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(54) **ODOR ELIMINATING SYSTEM FOR A TOILET**

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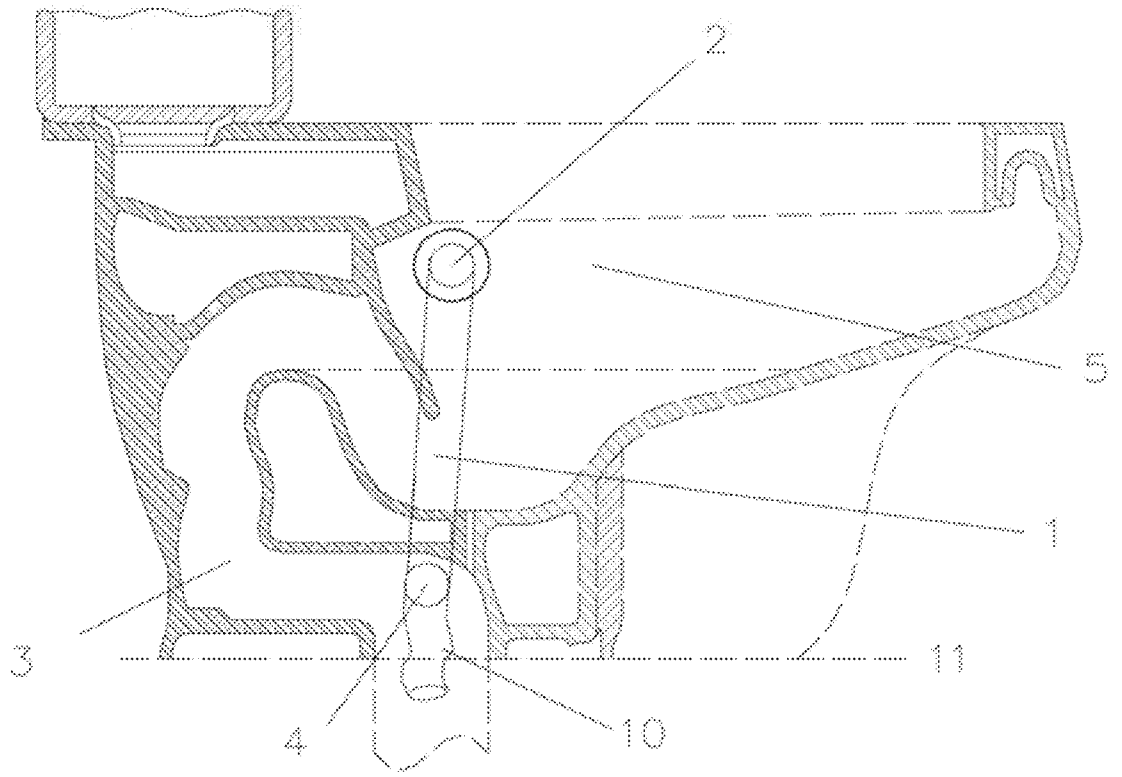
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(57) **ABSTRACT**

A ventilation system for a toilet that provides a clean, convenient and safe means for eliminating unpleasant odors by use of a fan is herein disclosed. This system can be added to an existing toilet or used in newbuilt as so desired. Odors are eliminated directly to the sewer outflow.



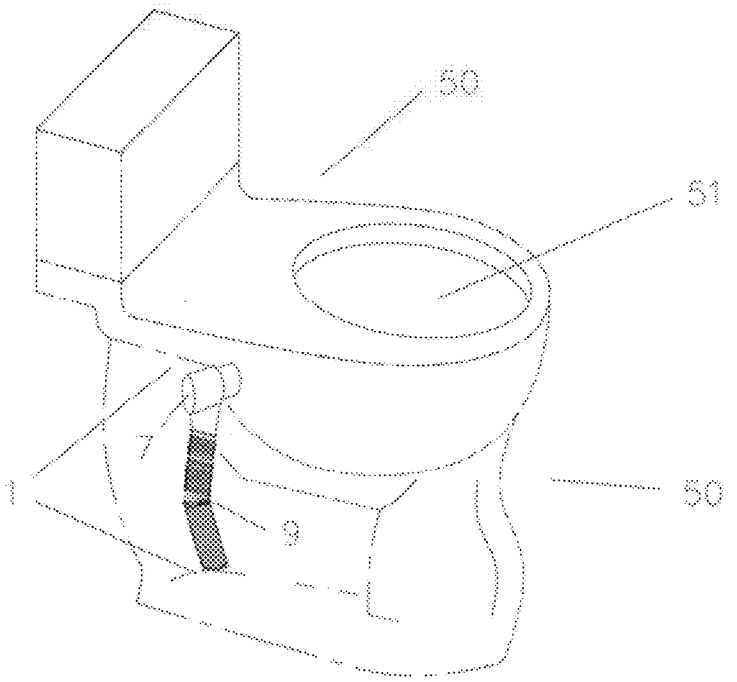


FIG 1

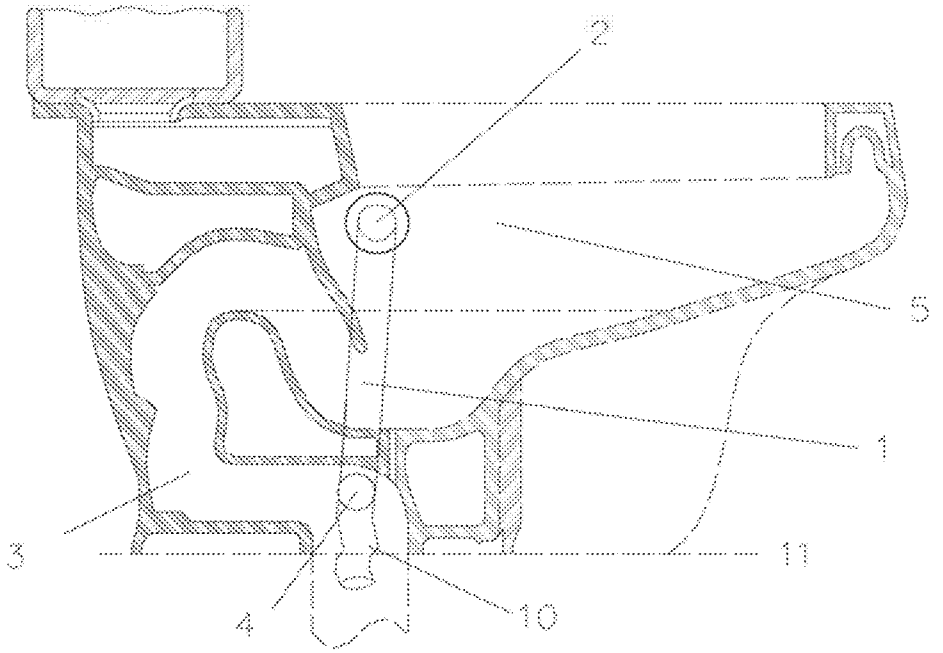


FIG 2

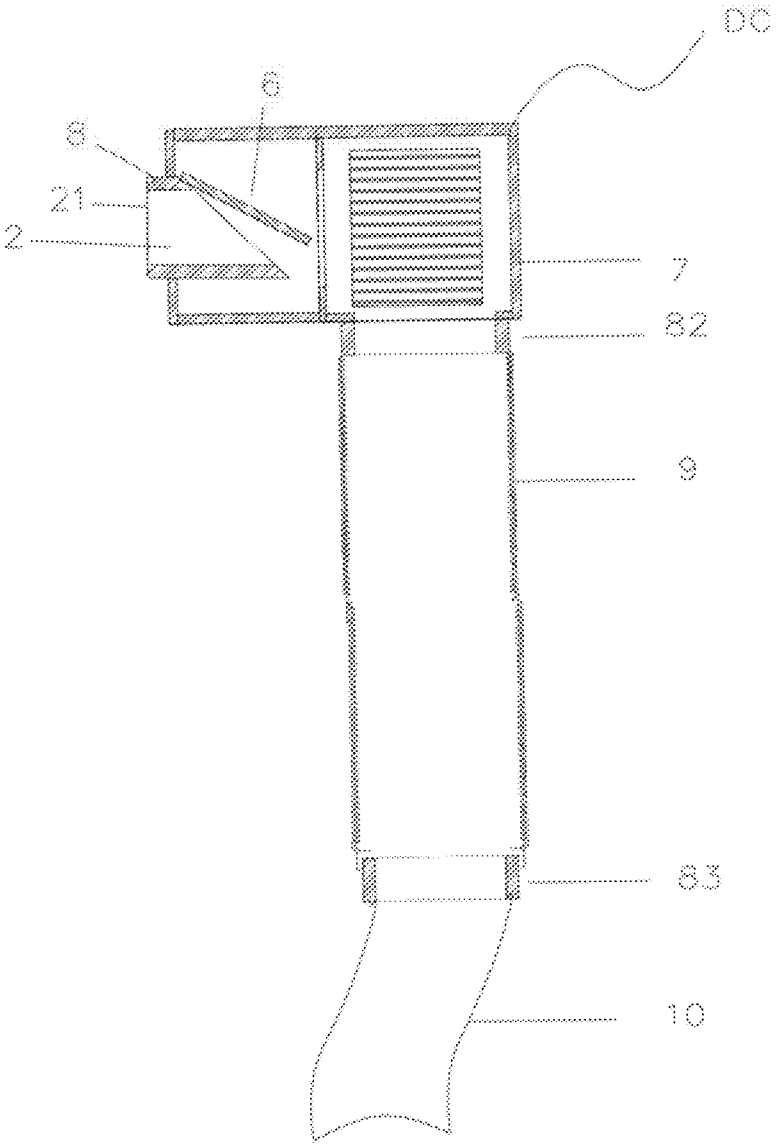


FIG 3

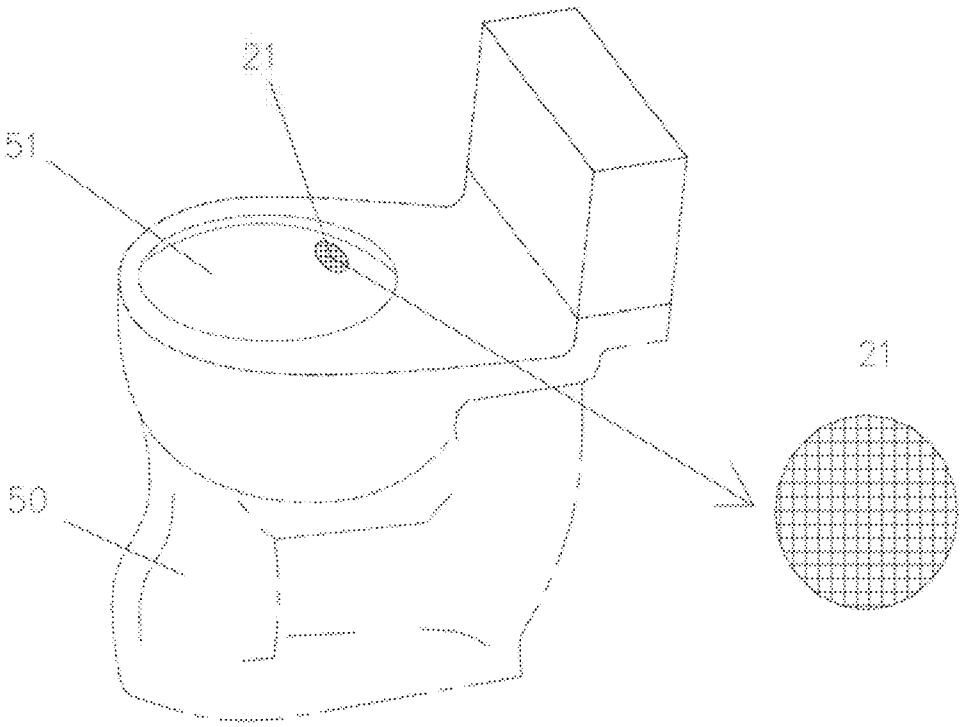


FIG 4

ODOR ELIMINATING SYSTEM FOR A TOILET

FIELD OF THE INVENTION

[0001] The invention described below relates to a ventilating system for the purpose of removing obnoxious odors promptly from the toilet bowl during toilet usage. More specifically, the subject invention pertains to an odors eliminating system utilizing a ventilating fan to evacuate odors from a toilet bowl to the drain.

BACKGROUND OF THE INVENTION

[0002] A common problem with the traditional toilet is that odors accumulate during and even long time after the toilet usage. The conventional bathroom ventilating fan provided on the ceiling can not withdraw these odors promptly, efficiently and timely. There are many types of devices made to provide means for removing these obnoxious odors. They can be categorized into several groups according to their construction and mode of operation.

[0003] One set of devices use the ventilation system attached to the seat, or built into the seat itself. These ventilation systems can cause a sanitary problem due to the presence of baffles, channels and openings along the underside of the seat and/or tubing located in the bowl which present a breeding ground for bacteria.

[0004] Another set of devices use an air filter system which are attached to the toilet bowl or hung on the side thereof. These designs involve the costs of buying and replacing filters. Furthermore, if the filter is spent, the system will pump unfiltered odor-filled air into the room.

[0005] Another set of devices use a pump system for removing odors from a toilet bowl to outside of the lavatory. Typically, the odors are pumped to the exterior of the bathroom or the building. These solutions require architectural improvements to be made to the building to allow for passages through which to pump the odor-filled gas.

[0006] In general, the above, ventilation systems have one or more of the following problems: inadequate sanitation, unsightly appearance, physical obstruction, and/or expense for the filter.

SUMMARY OF INVENTION

[0007] It is accordingly an object of the invention to provide an odor eliminating system for removing odors from a toilet bowl by pumping the odors to the sewer pipe, which overcomes the above-mentioned disadvantages of the heretofore-known devices and methods.

[0008] With the foregoing and other objects in view there is provided, in accordance with the invention, an odor elimination system for a toilet can be added to a existing toilet. The odor ventilating system includes a one-way valve, a low voltage direct current ventilating fan or similar device, three connectors, a flexible air hose and an open-end soft film tube. The top connector connects an inlet opening provided on the toilet bowel wall and the ventilating fan. The other connector connects the exhaust exit of said ventilating fan and the air hose. The one-way valve can be installed either on the inlet of the fan or on the exhaust exit of said ventilating fan. The third connector connects the air hose and an outlet opening provided on the toilet discharge passage. The open-end soft film tube is affixed inside to the third connector and extended toward the end of the toilet discharge passage. The end of the open-end soft film tube must at least pass through the sewer pipe or the floor line.

[0009] To retrofit an existing toilet, the inlet opening is drilled in the porcelain body of the toilet bowl wall to a spot above the water level, and the outlet opening is drilled on the toilet discharge passage. Insert and seal the connector into the inlet opening, then install the one-way valve, ventilating fan, another connector, the flexible air hose, the third connector and the open-end soft film tube, one after another. A screen is affixed on the inlet opening to prevent solid waste get into the inlet opening.

[0010] The main object of this invention is to provide a toilet bowl venting system whereby odors from within the toilet howl may be vented, therefrom and discharged into the drain line for the toilet bowl.

[0011] Another object of this invention in accordance with the preceding objects is to provide a toilet bowl venting system which will exclude the possibility of backflow of odors from the toilet drain line into the toilet bowl.

[0012] Still another object of this invention is to provide a toilet howl venting system in accordance with the preceding objects and which may be easily accessible while maintenance and services are needed.

[0013] A final object of this invention to be specifically enumerated herein is to provide a toilet bowl odor venting system in accordance with the preceding objects and which will be economically feasible, long lasting and relatively trouble free in operation.

[0014] The construction and method of operation of the invention, however, together with additional objects and advantages thereof will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] FIG. **1** is a diagrammatic view of an odor eliminating system and relation with an existing toilet to the invention;

[0016] FIG. **2** is a sectional view through an existing toilet with an odors eliminating system installed according to the invention;

[0017] FIG. **3** is a diagrammatic view of an odor eliminating system and elements relations according to the invention; and

[0018] FIG. **4** is a diagrammatic view showing the position of the inlet opening and the screen according to the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0019] Referring now to the figures of the drawing in detail and first, particularly, to FIGS. **1**, **2**, **3** and **4** thereof, there is seen a conventional toilet **50** having a toilet bowl **51** and a discharge passage **3**. An inlet opening **2** is drilled on the upper part of toilet bowl wall **5**. An outlet opening **4** is drilled on and near the end of the discharge passage **3**.

[0020] The intake opening **2** is further covered and waterproof sealed by an inlet screen **21** to prevent solid waste get into the inlet opening **2**. The inlet screen **21** can be made by any durable waterproof materials.

[0021] FIG. **3** illustrates an odor eliminating system **1** that further consists of a connector **8** inserted into the inlet opening **2**, a one-way valve **6**, a low voltage ventilating fan **7** or similar ice flexible an hose **9**, and in open-end soft film tube

10 The flexible an hose **9** connects to the exhaust exit **82** of the ventilating fan **7**. When the ventilating fan **7** starts to suck air, the one-way valve **6** will be pushed open. The one-way valve **6** will be closed when the ventilating fan **7** stops, that will prevent gases or odors returning back to toilet bowl **51**. The one-way valve **6** can be installed either on the inlet of the fan or on the exhaust exit of said fan. The electrical ventilating fan **7** can be activated on and off by an electric switch (not shown).

[0022] The third connector **83** connects the air hose **9** and the outlet opening **4** provided near the end of the toilet discharge passage **3**. The open-end soft film tube **10** is affixed inside to the third connector **8** and extended toward the end of the toilet discharge passage **3**. The end of the open-end soft film tube **10** must at least pass through the sewer pipe or the floor line **11** in order to make sure the open-end soft film tube **10** will not be clogged and the waste will be flushed clean during each water flash.

[0023] After installation of the odor eliminating system **1** described above, when a user turn on the ventilating fan **7**, the one-way valve **6** opens and the odors in the toilet bowl **51** are sucked from inlet opening **2** through the air hose **9**, the outlet opening **4** and the open-end soft film tube **10** and then the odors are eliminated into the drain pipe.

[0024] With respect to the above description then, it is to be realized that the optimum dimensional relationships for the parts of the toilet with an odors eliminating function, to include variations in size, materials, shape, form, function and the manner of operation, assembly and use, are deemed readily apparent and obvious to one skilled in the art, and all equivalent relationships to those illustrated in the drawings and described in the specification are intended to be encompassed by the present invention.

[0025] Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the toilet ventilation apparatus to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the odors eliminating system.

What is claimed is:

1. An odor eliminating system comprising:

a connector having a one-way valve installed connecting to a low voltage ventilating fan or similar device;

a flexible air hose connected to the exhaust exit of the ventilating fan; and

an open-end soft film tube inside the toilet bottom outlet.

2. The odors eliminating system according to claim **1**, wherein the one-way valve is installed on the inlet of the ventilating fan.

3. The odors eliminating system according to claim **1**, wherein the one-way valve is installed on the exhaust exit of said ventilating fan.

4. The odors eliminating system according to claim **1**, wherein the inlet screen is made of durable waterproof materials.

5. The odors eliminating system according to claim **1**, wherein the ventilating fan is an electrical centrifugal fan.

6. The odors eliminating system according to claim **1**, wherein the flexible air hose can be made by any durable materials and need not to be round shape.

7. The odors eliminating system according to claim **1**, wherein the open-end soft film be is made by of soft and durable materials.

8. The odors eliminating system according to claim **7**, wherein the length of the end of the open-end soft film tube must pass through the sewer pipe or the floor line.

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