Jan. 27, 1970 C. E. POISTER 3,491,382

TOILET STOOL VENTILATING MEANS

Filed May 1, 1967 2 Sheets-Sheet 1

Fig. 1.

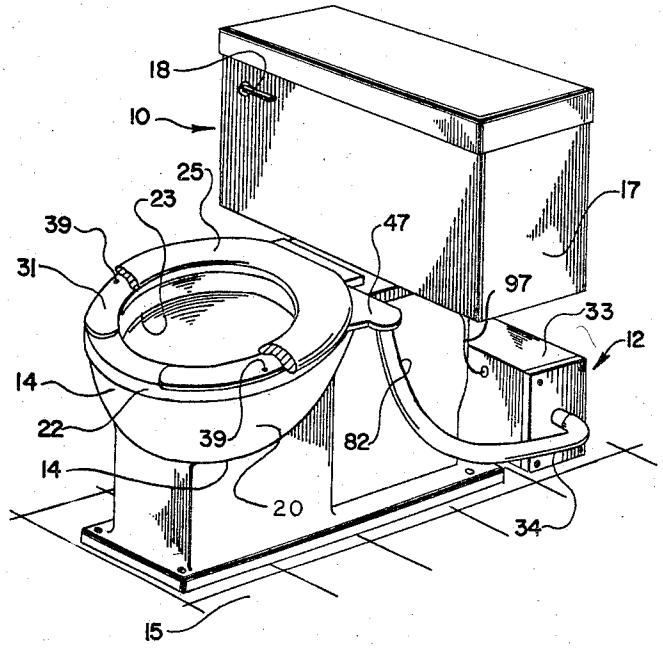
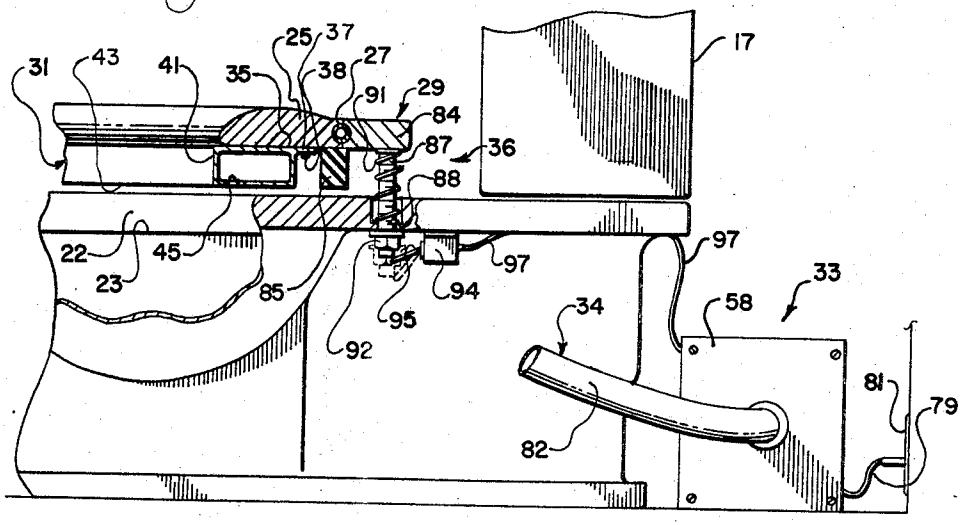


Fig. 2.



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Fig. 3.

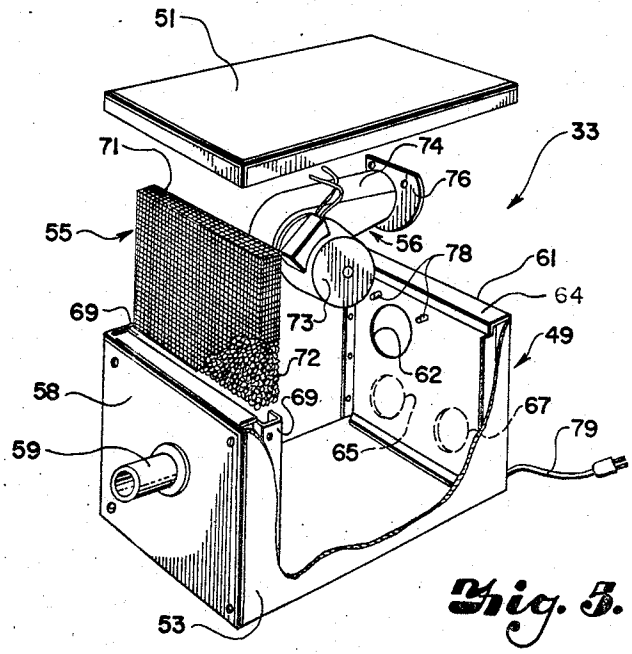
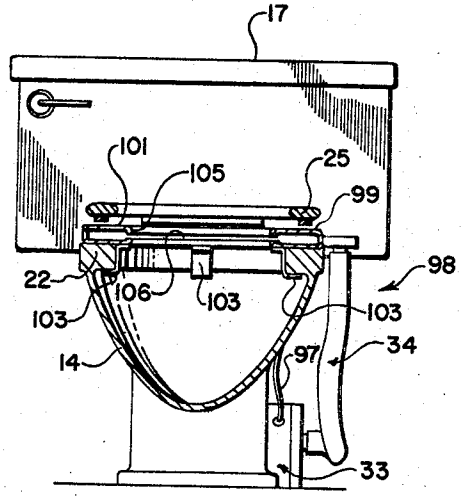
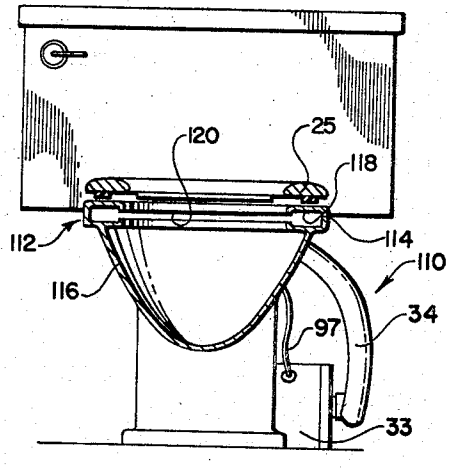


Fig. 5.

Fig. 4.





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TOILET STOOL VENTILATING MEANS

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ABSTRACT OF THE DISCLOSURE

This invention relates to ventilated toilet stools and, more particularly, to an air filtering apparatus having an inlet air chamber attachable to a conventional toilet seat or bowl to transfer air therefrom into a filter structure for purification. More specifically, this invention relates to a toilet stool ventilating apparatus having air inlet sections adjacent the upper open rim portion of the toilet bowl operable to convey air therefrom to a remote filter structure for removing odors therein by an activated charcoal filter element. Additionally, this invention relates to a toilet stool ventilating means having an air chamber constructed within an upper rim portion of a toilet bowl to convey air from within the bowl to a remote filtering structure for the purification thereof.

DISCLOSURE

Numerous types of toilet stool ventilating devices are known to the prior art operable to remove odors from air within a toilet bowl. However, these devices are generally unsightly in appearance, inefficient in operation, and costly to manufacture. Also, the prior art ventilating devices normally require specially designed toilet bowls and/or seats and are not readily adaptable to conventional toilet stool structures. The common means of ventilating a bathroom area by a ceiling or wall vent is generally unsatisfactory as the heated or air conditioned atmosphere is removed resulting in monetary waste plus numerous problems in maintaining a desired air temperature condition.

In accordance with one embodiment of this invention, a new toilet stool ventilating means is provided usable on a stool having a toilet bowl supported on a ground surface with a flushing tank connected thereto operable to supply flushing fluid to the bowl in a conventional manner. The toilet stool ventilating means includes an air chamber means connectible to the toilet seat or to the bowl; a filter means operable to draw air therethrough and remove odors therefrom; conduit means connected to the air chamber means and the filter means to convey air from the toilet bowl; and control means connected to the toilet seat operable under an in-use condition to actuate the filter means. The air chamber means overlies the upper enlarged opening of the toilet bowl and has substantial open inlet areas to receive air from the bowl to be conveyed to the filter means under vacuum pressure. The filter means includes a housing having a blower therein to move air through an inlet section transversely of a replaceable filter member and to discharge the purified air through an outlet section to the surrounding area.

In accordance with a second embodiment of this invention, a toilet stool ventilating means is provided including a specially constructed toilet bowl with an upper rim portion thereof provided with an annular air chamber having

an elongated slot opening into the upper peripheral section of the toilet bowl. A filter means is connected by a conduit means to the air chamber whereupon air is readily movable from within the toilet bowl upwardly and laterally under vacuum pressure through the elongated slot into the air chamber for conveyance into the filter means for the purification thereof.

Accordingly, it is an object of this invention to provide a new toilet stool ventilating means overcoming the above mentioned disadvantages of the prior art devices.

Another object of this invention is to provide a toilet stool ventilating means having an inlet air chamber structure readily connectible to a conventional toilet seat or rim portion of a toilet bowl for the conveyance of air therefrom to a remotely located filter means.

One other object of this invention is to provide a toilet stool ventilating means including an annularly shaped chamber means positioned in overlying relationship to the enlarged upper opening of a toilet bowl so as to convey air therefrom to a filter means and having control means operable to activate the filter means upon an in use condition of the toilet seat member positioned above and adjacent the chamber means.

Still another object of this invention is to provide a toilet stool ventilating means which may be used with any standard toilet stool structure, looks substantially the same as any conventional toilet stool arrangement, may be easily cleaned to maintain a sanitary condition, and is relatively simple and inexpensive in construction.

One further object of this invention is to provide a toilet stool ventilating means mountable on a conventional toilet stool between the toilet seat member and the upper rim portion of the toilet bowl operable to efficiently and effectively remove air from within the toilet bowl to a remotely located filter means for movement through a charcoal filtering medium for the purification thereof and discharge into the surrounding atmosphere.

Still one further object of this invention is to provide a toilet stool ventilating means including a toilet stool having a bowl portion with an upper rim flange portion provided with an annular air chamber therein with a slotted opening into the upper enlarged open end of the toilet bowl to remove air therefrom to a remote filter means.

Various other objects, advantages and features of the invention will become apparent to those skilled in the art from the following discussion, taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a perspective view of a conventional toilet stool structure having the ventilating means of this invention connected thereto with portions of a toilet seat member broken away for clarity;

FIG. 2 is a fragmentary elevational view of the ventilating means of this invention connected to a toilet stool having portions broken away for clarity;

FIG. 3 is an enlarged exploded perspective view of a filter means of the ventilating means of this invention;

FIG. 4 is a front elevational view of a second embodiment of the ventilating means of this invention having a toilet bowl portion shown in sectional view for clarity; and

FIG. 5 is a view similar to FIG. 4 illustrating a third embodiment of the ventilating means of this invention.

The following is a discussion and description of preferred specific embodiments of the new toilet stool venti-

lating means of this invention, such being made with reference to the drawings whereupon the same reference numerals are used to indicate the same or similar parts and/or structures. It is to be understood that such discussion and description is not to unduly limit the scope of the invention.

Referring to the drawings in detail and in particular to FIG. 1, a toilet stool structure indicated generally at **10**, is shown having the toilet stool ventilating means **12** of this invention connected thereto. The toilet stool structure **10** is substantially conventional having a toilet bowl **14** mounted on a floor surface **15** and a flushing tank **17** mounted on the rearward upper portion of the bowl **14** in an elevated relationship. The flushing tank **17** is provided with a handle member **18** operable in a conventional manner to release fluid from therewithin to the toilet bowl **14** for flushing purposes. The toilet bowl **14** is provided with a water section **20** and an integral upper rim section **22** defining the periphery of an enlarged opening **23**. A stool seat **25** is pivotally connected to the bowl **14** in adjacent, spaced relationship to the opening **23** and engageable with the rim section **22** in a closed position. The seat **25** is provided with a hinge **27** connected to a clamp means **29** secured to the rim section **22**.

As shown in FIGS. 1 and 2, the toilet stool ventilating means **12** includes an air chamber means **31** connected to the stool seat **25**; a filter means **33** mounted on the floor surface **15** positioned behind the bowl **14** and below the flushing tank **17**; a conduit means **34** connected to the chamber means **31** and the filter means **33** for air conveyance therebetween; and control means **36** connected to the clamp means **29** for controlled energization of the filter means **33** as will be explained.

The air chamber means **31** is of a generally oval shape and rectangular in transverse cross section having an upper flat surface **35** with a laterally, outwardly extended flange section **37**. The surface **35** is mounted against the undersurface of the stool seat **25** and secured thereto by screws **38** mounted through holes **39** in the flange section **37**. The forward portion of the chamber means **31** is open so as to be readily usable in conventional stool seats having open front sections. The inner upright surface **41** of the chamber means **31** is in substantial alignment with the inner edge of the stool seat **25** and is, therefore, extended over the enlarged opening **23** of the toilet bowl **14**. A lower surface **43** of the chamber means **31** is provided with a plurality of openings **45** near the inner surface **41**; the openings **45** being preferably eighteen equally spaced ⅛ inch diameter holes. The rear portion of the chamber means **31** is formed with a laterally extended connector section **47** adapted to receive the conduit means **34** thereon as will be explained.

As shown in FIG. 3, the filter means **33** includes a box-like housing means **49** having a removable lid member **51** mounted on a main body **53** in which is contained a filter element or member **55** and a blower mechanism **56**. The main body **53** includes an upright inlet section **58** provided with a cylindrical protrusion **59** adapted to receive the conduit means **34** thereon for conveyance of air to the housing means **49**. The opposite end of the main body **53** is provided with an outlet section **61** having an opening **62** into an intermediate chamber **64** for discharge through spaced openings **65** and **67**. It is seen that the openings **65**, **67**, and **62** are offset relative to each other so as to prevent a direct draft being formed by the air discharged therefrom.

More specifically, the filter element **55** is generally of block shape slidably mounted between a pair of spaced, upright U-shaped brackets **69** adjacent the inlet section **58**. Although numerous types of filtering structures could be used, it is preferred that the filter element **55** is constructed of a wire mesh housing **71** having activated charcoal particles **72** contained therein allowing the free flow of air therethrough during the filtering process. It is obvious that the filter element **55** can be readily replaced or the mesh housing **71** could be refilled with charcoal particles **72** after the same has been contaminated and lost its efficiency and effectiveness.

The blower mechanism **56** is of a centrifugal type having a rotatable blade element (not shown) powered by an electric motor **73** to discharge air through a funnel section **74**. It is seen that the funnel section **74** is provided with an outer upright flange **76** connectible to a pair of spaced bolt members **78** secured to the outlet section **61** (FIG. 3). The motor **73** receives the electrical energy from a conventional conductor **79** mountable in a standard 110 volt outlet socket **81**; however, the actual operation of the blower mechanism **56** is regulated through the control means **36** as will be explained.

In the use and operation of the toilet stool ventilating means **12** of this invention, the air chamber means **31** is readily connectible to the undersurface of the stool seat **25** as by the screws **38** to place the plurality of holes or openings **45** extended over the upper enlarged opening **23** of the toilet bowl **14**. The filter means **33** is mountable behind the toilet bowl **14** and beneath the flushing tank **17** so as to be substantially hidden and unnoticed by one in the area. The conductor **79** is readily mounted within a conventional 110 volt outlet to provide electrical energy to the filter means **33**. The conduit means **34** is thereupon connected to the cylindrical protrusion **59** on the filter means **33** and extended to the connector section **47** on the air chamber means **31**. It is obvious that the conduit means **34** can be constructed of a flexible hose member **82** and connectible to the filter means **33** and the air chamber means **31** in a manner substantially identical to the means of connecting a conventional vacuum hose to its related elements. As shown in FIG. 2, the stool seat **25** is connected to the clamp means **29** as by the hinge **27** and may be movable into an upright position as is commonly done in conventional toilet stool structures. The clamp means **29** is provided with a laterally extended main body **84** having an integral downwardly depending support portion **85** positioned adjacent but spaced above the adjacent rim portion **22** of hte toilet bowl **14**. The main body **84** is provided with a downwardly extended bolt member **87** mounted within a stepped opening **88** in the toilet bowl **14** and having a spring member **91** mounted about the bolt member **87** to maintain the stool seat **25** in a slightly elevated position in this area relative to the toilet bowl **14**. The lower portion of the bolt member **87** receives a nut member **92** to maintain the same in the assembled condition whereupon it is seen that the stool seat **25** is movable downwardly during usage of the facilities so as to place the support portion **85** in contact with the adjacent rim portion **22** to provide rigid support thereto.

The control means **36** includes a normally opened switch member **94** connected to the undersurface of the rim portion **22** of the toilet bowl **14** and having a laterally extended lever arm **95** engageable with the lower surface of the bolt member **87**. The switch member **94** is connected by conductors **97** to the electric motor **73** to activate the same when the switch member **94** is moved from the normally opened to the closed position. It is seen that the stool seat **25** and main body **84** will move as a unit due to abutting portions shown around the hinge pins **27**. Therefore, it is obvious that on placing weight upon the stool seat **25**, the main body **84** and interconnected bolt member **87** move downwardly to contact and trip the lever arm **95** to the dotted position as shown in FIG. 2 whereupon the circuit is closed from the conductor **79** to the switch member **94** and through conductors **97** to the motor **73** to energize the blower mechanism **56**. When the blower mechanism **56** is energized, it is obvious that vacuum is created through the conduit means **34** and into the air chamber means **31** so as to draw the stale and offensive air from within the toilet bowl **14** through the activated charcoal particles **72** for discharge outwardly through the openings **62** and **65**, **67**. It is seen that the toilet stool ventilating means **12** is operable only when necessary, namely, when in use is

indicated by a weight upon the stool seat **25** and operates to remove the odors from the air within the toilet bowl **14** and recirculate this air into the adjacent atmosphere so as not to change the heated or airconditioned status. It is obvious that a slot could be formed about the connection of the stool seat **25** and main body **84** by the hinge pins **27** for conventional upward pivotal movement of the seat **25** if desired.

In a second embodiment of this invention, a toilet stool ventilating means **98** is shown in FIG. 4 having an air chamber means **99** connectible to the upper rim section **22** of the toilet bowl **14** to convey air therefrom through the conduit means **34** to the filter means **33**. In this embodiment, the filter means **33**, the control means **36** (not shown), and the conduit means **34** are identical to those previously described and further discussion thereof is not deemed necessary. The air chamber means **99** is provided with an oval shaped main body **101** of rectangular shape in transverse cross section having a plurality of spaced downwardly extended Z-shaped bracket members **103** engageable with the undersurface of the rim section **22** and secured to the main body **101** as by bolts, screws, or the like. An inner upright surface **105** of the main body **101** is provided with an elongated slotted opening **106** there about so as to permit air to enter within the inner cavity of the main body **101**. It is seen, therefore, that the stool seat **25** rests upon the upper surface of the air chamber means **99** and is operable in a conventional manner whereupon the air chamber means **99** remains attached to the toilet bowl **14** when the stool seat **25** is in an elevated position.

In the use and operation of the toilet stool ventilating means **98** of this invention, it is seen that the air chamber means **99** is operable in a substantially identical manner to the air chamber means **31** previously described whereupon the air is drawn through the conduit means **34** and the filter means **33** for the purification of air from within the toilet bowl **14**. The attachment of the air chamber means **99** to the toilet bowl **14** permits the same to extend about the entire periphery of the rim sides **22** allowing greater air flow capacity through the continuous slotted opening **106** for greater efficiency.

In a third embodiment of a toilet stool ventilating means **110** of this invention as shown in FIG. 5, the identical filter means **33**, conduit means **34**, and the control means **36** is used whereupon the previously described air chamber means **31** and **99** attachable to the stool seat **25** and the rim section **22**, respectively, have been replaced by a stool structure **112** whereupon an upper flange or rim section **114** of a toilet bowl **116** is provided with a built-in air chamber **118** about its periphery having an elongated space or slotted opening **120** adapted to receive air therein. Therefore, it is seen that the specially constructed toilet stool structure **112** is provided with a rearward opening molded therein connectible to the conduit means **34** so as to present an attractively appearing structure being highly efficient in operation. It is obvious that the use and operation of the toilet stool ventilating means **110** of this embodiment is substantially identical to those previously described and further discussion thereof is not necessary.

It is seen that the toilet stool ventilating means of this invention provides a compact, easily hidden structure readily connectible to conventional toilet stool structures and stool seats or can be molded in a specially designed toilet bowl structure operable in a highly efficient manner to remove air therefrom only when required due to usage of the toilet stool facility. It is seen that toilet stool ventilating means of this invention is simple to operate, does not effect the adjacent atmospheric conditions, and is relatively inexpensive to manufacture.

As will be apparent from the foregoing description of preferred specific embodiments of applicant's toilet stool ventilating means, relatively simple means have been provided easily attachable to conventional toilet stools so as to provide efficient and effective means of removing odors from the immediate area as required.

While the invention has been described in connection with preferred specific embodiments thereof, it will be understood that this description is intended to illustrate and not to limit the scope of the invention which is defined by the following claims.

I claim:

1. On a toilet bowl mounted on a supporting floor having a flushing tank mounted on and secured to the toilet bowl operable to supply water thereto, the improvement comprising:

(a) a generally annular seat pivotally connected to the toilet bowl in an overlying relation to the enlarged upper opening of the toilet bowl,

(b) a generally annular air chamber means positioned between said seat and the toilet bowl having an inner portion overlying the upper opening of the toilet bowl, said air chamber means having an inlet area adapted to receive air from the toilet bowl,

(c) filter means having an air inlet and an outlet to convey air through a charcoal filtering element to remove odors,

(d) means to connect said air chamber means to said filter means to remove air from the toilet bowl and transfer same through said filter means to purify the air with discharge to the adjacent area,

(e) switch means mounted on said seat connected to said filter means operable on downward movement of said seat to actuate said filter means for removing air from the toilet bowl only when in use, and

(f) said switch means having a switch member engageable with a support bolt connected to said seat and a biasing means connected to the toilet bowl engageable with said seat to elevate the same and hold said switch member open and downward movement of said seat and said bolt closes said switch member to actuate said filter means.

2. A venting means as described in claim **1**, wherein:

(a) said air chamber means is secured to the toilet bowl in an overlying relationship to the upper opening thereof,

(b) said air inlet is formed of a continuous annular slot directed inwardly to pull air into said air chamber means from the toilet bowl,

(c) said filter means having a housing means, a blower mechanism mounted in said housing means between said air inlet and outlet, and said outlet discharging air into an intermediate chamber, and

(d) said intermediate chamber having a discharge opening off-set relative said air inlet thereby preventing a direct draft air discharge from said filter means.

3. A venting means as described in claim **1**, wherein:

(a) said filter means having a housing, an inlet section in said housing to receive air from said air chamber means, a blower means mounted in said housing, an outlet section in said housing to discharge air from said blower means into an intermediate chamber for flow transversely of said housing, and a filtering member mounted in said housing between said blower means and said outlet section to remove odors from air conveyed through said housing,

(b) said filtering member removably mounted in said housing having activated charcoal particles contained in a mesh screen housing being readily replaceable, and

(c) said intermediate chamber having discharge openings off-set relative to said outlet section to prevent a direct draft discharge from said filter means.

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