



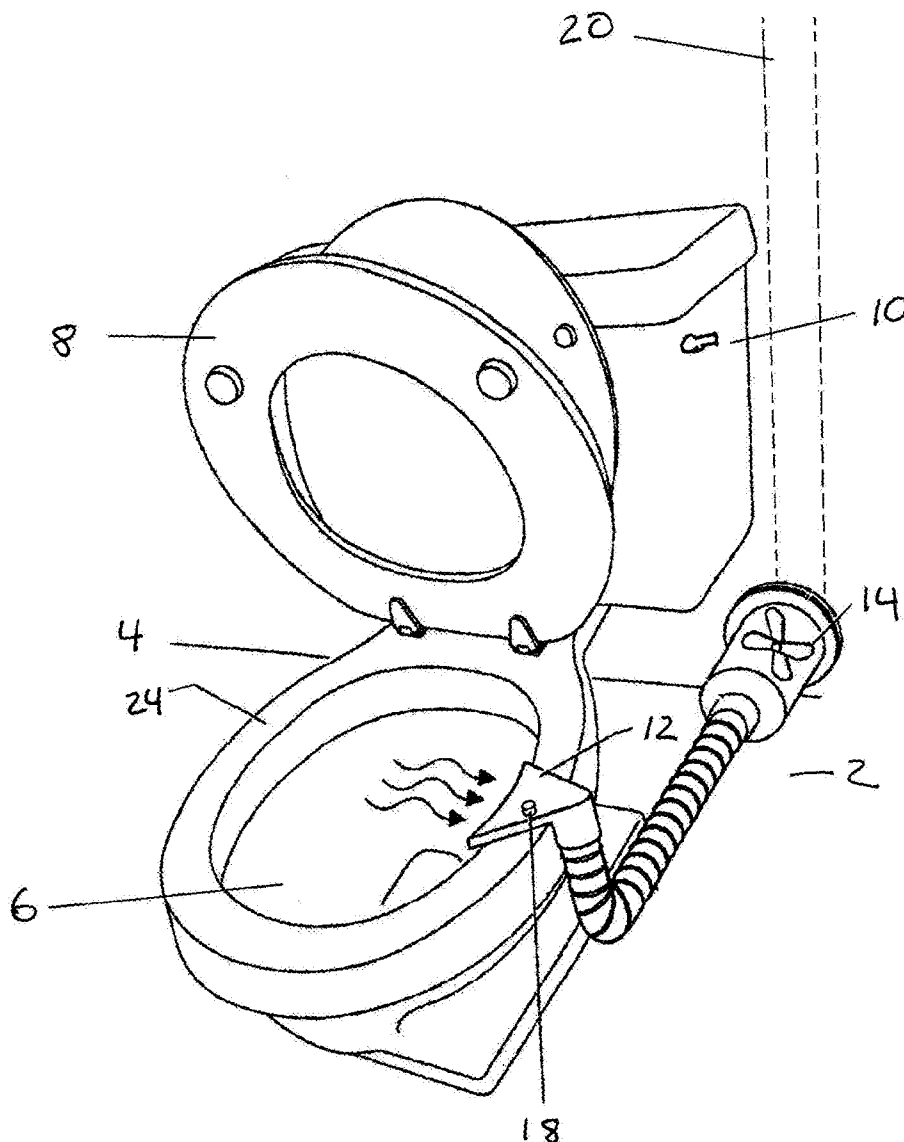
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(19) **United States**(12) **Patent Application Publication**
Moore(10) **Pub. No.: US 2011/0047686 A1**(43) **Pub. Date: Mar. 3, 2011**(54) **APPARATUS FOR TREATING
OBJECTIONABLE ODORS IN TOILET
BOWLS****Publication Classification**(51) **Int. Cl.**
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(52) **U.S. Cl.** 4/213(57) **ABSTRACT**(76) **Inventor: James Moore, Sparland, IL (US)**(21) **Appl. No.: 12/582,072**(22) **Filed: Oct. 20, 2009****Related U.S. Application Data**(63) Continuation-in-part of application No. 12/553,089,
filed on Sep. 2, 2009, now abandoned.

Disclosed is an apparatus for removing foul odor from the stool directly from the stool area without having to first draw the foul air through the toilet closet. The apparatus includes various embodiments including a unit venting the foul air out of the toilet closet or bathroom. The apparatus includes both pressure and motion actuators for activating the fan upon the use of the toilet. Furthermore the apparatus includes a sound generation device for masking bathroom sounds and filter for treating the foul air. The apparatus may be power by household current or battery power.



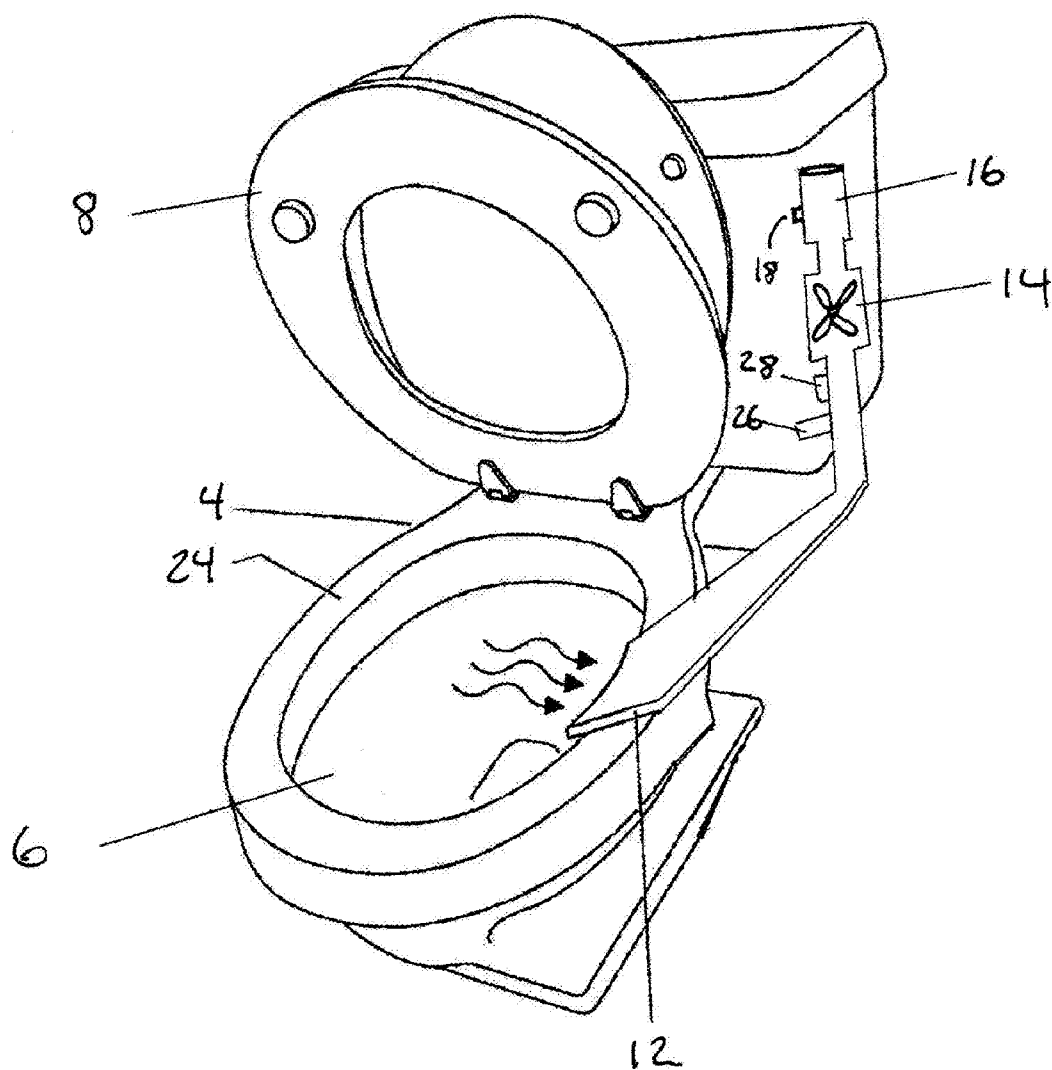


Figure 1

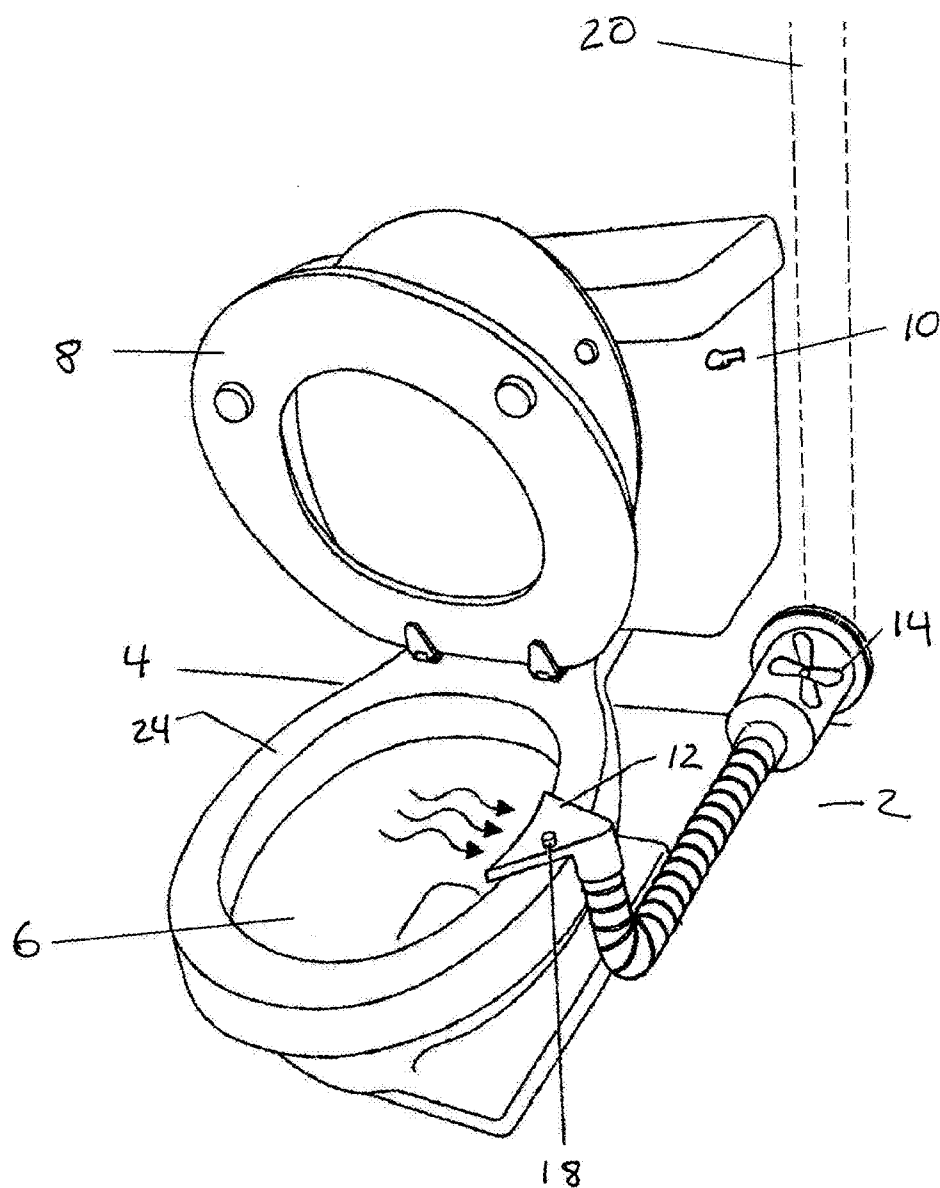


Figure 2

APPARATUS FOR TREATING OBJECTIONABLE ODORS IN TOILET BOWLS

RELATED APPLICATION

[0001] This application is a continuation-in-part of U.S. patent application Ser. No. 12/553,089, filed Sep. 2, 2009, the contents of which are hereby incorporated in their entirety.

TECHNICAL FIELD

[0002] The present invention relates to the field of air treatment devices and particularly to devices for eradicating objectionable odors from toilet bowls or stools by retrofitting a standard toilet.

BACKGROUND

[0003] The most disliked aspect of today's toilet is the unpleasant odor when using the toilet cannot be effectively expelled from the toilet. Since the restroom is a small closed space associated with an individual's privacy, air within cannot be well circulated to overcome the problem of stagnant and unpleasant smells.

[0004] Objectionable odors produced during normal toilet use are a source of concern and embarrassment to many people. Thus, the elimination or diminution thereof has occasioned a great deal of effort and inventive energy.

[0005] There are various conventional ways known to reduce the pollution of unpleasant smells, or odors, from a restroom. Such methods include the use of ceiling fans or exhaust fans which typically discharge the unpleasant smell to the outdoors. Further methods include the introduction to the bathroom of a deodorizer to mask the smell.

[0006] Some known systems attempt to add sufficient fragrance to the air to overcome objectionable odors. Re-odorizing the air has resulted in the annoyance and/or discomfort of many people. Indeed, the addition of chemicals and fragrances to the atmosphere is becoming less and less acceptable to many people. Thus a system to remove and eliminate malevolent odors and makes no attempt to "cover-up" odors is preferred by most people.

[0007] Another approach to solving the odor removal problem around toilets is to mount a suction blower in the ceiling of the room containing the toilet such as a bathroom. Unfortunately, the deodorizing effect brought about by ceiling fans is often quite inadequate and thus limited. In such a configuration a wall mounted switch controls the suction blower to exhaust odorous gases present in the bathroom to the exterior of the building. This approach works to a degree, but has some serious shortcomings.

[0008] For example, the odorous gases are allowed to circulate throughout the air in the bathroom prior to being removed and exhausted. Thus, foul air is drawn through out the whole bathroom and past the user. Therefore, the person using the toilet must smell the odorous gases in the air which can be quite unpleasant.

[0009] Secondly, this approach necessitates removing most or all of the air from the bathroom to remove the odorous gases, which is a quantity of air at least equal to that contained in the bathroom, typically two to three times as much. The air contained in the bathroom is typically heated air in the winter, which must be replaced with more heated air causing an increase in the heating and/or electric bill. In the summer, this air might be cooled air such as in an air conditioned building,

which air must be replaced with more cooled air causing an increase in the electric bill for air conditioning.

[0010] A further example of ventilating a toilet and eliminating odors includes a toilet bowl having an auxiliary passageway built-in to the rear of the bowl and housing a water driven ventilation fan. Water valves are coupled to use of the toilet seat so that weight placed on the seat initiates the fan turbine which runs the fan until the weight is removed from the seat. Unfortunately, such a design requires replacing the conventional toilet bowl entirely which is expensive and undesirable.

[0011] Thus what is needed is an apparatus which can overcome the failings of the above described art while quickly and efficiently removing odors from a bathroom and in particular a toilet bowl.

SUMMARY

[0012] The present invention includes an apparatus for removing foul odor directly from the toilet stool without having to first draw the foul air through the bathroom. The apparatus includes various embodiments including a unit venting the foul air directly out of the bathroom and an embodiment wherein the foul is treated and then returned to the bathroom. The apparatus includes both pressure and motion actuators for activating the fan upon the use of the toilet. Furthermore the apparatus includes a sound generation device for masking bathroom sounds and a filter for treating the foul air. The apparatus may be power by household current or by battery power.

[0013] In greater detail, the apparatus for venting objectionable or foul odors from a toilet bowl includes the toilet bowl having an upper rim thereon for supporting a toilet seat. The apparatus includes a conduit being disposed on the upper rim of the toilet bowl and under the toilet seat. The conduit has an opening in communication with the toilet bowl for drawing air from the bowl. A fan is fluidly connected to the conduit for drawing air through the conduit and from the bowl within the apparatus. Additionally a filter is also fluidly connected to the fan for receiving the drawn air and cleansing the air. An activator operatively connected to the fan for engaging the fan upon the use of the toilet is also included.

[0014] A further embodiment includes a vent stack extending communicatingly from the fan and the vent stack extending out from a dwelling into the outside air. The apparatus may further include a fragrance dispenser within the conduit for treating the air drawn from the bowl. The fan may be powered by standard electrical outlet power, by 12 volts, the 12 volts provided by a plug/transformer plugging into standard electrical outlet power, and by battery.

[0015] Regarding the activation of the apparatus, a pressure switch activator may be attached to the conduit disposed on the upper rim of the toilet and under the toilet seat bottom surface for actuating the fan when a predetermined amount of pressure is applied to the toilet seat. Furthermore the pressure switch may include a delay so that the fan continues to be actuated for a predetermined amount of time after the predetermined amount of pressure is no longer applied to the toilet seat.

[0016] An additional embodiment includes a sound generator operatively connected to the activator such that when the fan is activated music or sounds are played to mask the sounds

of a user of the toilet. The apparatus may also include a motion sensor activator activating the fan at a predetermined interval.

DRAWINGS

[0017] In the Drawings

[0018] FIG. 1 illustrates an embodiment of the present apparatus including the duct work between the seat and stool area for removing the foul odor connected to a fan and filter for removing the objectionable odor from the foul air; and

[0019] FIG. 2 is a further embodiment of the present invention including a vent stack for removing the foul air from the bathroom and the pressure activator between the rim and seat.

DETAILED DESCRIPTION

[0020] The present apparatus is for removing foul odor directly from the toilet stool without having to first draw the foul air through the bathroom. The apparatus includes various embodiments including venting the foul air directly out of the bathroom and an embodiment wherein the foul is treated and then returned to the bathroom. The apparatus includes both pressure and motion actuators for activating the fan upon the use of the toilet. Furthermore the apparatus includes a sound generation device for masking bathroom sounds and filter for treating the foul air. The apparatus may be powered by household current or battery power.

[0021] Traditional air cleansing methods in a toilet setting use an exhaust system which draws air out of the stool and into the room before being exhausted through the exhaust fan unit located in the ceiling. Such systems must first saturate the air of the room with the stool odor before the odor can be removed from the room. The present invention removes the foul odor from the stool directly from the stool area without having to first draw the foul air through the air of the toilet closet.

[0022] The present invention includes various embodiments including a conduit having various configurations which draws air from the stool area between the toilet seat and stool. A fan draws the foul air of the stool area through the duct work and past a filter removing the objectionable odors from the removed stool air. The filter may be any known air filter such as activated charcoal or the like. However, the present invention is not limited by any single type of filter. In a further embodiment the foul air may be drawn into an existing air duct or vent stack.

[0023] Fans employed in the present apparatus may be powered by such known means as portable sources such as batteries or hard wired into the house. The fan may be mounted to the toilet or the fan may be incorporated into the drywall of the dwelling housing the toilet. The fan may run as a quiet mode or an apparatus may be included which plays music or some type of prerecorded sound when the unit is activated. Recorded sound may be used to mask the sound of a person using the toilet to avoid embarrassment. The fan may be controlled by a switch, motion sensor, or pressure sensor when one sits on the toilet seat.

[0024] A further embodiment contemplates a portable device for traveling or the like. Furthermore the unit may be modified for use with bedpans for use in hospitals or nursing homes. The unit may be modified by use of a hose from a fan in a wall or a unit attached to the bed or built into the bedpan. Additionally, the unit may use dc power.

[0025] Referring now in greater detail to the drawings in which like numerals indicate like items throughout the several views, FIGS. 1-2 depict the apparatus for venting foul odors from a toilet bowl in various embodiments of the present invention.

[0026] The present apparatus is shown generally in FIG. 1 for venting objectionable odors from a toilet bowl 6 and cleansing the air through a filter 16. The toilet 4 has a bowl 6, a seat 8, an upper rim 24 and a flush handle 10. The present apparatus 2 comprises a conduit 12, a fan 14, a filter 16 and an activator 18. The conduit 12 communicates with the bowl 6 of the toilet 4. The fan 14 is in communication with the conduit 12 and is for venting the objectionable odors from the toilet 4. Typically the fan 14 is housed within the conduit 12. The activator 18 is operatively connected to the fan 14 for engaging the fan 14.

[0027] The conduit 12 is generally Y-shaped tapering from a wider first opening operatively connected to the bowl 6 to a narrow second opening fluidly connected to the fan 14. However, the conduit 12 can take any form or shape and may have a plurality of apertures opening up into the toilet bowl 6 for removing foul odors.

[0028] As shown in the embodiment in FIG. 2, the apparatus may further comprise a vent stack 20. The vent stack 20 extends communicatively from the fan 14 and extending out from a dwelling into the outside air.

[0029] An activator 18 is in communication with the fan 14 to selectively actuate the fan 14. The activator 18 as shown in FIG. 1 or a pressure mounted activator 18 is shown in FIG. 2. The activator may also be connected to the flush handle 10 to activate the fan 14 when the toilet is flushed.

[0030] As shown in FIG. 2, the activator is a pressure activation sensor 18 attached to the conduit 12. The activator 18 is a toilet seat weight-sensing switch for selectively interacting with toilet seat 8 and the conduit 12. The toilet seat weight-sensing switch 18 of the activator is operatively connected to the fan 14 and is for activating when the seat 8 of the toilet 4 is sat upon.

[0031] The activation sensor 18 is a pressure switch that automatically actuates the fan 14 when a predetermined amount of pressure is applied to the toilet seat 8. The pressure switch 18 may include a delay so that the fan 14 continues to be actuated for a predetermined amount of time after the pressure is no longer applied to the toilet seat 8. This delay would allow any odor that remains in the toilet bowl 6 after the user leaves to be exhausted through the apparatus 2. This could also be accomplished by programming the fan 14 to run for a predetermined amount of time after the activator 18 is released.

[0032] The apparatus may further comprise a toilet flush handle switch 10. The toilet flush handle switch 10 is operatively connected to the flush handle 10 of the toilet 4 and is for activating the fan 14 when the flush handle of the toilet 4 is activated.

[0033] In the embodiment shown in FIG. 1, the foul air is recirculated back into the room after being treated with an odor removing filter 16 and in an additional embodiment a fragrance introducing means is added to the filter 16. The filter 16 may be an activated charcoal filter wherein the foul air is neutralized or the filter may contain some other medium capable neutralizing the foul air. In the example where the foul air is exhausted out of the room and building through the vent pipe 20, as shown in FIG. 2, the filter 16 and/or fragrance introducing is not necessary.

[0034] The fan 14 requires energy to perform its functions. Although the power source for the fan 14 can be derived from numerous sources, typically the power source is household AC current supplied by adapter plug that fits into a standard electrical outlet, as this power source present in most households. Alternatively, the fan 14 could be directly configured into the standard electric grid of the building or house. Alternatively, the power source could be derived from a battery or standard electric current reduced to the equivalency of a battery. The fan 14 is activated by one or more activators or switches 18 that can be electrically connected to fan 14.

[0035] In operation and use, foul air is drawn away from a region generally defined by toilet bowl 6 once the fan 14 has been activated. As disclosed previously, activation is either by the user manually activating manual activator/switch 18, by toilet seat 8 depressing automatic switch 18 by the weight of the user or by activating a proximity sensor 26 detecting the presence of a user.

[0036] When activated, the fan 14 creates a vacuum that draws air from the region generally defined by toilet bowl 6 into the conduit 14 having an opening or aperture into the bowl 6 area. From the conduit 14, the air is drawn through the conduit 14 and past the fan 14, and into the filter 16 or vent pipe 20. As shown in FIG. 2 the conduit may extend out as a tube to the fan 14 where the fan 14 is housed within the conduit 12.

[0037] In an additional embodiment the apparatus 2 may also include a sound generation device 28 of most any known device known. Typically, the sound generator is relatively small and provides sufficient volume as to mask the sounds of the user and in an embodiment the fan 14. The sound generator 28 may be activated the activator/switch 18 which also activates the fan 14. The sound generator 28 may play music or other sounds to mask the use of the toilet 4 or the operation of the fan 14.

[0038] While Applicant has set forth embodiments as illustrated and described above, it is recognized that variations may be made with respect to disclosed embodiments. Therefore, while the invention has been disclosed in various forms only, it will be obvious to those skilled in the art that many additions, deletions and modifications can be made without departing from the spirit and scope of this invention, and no undue limits should be imposed except as set forth in the following claims.

What is claimed is:

1. An apparatus for venting objectionable odors from a toilet bowl, the toilet bowl having an upper rim thereon for supporting a toilet seat, comprising:

- a conduit being disposed on the upper rim of the toilet bowl and under the toilet seat, the conduit having an opening in communication with the toilet bowl for drawing air from the bowl;
- a fan fluidly connected to the conduit for drawing air through the conduit and from the bowl;
- a filter fluidly connected to the fan receiving the drawn air and cleansing the air;
- an activator operatively connected to the fan for engaging the fan.

2. The apparatus for venting objectionable odors of claim 1, further including a vent stack extending communicatingly from the fan and the vent stack extending out from a dwelling into the outside air.

3. The apparatus for venting objectionable odors of claim 1, further including a fragrance dispenser within the conduit for treating the air drawn from the bowl.

4. The apparatus for venting objectionable odors of claim 1, wherein the fan is powered by standard electrical outlet power.

5. The apparatus for venting objectionable odors of claim 1, wherein the fan is powered by 12 volts, the 12 volts provided by a plug/transformer plugging into standard electrical outlet power.

6. The apparatus for venting objectionable odors of claim 1, wherein the fan is powered by a battery.

7. The apparatus for venting objectionable odors of claim 1, further including a pressure switch activator attached to the conduit disposed on the upper rim of the toilet and under the toilet seat bottom surface for actuating the fan when a predetermined amount of pressure is applied to the toilet seat.

8. The apparatus for venting objectionable odors of claim 7, wherein the pressure switch includes a delay so that the fan continues to be actuated for a predetermined amount of time after the predetermined amount of pressure is no longer applied to the toilet seat.

9. The apparatus for venting objectionable odors of claim 1, further including a sound generator operatively connected to the activator such that when the fan is activated music or sounds are played to mask the sounds of a user of the toilet.

10. The apparatus for venting objectionable odors of claim 1, further including a motion sensor activator activating the fan at a predetermined interval.

11. An apparatus for venting objectionable odors from a toilet bowl, the toilet bowl having an upper rim thereon for supporting a toilet seat, comprising:

- a conduit being disposed on the upper rim of the toilet bowl and under the toilet seat, the conduit having an opening in communication with the toilet bowl for drawing air from the bowl;
- a fan fluidly connected to the conduit for drawing air through the conduit and from the bowl;
- a vent stack extending communicatingly from the fan and the vent stack extending out from a dwelling into the outside air; and
- an activator operatively connected to the fan for engaging the fan.

12. The apparatus for venting objectionable odors of claim 11, further including a filter fluidly connected to the fan receiving the drawn air and cleansing the air.

13. The apparatus for venting objectionable odors of claim 11, further including a pressure switch activator attached to the conduit disposed on the upper rim of the toilet and under the toilet seat bottom surface for actuating the fan when a predetermined amount of pressure is applied to the toilet seat.

14. The apparatus for venting objectionable odors of claim 11, further including a sound generator operatively connected to the activator such that when the fan is activated music or sounds are played to mask the sounds of a user of the toilet.

15. The apparatus for venting objectionable odors of claim 11, further including a motion sensor activator activating the fan at a predetermined interval.

16. The apparatus for venting objectionable odors of claim 11, further including a fragrance dispenser within the conduit for treating the air drawn from the bowl.

17. The apparatus for venting objectionable odors of claim 1, wherein the fan is powered by a battery.

18. An apparatus for venting objectionable odors from a toilet bowl, the toilet bowl having an upper rim thereon for supporting a toilet seat, comprising:

a conduit being disposed on the upper rim of the toilet bowl and under the toilet seat, the conduit having an opening in communication with the toilet bowl for drawing air from the bowl;

a fan fluidly connected to the conduit for drawing air through the conduit and from the bowl;

a filter fluidly connected to the fan receiving the drawn air and cleansing the air;

an activator operatively connected to the fan for engaging the fan, wherein the activator is a pressure switch activator attached to the conduit disposed on the upper rim

of the toilet and under the toilet seat bottom surface for actuating the fan when a predetermined amount of pressure is applied to the toilet seat; and

a sound generator operatively connected to the activator such that when the fan is activated music or sounds are played to mask the sounds of a user of the toilet.

19. The apparatus for venting objectionable odors of claim **18**, further including a vent stack extending communicatingly from the fan and the vent stack extending out from a dwelling into the outside air.

20. The apparatus for venting objectionable odors of claim **18**, further including a fragrance dispenser within the conduit for treating the air drawn from the bowl.

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