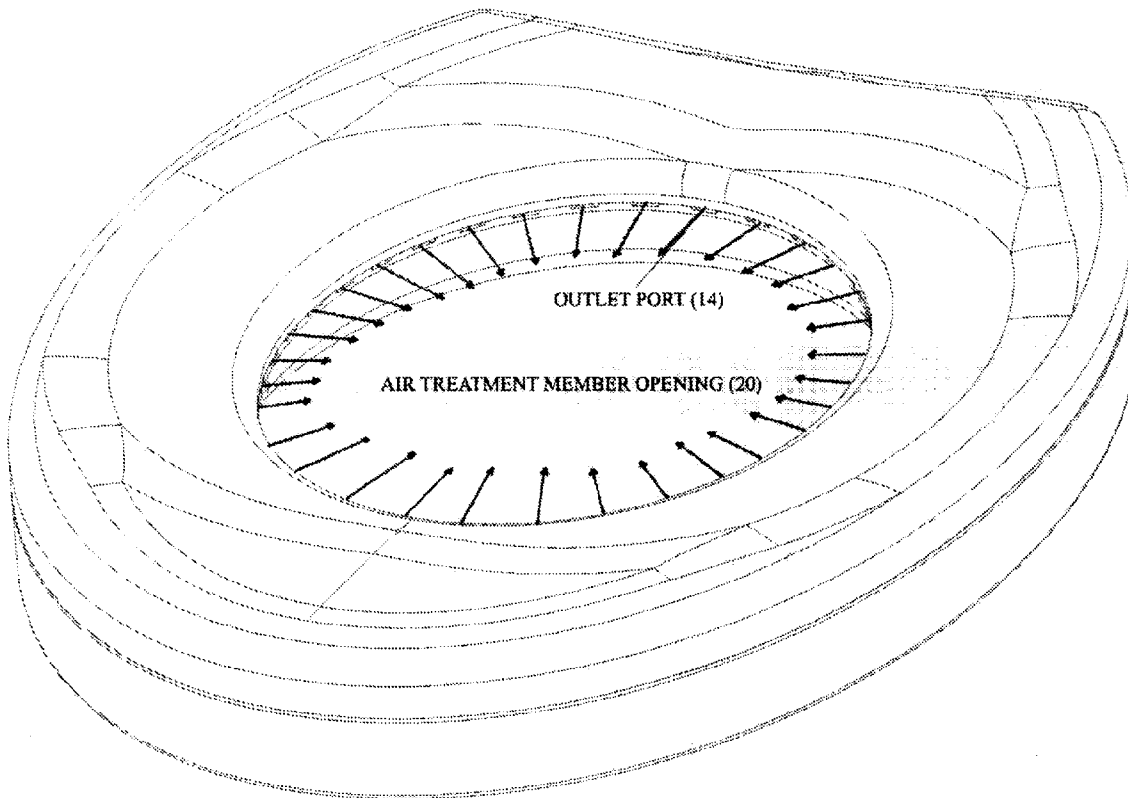




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(19) **United States**(12) **Patent Application Publication**
Barton(10) **Pub. No.: US 2008/0256692 A1**(43) **Pub. Date: Oct. 23, 2008**(54) **NOVEL TOILET AIR TREATMENT DEVICE**(52) **U.S. Cl. 4/213; 4/217**(76) **Inventor: Bruce Edward Barton,**
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MEMPHIS, TN 38119 (US)(21) **Appl. No.: 11/736,491**(22) **Filed: Apr. 17, 2007****Publication Classification**(51) **Int. Cl.**
A47K 13/30 (2006.01)
E03D 9/05 (2006.01)(57) **ABSTRACT**

The invention comprises a novel device for circulating and treating odorous air inside a toilet bowl without the need for external venting of the treated air. The invention comprises a toilet air treatment device that has an air treatment member. The air treatment member has an inlet port leading from the toilet bowl to an air pathway and an outlet port leading from the air pathway to the toilet bowl. A means for treating air is located along the air pathway of the air treatment member. A means for moving air, located inside the air treatment member, causes air to be moved under pressure from the toilet bowl, through the inlet port, along the air pathway, into contact with the means for treating air, and through the outlet port into the toilet bowl.

AIR TREATMENT MEMBER (10)

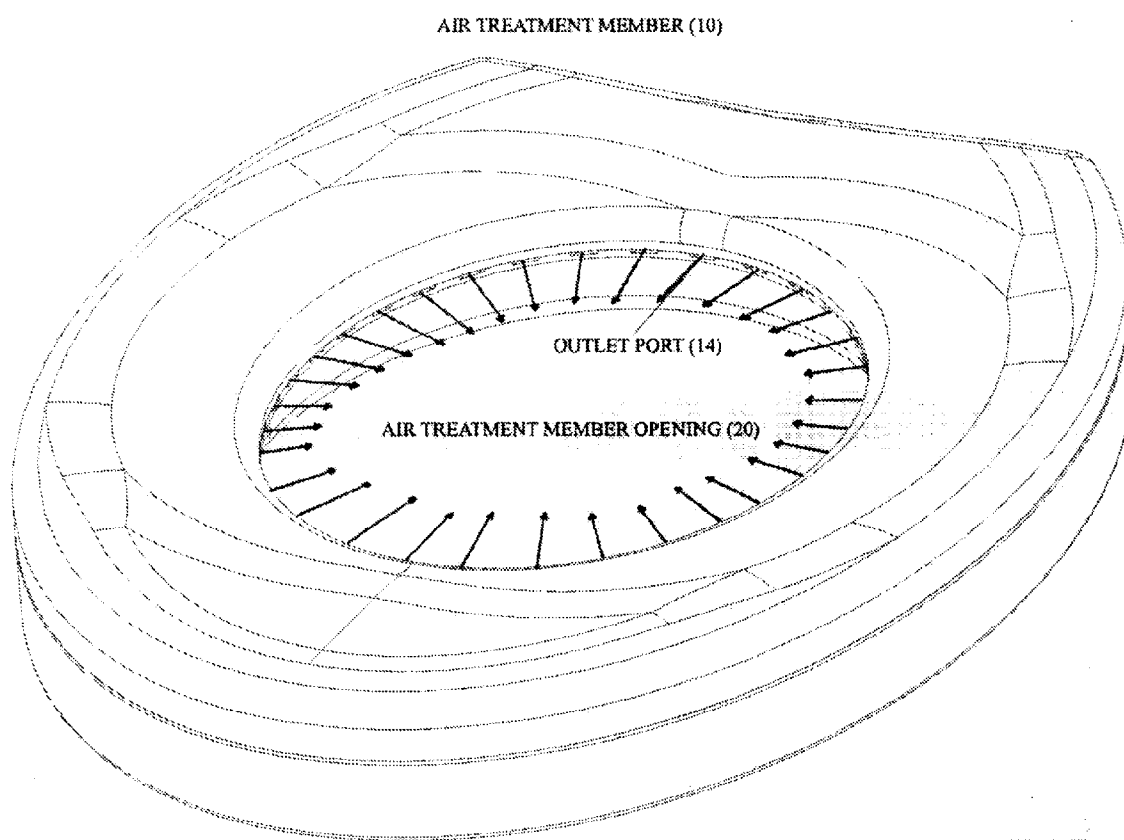


FIG. 1

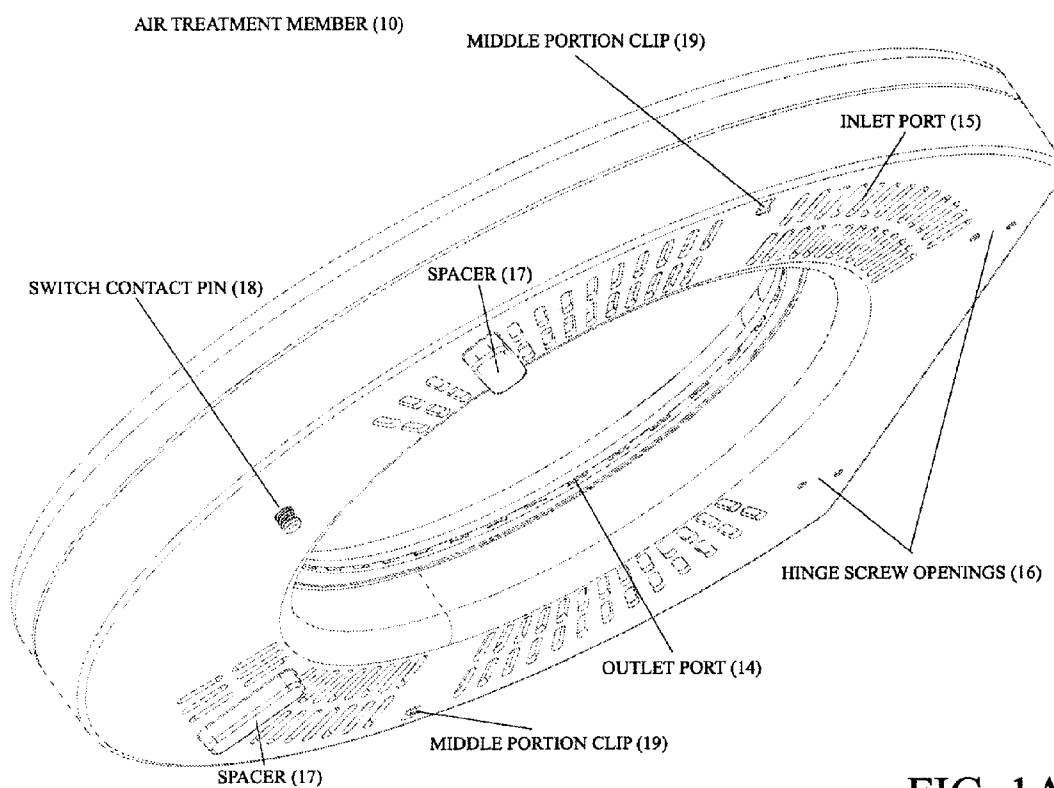


FIG. 1A

AIR TREATMENT MEMBER (10)

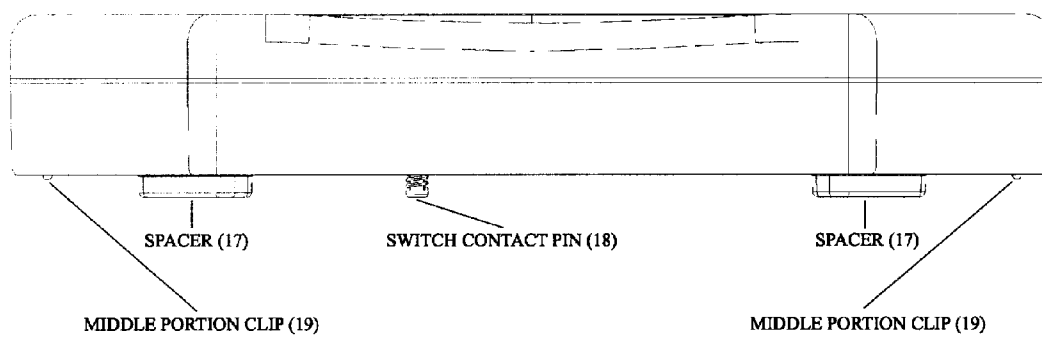


FIG. 1B

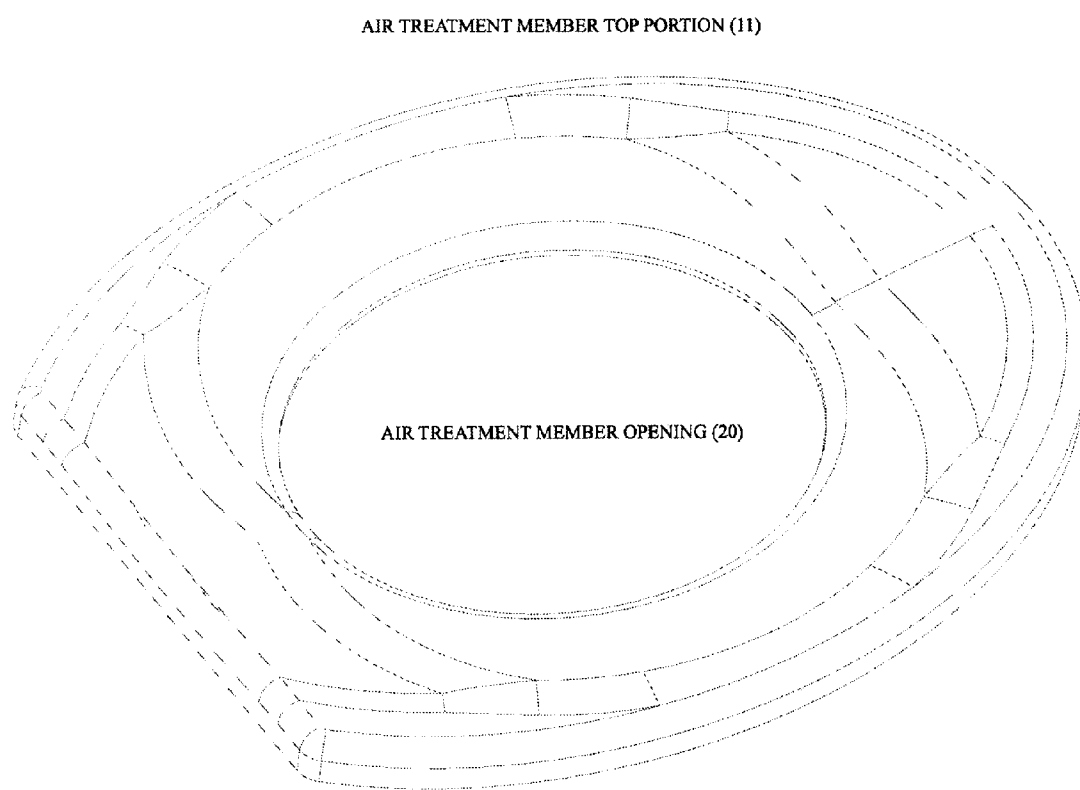


FIG. 2

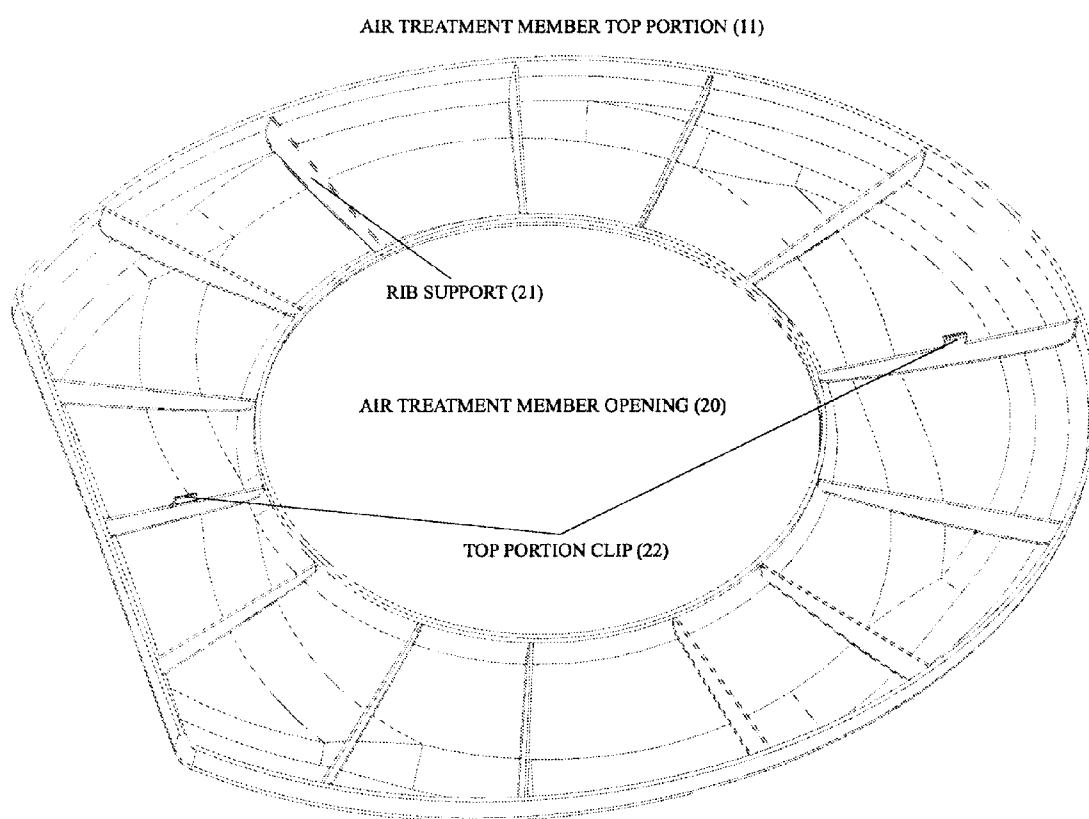


FIG. 2A

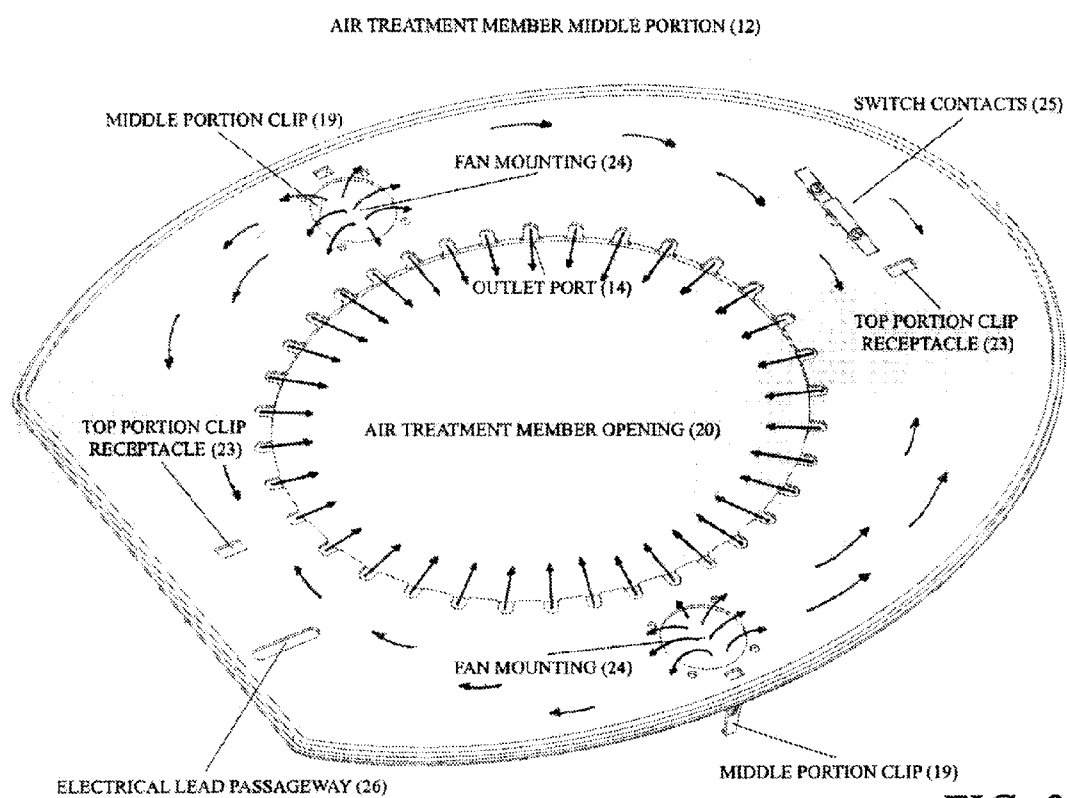


FIG. 3

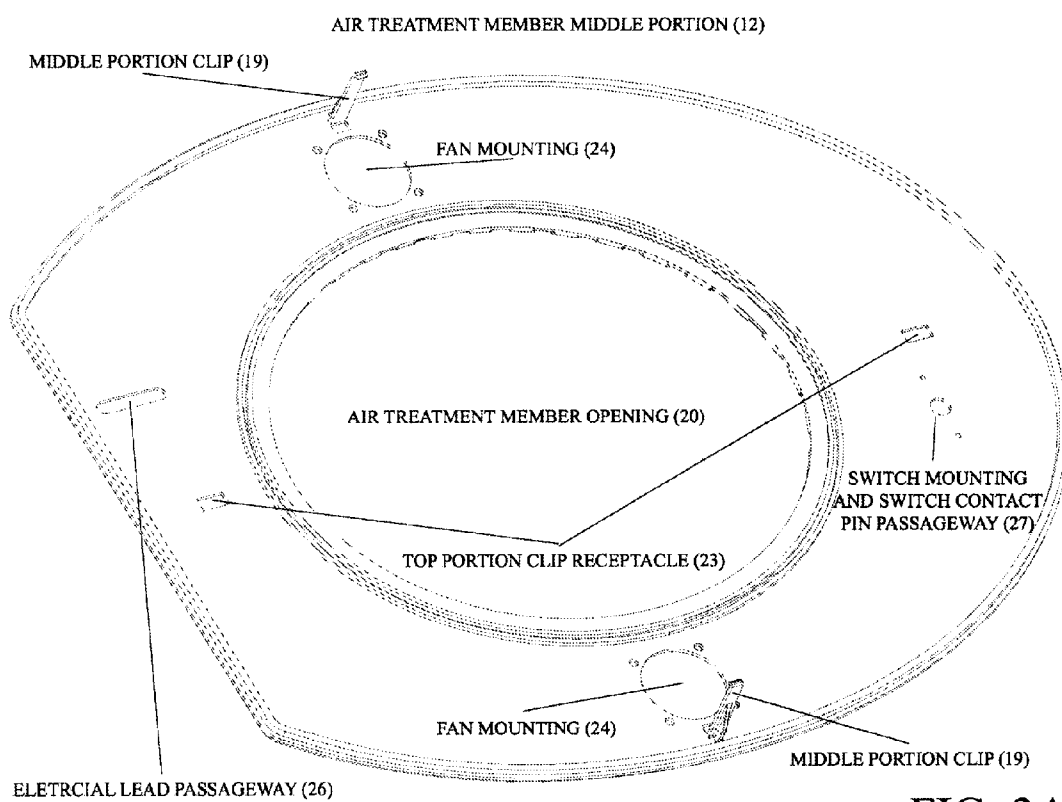


FIG. 3A

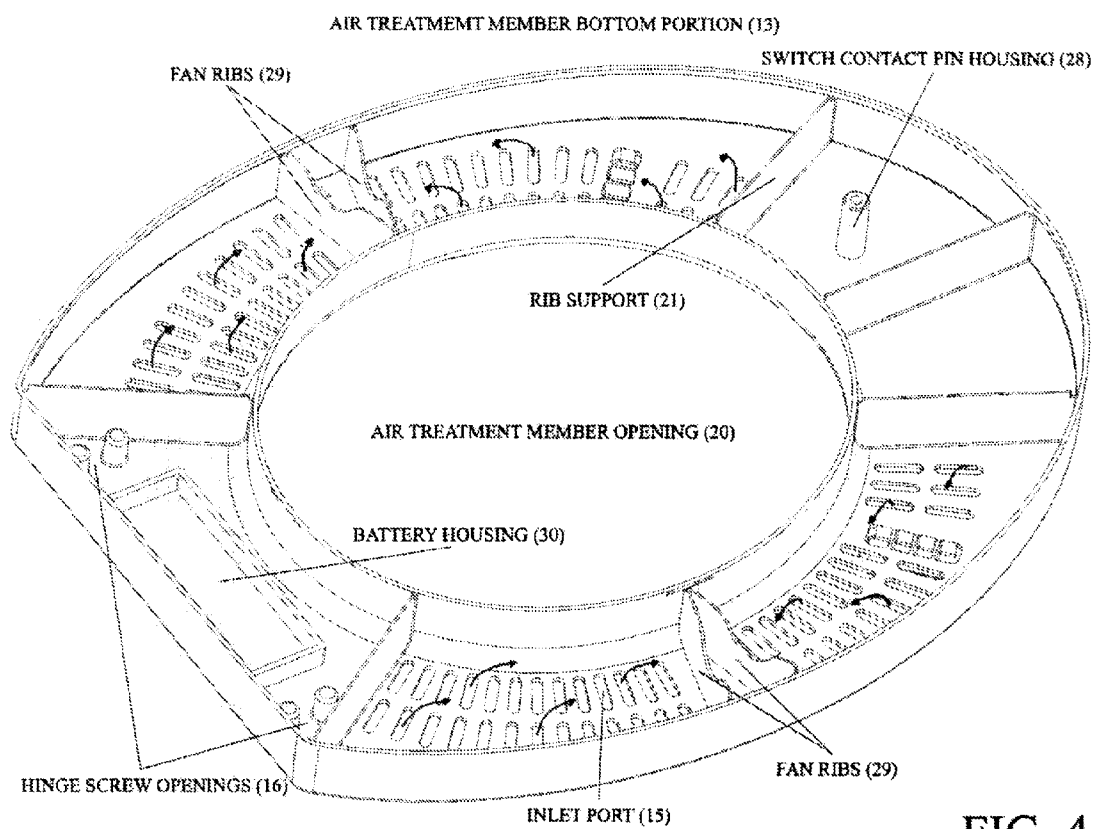


FIG. 4

NOVEL TOILET AIR TREATMENT DEVICE

BACKGROUND

[0001] 1. Field of the Invention

[0002] The present invention relates to an air treatment device for a toilet.

[0003] 2. Description of the Related Art

[0004] Odors emanating from a toilet are a long-standing problem associated with use of said toilet. Many attempts have been made to address this issue, both external and internal to the toilet. A common technique is to ventilate the enclosed space where the toilet resides. This ventilation means normally consists of an exhaust fan located in the ceiling of the enclosed space where the toilet resides. Due to its location, the exhaust fan can actually exacerbate the spread of odors throughout the enclosed space. Another technique is to place the ventilation means in or around the toilet seat. However, air vented in this manner must still either be dispersed into the enclosed space where the toilet resides or through tubing or other similar means to a location external of the enclosed space.

[0005] Information relevant to attempts to address this problem can be found in U.S. Pat. Nos. 7,165,274 B1, 7,117,548 B1, 7,103,925 B1, 6,928,666 B1, 6,895,604 B1, 6,775,853 B1, 6,772,449 B1 and 4,780,913 and also U.S. Patent Application Nos. 2007/0028373 A1, 2007/0000035 A1, 2006/0277671 A1, 2006/0248634 A1, 2006/0195975 A1, 2006/0031979, 2005/0166305, and 2004/0019960. However, each one of these references suffers from one or more of the following disadvantages: exhaust of treated air into space occupied by user, air moving means external of toilet, and ventilation means external of toilet.

SUMMARY

[0006] The present invention is directed to a device that allows for the treatment of toilet odors without need for external venting of the treated air. The invention comprises a toilet air treatment device that has an air treatment member. The air treatment member has an inlet port leading from the toilet bowl to an air pathway and an outlet port leading from the air pathway to the toilet bowl. A means for treating air is located along the air pathway of the air treatment member. A means for moving air, with the associated power source being located in the air treatment member, causes air to be moved under pressure from the toilet bowl, through the inlet port, along the air pathway, through the means for treating air, and through the outlet port into the toilet bowl.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0007] These and other features, aspects, and advantages of the present invention will become better understood with regard to the following description, appended claims, and accompanying drawings where:

[0008] FIG. 1 is a perspective view from above of the air treatment member of the embodiment shown in FIG. 1.

[0009] FIG. 1A is a perspective view from below of the air treatment member of the embodiment shown in FIG. 1.

[0010] FIG. 1B is a front elevation view of the air treatment member of the embodiment shown in FIG. 1.

[0011] FIG. 2 is a perspective view from above of the top of the air treatment member of the embodiment shown in FIG. 1.

[0012] FIG. 2A is a perspective view from below of the top portion of the air treatment member of the embodiment shown in FIG. 1.

[0013] FIG. 3 is a perspective view from above of the middle portion of the air treatment member of the embodiment shown in FIG. 1.

[0014] FIG. 3A is a perspective view from below of the middle portion of the air treatment member of the embodiment shown in FIG. 1.

[0015] FIG. 4 is a perspective view from above of the bottom portion of the air treatment member of the embodiment shown in FIG. 1.

DESCRIPTION

[0016] Reference now will be made in detail to the embodiments of the invention, one or more examples of which are set forth below. Each example is provided by way of explanation of the invention, not limitation of the invention. In fact, it will be apparent to those skilled in the art that various modifications and variations can be made in the present invention without departing from the scope or spirit of the invention. It is intended that the present invention cover modifications and variations as come within the scope of the appended claims and their equivalents.

[0017] In describing the various figures herein, the same reference numbers are used throughout to describe the same material, apparatus, or process pathway. To avoid redundancy, detailed descriptions of much of the apparatus once described in relation to a figure is not repeated in the descriptions of subsequent figures, although such apparatus or process is labeled with the same reference numbers.

[0018] FIG. 1 shows an air treatment member generally at 10 according to an embodiment of the present invention. FIG. 1 further shows the air treatment member top portion 11 connected to the air treatment member middle portion 12, which is further connected to the air treatment member bottom portion 13. Connection of the air treatment member top portion 11 and air treatment middle portion 12 creates outlet ports 14 which direct air horizontally across air treatment member opening 15. In a preferred embodiment, the air treatment member 10 serves as a toilet seat. Hinge screw openings 16 allow the toilet seat to be connected to the toilet bowl by use of traditionally used nuts and bolts. Though shown in one configuration here, the hinge screw openings could easily be modified to accept all traditional hinge screw patterns.

[0019] As best seen in FIGS. 2, 3, and 4, the air treatment member 10 is formed of three separate pieces including air treatment member top portion 11, air treatment member middle portion 12, and air treatment member bottom portion 13. The air treatment member top portion 11 may be secured to the air treatment member middle portion 12 by a plurality of clips extending from the air treatment member top portion 11 which engage a plurality of aligned clip attachments located on the air treatment member middle portion 12. In a preferred embodiment, the air treatment member top portion 11 is connected to the air treatment member middle portion 12 by the connection of the top portion clips 22 into the top portion clip receptacles 23. The air treatment member middle portion 12 may be secured to the air treatment member bottom portion 13 by a plurality of clips extending from the air treatment member middle portion 12 which engage a plurality of aligned clip attachments located on the air treatment member bottom portion 13. In a preferred embodiment, the air treatment member middle portion 12 is connected to the

air treatment member bottom portion **13** by the connection of the middle portion clips **19** into the middle portion clip receptacles (not shown). The provision of the top, middle, and bottom portions of the air treatment member facilitate the construction of the air pathways and placement of operative components as will best be described below. However, other conventional attachment mechanisms such as a dowel/aperture configuration, adhesives, or other joining hardware may be used between the top, middle, and bottom portions of the air treatment member.

[0020] Air treatment member **10** has an air inlet port **15** that is preferably located along the bottom surface of air treatment member **10**. In one embodiment, inlet port **15** comprises an opening defined upon the bottom of the air treatment member. However, as seen in FIG. 1A, a plurality of inlet ports **15** may be provided. The inlet port **15** is in connection with the air pathway, the shape and direction of air pathway best seen in reference to the directional arrows of FIGS. 1, 1A, 3, and 4. The air pathway is defined by the hollow portion of the air treatment member **10**. In a preferred embodiment, rib supports **21** in the air treatment member bottom portion **13** and air treatment member top portion **11** do not completely extend to the surfaces of the air treatment member middle portion **12**. The directional arrows indicate the flow of air through the air pathway, the air movement being controlled by the air moving means. In this preferred embodiment, two fans (not shown), such as those used to cool desktop computers, are used as the air moving means. The computer cooling fans (not shown) used in a preferred embodiment are placed into the fan mountings **24** measure forty (40) millimeters by forty (40) millimeters by ten (10) millimeters. Fan ribs **29** allow space for the fans (not shown). The operation of the fans (not shown) pulls air through the inlet port **15** and into the air pathway, said air pathway shown by air flow directional arrows. The movement of air generated by the fans (not shown) establishes a substantially circular air pathway of air entering inlet port **15** and continuing through air pathway. The air pathway passes the moving air along the air treatment means (not shown). In a preferred embodiment, the air treatment means is comprised of a foam filter treated with scented oils (not shown). This foam filter is manufactured to fill each side of the air pathway in the air treatment member bottom portion **13**. In this preferred embodiment, air enters inlet port **15**, flows directly through the foam filter treated with scented oils (not shown), and passes through the fans (not shown) and into air treatment member top portion **11**.

[0021] Air passing through fan (not shown) and into air treatment member top portion **11** is directed along the air pathway and out of the air treatment member top portion **11** via outlet port **14**. In one embodiment, outlet port **14** comprises an opening defined upon the inside edge of the air treatment member opening **20**, created by connection of the air treatment member top portion **11** and air treatment member middle portion **12**. However, as seen in FIGS. 1A and 3, a plurality of outlet ports may be provided. Air exiting outlet port **14** is directed straight across the air treatment member opening **20**. During use in this embodiment, a circular flow of air is created by the fans (not shown), allowing for continual treatment of air within toilet. This preferred embodiment is that for a mostly circular opening in the toilet seat. However, the present invention could easily be modified to take the shape of an oval toilet seat or split toilet seat.

[0022] As seen in FIG. 4, a battery housing **30** is provided within the interior of the air treatment member **10**. Power

supply may be provided by conventional batteries, including a rechargeable battery pack. If a rechargeable battery pack is used, it is convenient to provide an access port for a conventional connection for a re-charger.

[0023] Electrical leads (not shown) connect the power source to fan. In a preferred embodiment, a switch, seen here in the form of a pressure contact switch placed on the switch mounting **27** with a switch contact pin **18** moving through a switch contact pin housing **28**, switch contacts **25**, may be provided to control the operation of the fan when the seat bears weight of a seated individual. If desired, a rocker switch may also be used to control the operation of the fan. For either type of switch, it is desirable that the switch be responsive to a timer circuit so as to provide for a pre-determined interval of operation before the fan is automatically turned off. Use of the timer circuit provides for a continued interval of operation once the user has left the bathroom facility and, in the case of a rocker switch, conserves battery life if the rocker switch is left in the on position.

[0024] Two conventional spacers **17** are located on the bottom surface of the air treatment member **10** to insure that the inlet port **15** does not rest on the rim of the toilet bowl when an individual is seated. This ensures proper air flow into the inlet port **15** when fan is in operation.

[0025] The illustrated embodiment is manufactured by injection molding. One having ordinary skill in the art would be able to create an equivalent structure from milled or routed wood or other materials. However, injection molding allows for less expensive and quicker manufacturing while still providing sufficient structural strength required by consumers.

[0026] The structural strength of air treatment member **10** is also enhanced by the placement of rib supports **21** throughout the air treatment member top portion **11** and air treatment member bottom portion **13**. The air treatment member middle portion **12** also contributes to the strength of the air treatment member **10**. In this embodiment, the rib supports **21** also define the air pathway as shown by the air flow directional arrows.

[0027] The means for providing power to the means for moving air may be accessed by disconnecting the air treatment member middle portion **12** from the air treatment member bottom portion **13**. In a preferred embodiment, the means for providing power is comprised of a battery housing **30** built into the air treatment member. The battery housing **30** holds nine (9) AA batteries and is connected to the fans (not shown) by electrical leads (not shown) which pass from the battery housing **30**, through the electrical lead passageway **26**, to the switch contacts **25**, and to the fans (not shown).

[0028] Although the present invention has been described and illustrated with respect to a preferred embodiment and a preferred use therefore, it is not to be so limited since modifications and changes can be made therein which are within the full intended scope of the invention.

What is claimed is:

1. A toilet air treatment device, the toilet air treatment device comprising:

- (a) an air treatment member having an air pathway for the circulation of air, an inlet port leading from the toilet bowl into the air pathway, and an outlet port leading out of the air pathway into the toilet bowl;
- (b) an air treatment means located in the air treatment member, located along the air pathway, for treating air circulated through the air pathway; and

- (c) a means for moving air under pressure from the toilet bowl, through the inlet port, through the air pathway and into contact with the air treatment means, through the outlet port, and into the toilet bowl, said means for moving air under pressure being located in the air treatment member.
2. The toilet air treatment device as described in claim 1 further comprised of a means for providing electrical power to the means for moving air and a switch for activating the means for moving air.
3. The toilet air treatment device as described in claim 1 wherein the air treatment member is further comprised of multiple outlet ports leading out of the air pathway, directing air across an opening in the air treatment member, the opening and air flow forming a boundary between air inside the toilet bowl and air outside the toilet bowl.
4. The toilet air treatment device as described in claim 1 wherein the air treatment means is comprised of a means to absorb odors from the air.
5. The toilet air treatment device as described in claim 1 wherein the air treatment means is comprised of a means to remove particulates from the air.
6. The toilet air treatment device as described in claim 1 wherein the air treatment means is comprised of a means to provide the air with a fragrance.
7. The toilet air treatment device as described in claim 2 wherein the air treatment member is further comprised of multiple outlet ports leading out of the air pathway, directing air across an opening in the air treatment member, the opening and air flow forming a boundary between air inside the toilet bowl and air outside the toilet bowl.
8. The toilet air treatment device as described in claim 2 wherein the air treatment means is comprised of a means to absorb odors from the air.
9. The toilet air treatment device as described in claim 2 wherein the air treatment means is comprised of a means to remove particulates from the air.
10. The toilet air treatment device as described in claim 2 wherein the air treatment means is comprised of a means to provide the air with a fragrance.
11. The toilet air treatment device as described in claim 3 wherein the air treatment means is comprised of a means to absorb odors from the air.
12. The toilet air treatment device as described in claim 3 wherein the air treatment means is comprised of a means to remove particulates from the air.
13. The toilet air treatment device as described in claim 3 wherein the air treatment means is comprised of a means to provide the air with a fragrance.
14. The toilet air treatment device as described in claim 7 wherein the air treatment means is comprised of a means to absorb odors from the air.
15. The toilet air treatment device as described in claim 7 wherein the air treatment means is comprised of a means to remove particulates from the air.
16. The toilet air treatment device as described in claim 7 wherein the air treatment means is comprised of a means to provide the air with a fragrance.
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