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VENTILATED TOILET BOWL

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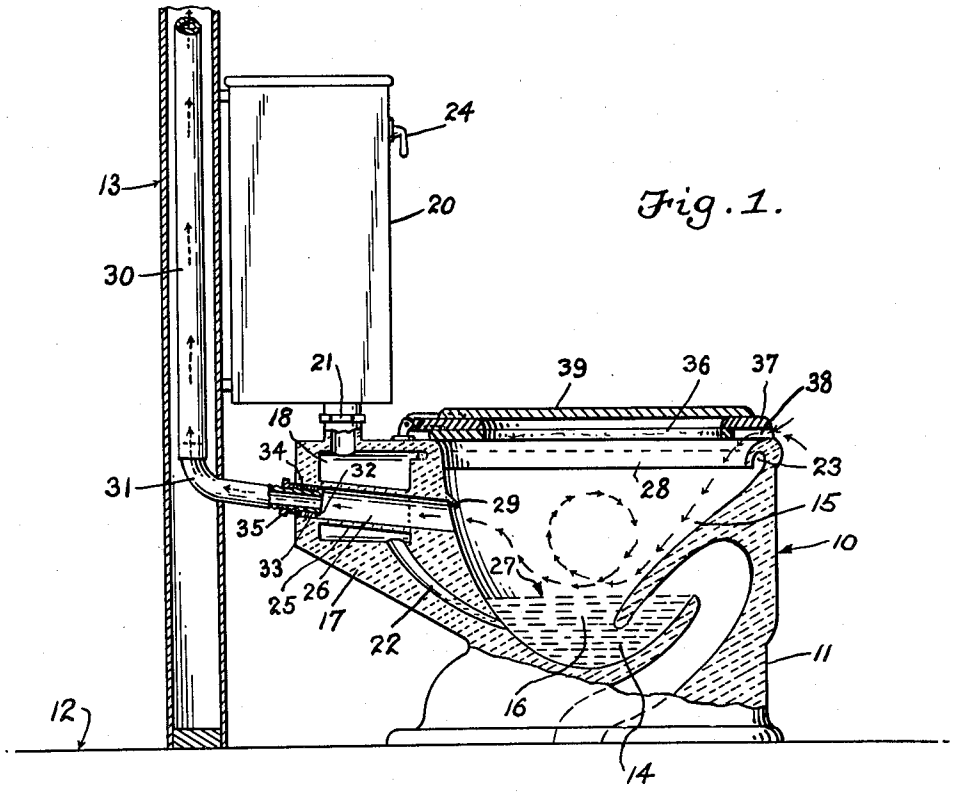


Fig. 1.

Fig. 2.

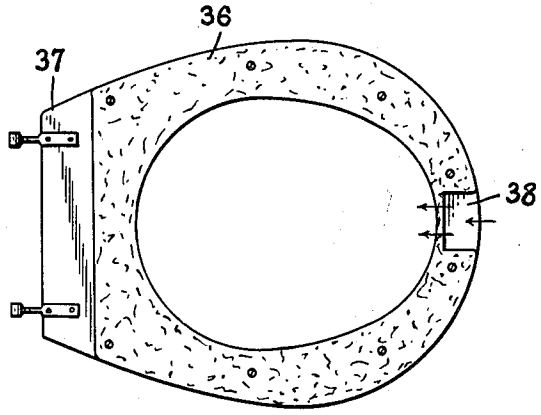
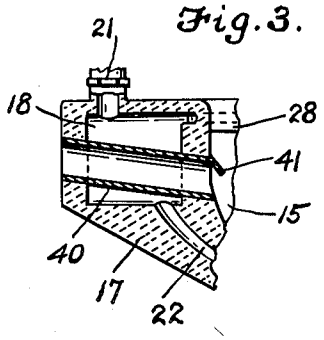


Fig. 3.



Thurman F. Scott & William V. Scott INVENTORS.

BY

McMorrow, Berman & Davidson

Attorneys.

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VENTILATED TOILET BOWL

William V. Scott, Bowie, and Thurman F. Scott, Wichita Falls, Tex.

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1 Claim. (Cl. 4—216)

This invention relates to ventilated toilet bowls, and more particularly to a toilet bowl having a built-in air duct connected to a vent pipe or stack for drawing air from the space surrounding the bowl through the bowl and exhausting such air to the outside of the building in which the toilet bowl is installed.

It is among the objects of the invention to provide an improved ventilated toilet bowl which has a built-in ventilating duct and has substantially the same appearance as an unventilated bowl and can be manufactured at substantially the same cost as the cost of manufacturing unventilated bowls of equivalent quality; which does not utilize any portion of the flush system of the toilet bowl for ventilation and requires no fan, valve or other mechanical contrivance other than the exhaust stack for effective operation; which requires no additional installation expense other than the provision of the exhaust stack; and which is simple and durable in construction, and positive and effective in operation.

Other objects and advantages will become apparent from a consideration of the following description and the appended claims in conjunction with the accompanying drawings, wherein:

Figure 1 is a somewhat diagrammatic cross sectional view of a ventilated toilet bowl illustrative of the invention and an adjacent partition wall showing the manner of installing the ventilated toilet bowl;

Figure 2 is a bottom plan view of a seat cushion or pad for the toilet bowl; and

Figure 3 is a fragmentary cross sectional view showing a somewhat modified form of ventilated toilet bowl.

With continued reference to the drawing, the illustrated bowl, generally indicated at **10**, has a base portion **11** adapted to rest on the floor **12** of a room, such as a bathroom, adjacent a partition wall **13** and including a trap **14**, the discharge end of which is connected to a sewer line in a manner well known to the art. A bowl portion **15** extends upwardly from the base **11** and connects at its bottom with the trap **14**, as indicated at **16** and an extension **17** projects rearwardly from the bowl portion **15** above the base **11** and includes a water chamber **18**. A toilet flush tank **20** of well known construction is mounted adjacent the wall **13** and immediately above the extension **17** and is interiorly connected to the water chamber **18** by a suitable disconnectible fitting, as indicated at **21**. The bowl portion **15** includes a conduit as indicated at **22** which is tapering in cross section from its upper end to its lower end and which connects the water chamber **18** with the interior of the bowl **15** for flushing the toilet when the tank valve is opened by operation of the flush valve handle **24**, as is well known to the art.

An air duct **25** extends through the water chamber **18** in the extension **17** and comprises a tubular structure of the same material as the material of the toilet bowl **10**, molded in position at the time the bowl is formed and temperature hardened at the time the remainder of the bowl is so hardened. This structure **25** has a bore **26**

extending longitudinally therethrough from the interior of the bowl portion **15** to the exterior of the extension **17** at the surface of the extension most remote from the bowl portion **15**.

The bore **26** is of sufficient cross sectional area to provide an adequate flow of air from the interior to the exterior of the bowl and its end within the bowl is disposed above the normal water level in the bowl, as indicated at **27**, but below the top internal flange **28** which provides the water channel **23**.

A lip **29** is formed on the inner surface of the bowl portion **15** at the top of the end of the bore **26** opening into the bowl and this lip is inclined downwardly and inwardly of the bowl to prevent water from the channel **23** flowing into the inner end of the bore **26** of the duct **25** and also to conceal the inner end of the bore **26** from view. The duct **25** is spaced from the walls of the chamber **18** and declines toward the bowl portion **15**.

An exhaust stack **30**, such as a length of suitable thin walled pipe or tubing, is vertically mounted in the partition wall **13** between the opposite wall surfaces and terminates at its lower end at a level slightly above the outer end of the bore **26**. An elbow fitting **31** extends through the side of partition wall **13** adjacent the toilet bowl **11** and has one end disposed within the wall and telescopically received in the lower end of the exhaust or vent stack **30**. The other end of the elbow fitting **31** is inserted into the outer end of the bore **26** and secured therein by a suitable expansion joint.

The expansion joint may comprise an external annular flange **32** on the end of the fitting **31** received within the bore **26**, a sleeve **33** of elastic material, such as vulcanized rubber, surrounding the fitting adjacent the flange **32**, a washer **34** surrounding the fitting at the end of the sleeve **33** remote from the flange **32** and a nut **35** threaded onto an externally screw threaded portion of the fitting and bearing against the washer **34** to compress the sleeve **33** longitudinally and expand it radially in the corresponding end portion of the bore **26** and thereby firmly secure the corresponding end of the elbow fitting **31** in the bore **26** with an airtight seal.

A flat pad **36** of elastic material, such as vulcanized rubber, is secured to the under surface of the toilet seat **37** and extends entirely around the under surface of the toilet seat except for an opening **38** at the front of the seat. When the seat is lowered onto the top surface of the bowl portion **15** and the seat cover **39** is lowered onto the seat the bowl is closed except for the ventilating opening **38**. Air may flow through the opening **38** into the bowl above the water in the bottom of the bowl and out of the bowl through the bore **26** of the ventilating duct **25** and through the elbow fitting **31** to the exhaust stack **30** through which it flows to the exterior of the building in which the toilet bowl is installed.

The air duct structure **25** does not utilize any portion of the flushing system of the toilet bowl for ventilation nor in any way change the capacity of the flushing system since the extension **17** may be enlarged to provide a water chamber **18** as large as or larger than the corresponding water chamber provided in an unventilated toilet bowl and the enlarged extension will provide a better support for the flush tank **20** mounted thereon.

In the modified arrangement illustrated in Figure 3, the duct structure **25** is first provided as a separate tube **40** of suitable material, such as the ceramic material of which the toilet bowl is formed and is provided at one end with an outwardly inclined lip **41** which corresponds to the lip **29** of Figure 1.

In manufacturing a toilet bowl with the separate duct structure **40**, the preformed tubular duct is merely set in place in the form or mold in which the toilet bowl is

formed before the material to form the toilet bowl is placed in the mold and, as the material forming the bowl is placed in the mold the duct structure is molded into the toilet bowl and is permanently secured therein when the material forming the bowl is heat hardened.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claim rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claim are, therefore, intended to be embraced therein.

What is claimed is:

A toilet comprising a base portion and a bowl portion, said base portion having a trap therein, said trap having a discharge end adapted and arranged to be connected to a sewer line, said bowl portion having a bottom and a top and being extended upwardly from said base portion and being connected at its bottom with said trap, a rearwardly extending extension on said bowl portion having a water chamber therein, said chamber having an upper end and a lower end, a conduit tapering in cross section being connected at its end having the largest cross section to said chamber at its lower end and at its other end to said bowl portion adjacent the bottom thereof, said chamber having a second conduit opening into its upper end and adapted and arranged to be connected to a source of water under pressure, a tubular air duct traversing said chamber and opening at one end into said bowl portion and spaced from said bottom and said top, said air duct at its other end

remote from said bowl portion being adapted and arranged to be connected to a flue, said air duct declining toward said bowl portion, a seat having a top and bottom surface hingedly secured to the top of said bowl portion, said seat having a resilient pad on its bottom surface engageable with the top of said bowl portion when in closed condition, and said pad having a cutaway portion defining a relatively small air opening at the side opposite said extension when closed, providing for flow of air into said bowl portion and to said air duct.

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