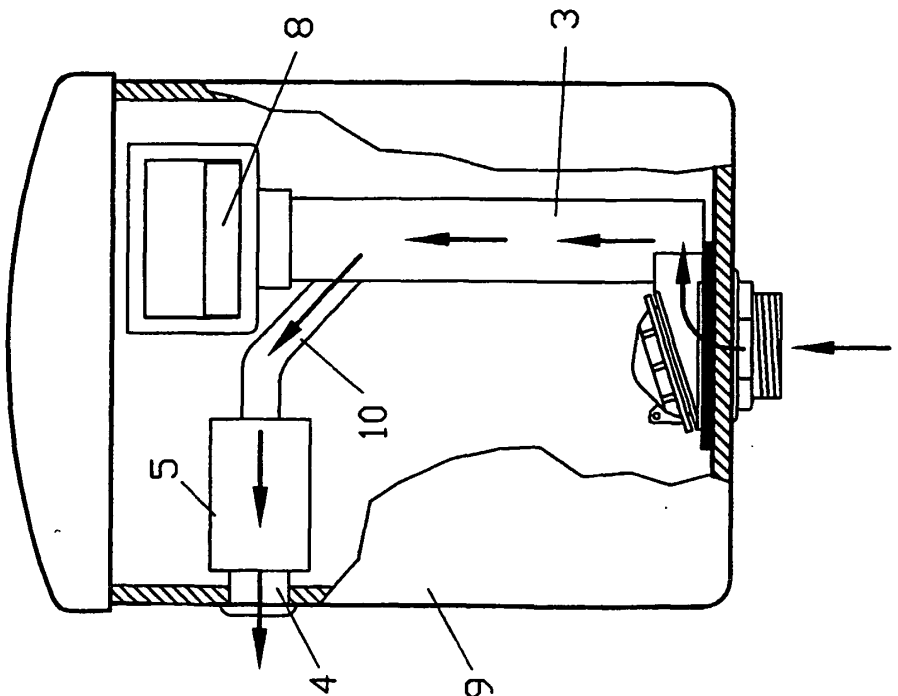


FIGURE-4

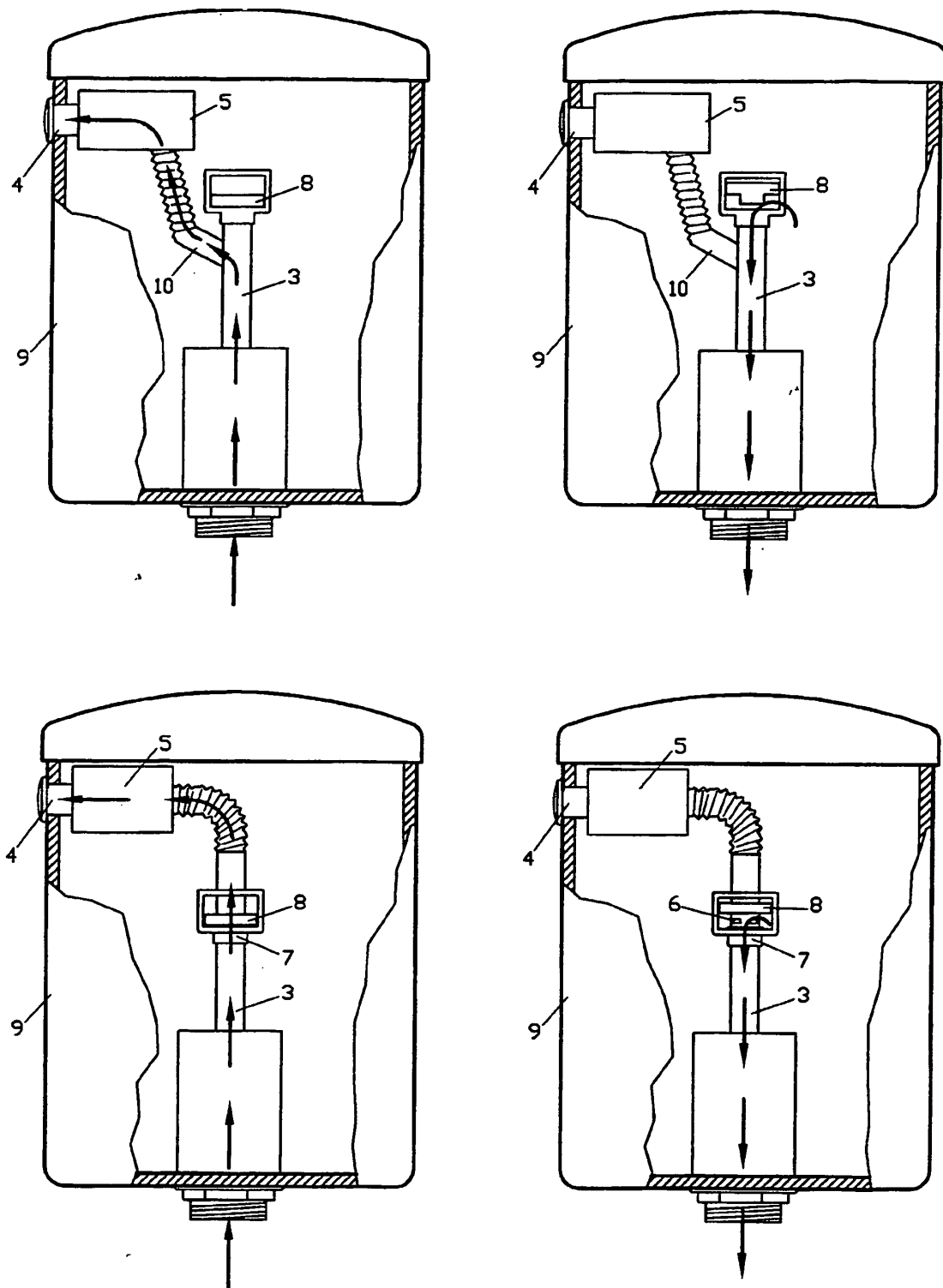


FIGURE-6

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- DE 19752069 [0005]