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WATER CLOSET VENTILATOR

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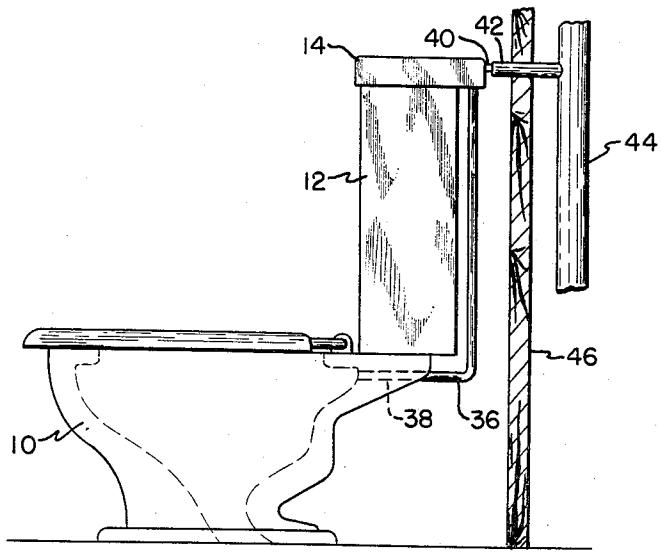


FIG. 1

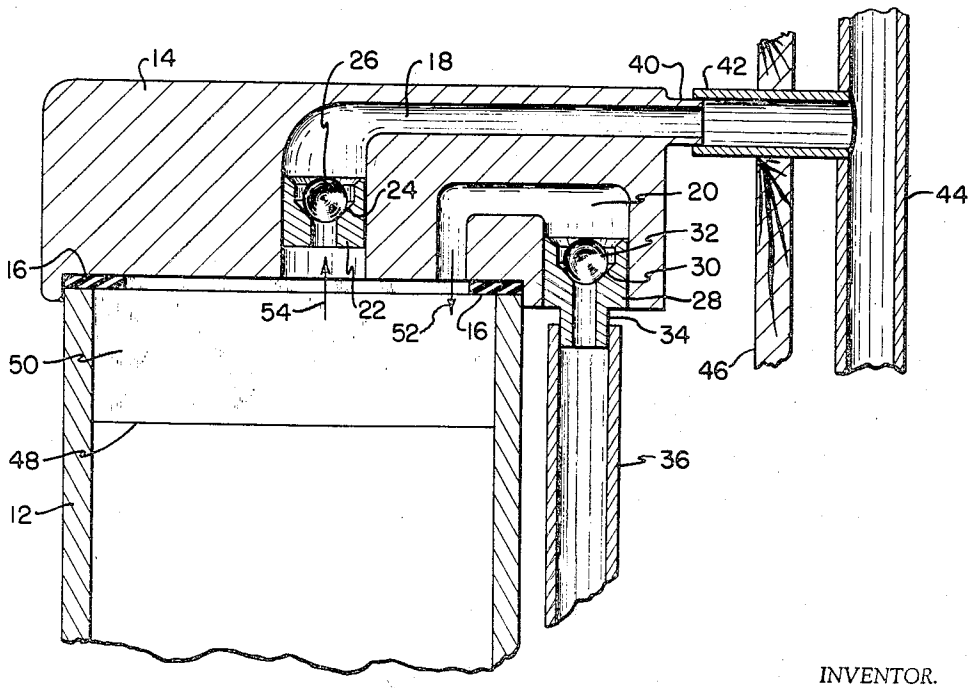


FIG. 2

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WATER CLOSET VENTILATOR

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5 Claims. (Cl. 4—216)

This invention relates to a water closet ventilator and more particularly to an improved water closet apparatus which provides ventilating action for removal of the gases in the bowl when the liquid contents of the bowl are flushed. The invention will hereinafter be described in connection with a newly constructed water closet apparatus, but the principles thereof are readily applicable in the form of ventilator attachments to a standard toilet structure.

Attempts have been made in the past to accomplish this desirable end, but to the best of my knowledge complicated arrangements were required, such as blowers, chemical deodorizers, etc., so as to make these arrangements impractical, complicated and expensive to manufacture.

It is an object of this invention, therefore, to provide an improved water closet ventilator which avoids one or more of the disadvantages of the prior art arrangements and one in which the operation is greatly simplified.

An important object of this invention is to provide an improved ventilator for a water closet which will withdraw the gases from the water closet bowl by suction and discharge the gases into the usual vent pipe employed for conveying the gases outwardly from a house.

It is a further object of this invention to provide an improved water closet ventilator which is simple in construction, inexpensive, strong and durable and pleasing to the eye and further which requires little maintenance.

In accordance with the invention the improved water closet ventilator comprises a bowl and associated flush tank having a removable cover therefor, the cover being provided with passageways therein communicating the interior and exterior of the flush tank, each having valve means therein permitting selective entry of a gas through a first passage and selective exit of air through a second passage, conduit means connecting the first passage with the bowl to communicate with the interior thereof above the normal water level and means for connecting the second passage to a sewer vent pipe.

For a better understanding of the present invention together with other and further objects thereof, reference is had to the following description taken in connection with the accompanying drawing wherein the preferred embodiment of the invention is illustrated and wherein:

Figure 1 is a side elevation of a water closet embodying the present invention; and

Figure 2 is a sectional view of part of the structure illustrated in Figure 1.

Referring to Figures 1 and 2, there is shown a water closet or toilet bowl generally identified by the numeral **10** and associated flush tank **12**. Flush tank **12** is provided with a removable cover **14** having suitable seal means **16** in contact with the top edges of tank **12** forming an air tight seal therewith. Cover **14** is further provided with a pair of passageways **18** and **20** as shown in Figure 2, each having one end in communication with

the interior of flush tank **12**. A one-way valve **22** is positioned in passage **18**, intermediate the ends thereof, and conveniently in an enlarged portion thereof. Valve **22** is located at the inlet side of passage **18** adjacent the interior of flush tank **12**. Although valve **22** may assume various forms, it may conveniently comprise a valve seat **24** and a closure **26** which is preferably of low density material such as to be unseated by a gentle flow of air through passage **18** from the interior of flush tank **12**. Another similar one-way valve **28** is located in passage **20**, intermediate the ends thereof, and conveniently in an enlarged portion thereof. Valve **28** is located at the inlet side of passage **20** remote from the interior of flush tank **12** and comprises a valve seat **30** and a closure **32** comparable to closure **26** of valve **22**. Valve **28** further includes a reduced portion **34** which extends beyond top **14** for external connection with one end of conduit **36**. The other end of conduit **36** is connected to bowl **10** to communicate with the interior thereof above the normal water level by means of passage **38**, shown by dotted lines in Figure 1. An extension **40** which may conveniently be formed integral with top **14** forms an extension of passage **18**. One end of conduit **42** is connected to extension **40** communicating with passage **18** and the other end of conduit **42** is connected to a sewer vent pipe **44**, which may conveniently be located behind wall **46** of a bathroom or the like.

The normal water level in the flush tank is indicated by line **48**. When flushed in the usual manner the water is discharged into the interior of bowl **10** and the water level in flush tank **12** drops below line **48**. A suction is created in the space **50** in flush tank **12** above the normal water level, seating closure **26** of valve **22**, unseating closure **32** of valve **28** and gases are drawn from the interior of bowl **10** above the water level, through passage **38**, conduit **36**, valve **28** and passage **20** into space **50** of flush tank **12** in the direction of arrow **52**. After the water has been discharged from flush tank **12**, the usual flush valve closes and water is introduced into the flush tank from a source of supply through a float valve. As the water enters and the water level rises in tank **12**, the pressure in space **50** will increase, thus seating closure **32** of valve **28**, unseating closure **26** of valve **28**, and the gases from space **50** will be discharged through valve **22**, passage **18** and conduit **42** into vent pipe **44**, in the direction of arrow **54**. Thus with applicant's improved ventilator construction the simple, ever present pumping action of water rising and falling in the flush tank provides a simple and efficient means of withdrawing gases from the bowl and area immediately surrounding and dispelling them into a sewer vent pipe.

While in the specific embodiment shown bowl **10** is disclosed to have a passage communicating with the interior thereof, it will be readily appreciated that conduit **36** may be lengthened and positioned to terminate in the interior of bowl **10**, such that applicant's improved ventilator may be easily added to an existing and conventional tank-type water closet. Assuming this were done, it would only be necessary to substitute cover **14** and associated conduits and parts for the usual tank cover whereby the principles of this invention could be installed and applied in the form of an attachment.

While there have been described what at present are considered to be the preferred embodiments of this invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention. It is aimed, therefore, in the appended claims to cover all such changes and modifications which fall within the true spirit and scope of the invention. For example, while the invention has been described in connection with a cover or lid **14**, the tank **12** could merely be closed at its top and

passageways corresponding to **18** and **20** and valves corresponding to **26** and **32** provided otherwise so that the principles of the invention would still apply.

What is claimed is:

1. A water closet ventilator comprising a bowl and associated flush tank, a cover on the flush tank provided with passageways therein communicating the interior and exterior of the flush tank and valve means in each of said passageways adapted to permit selective entry of a gas through a first passage into the interior of the flush tank and selective exit of a gas through a second passage from the flush tank.

2. The combination as set forth in claim 1 including conduit means connecting said first passage with the bowl to communicate with the interior thereof above the normal water level and conduit means connecting said second passage with a sewer vent pipe.

3. The combination as set forth in claim 2 wherein the valve means are one-way valves and sealing means is provided between the cover and the flush tank.

4. In a water closet ventilator, a flush tank having a top and provided with spaced passageways therein adapted to communicate the interior, above the normal liquid level and exterior of the flush tank, said passageways each having valve means therein adapted to permit selective entry of a gas through a first passage into the interior of a flush tank and selective exit of a gas through a second passage from a flush tank.

5. In a water closet ventilator, a flush tank cover having a pair of spaced passageways therethrough, one-way valve means positioned within each of said passages adapted to permit flow in opposed directions through said passages.

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