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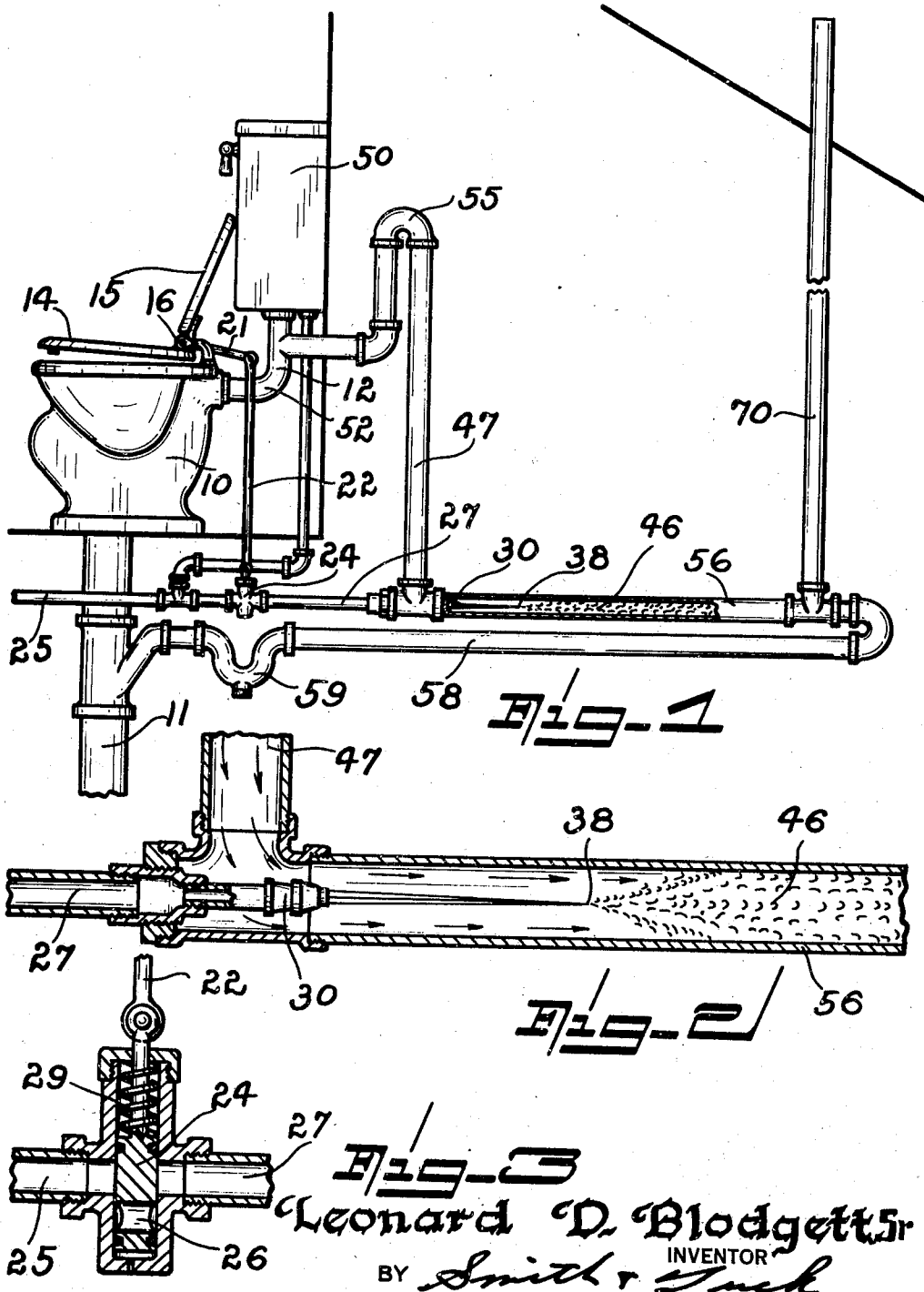
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2,021,402

VENTILATING MEANS FOR TOILETS AND THE LIKE

Filed May 12, 1934

2 Sheets-Sheet 1



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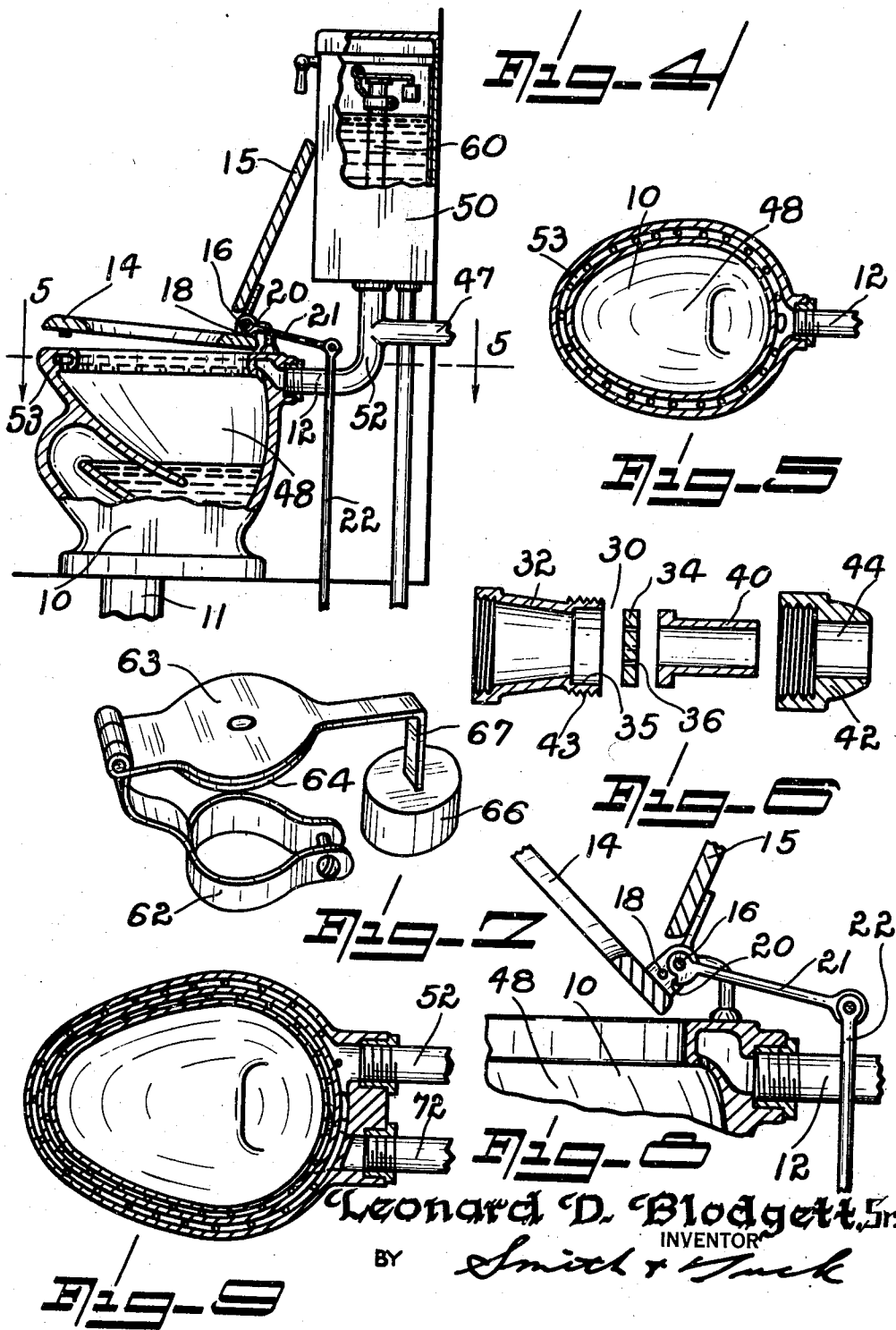
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VENTILATING MEANS FOR TOILETS AND THE LIKE

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2 Claims. (Cl. 4-215)

My present invention relates to the art of plumbing supplies and more particularly to a ventilating means for toilets and the like.

The utilization of outside walls for light and ventilation has of recent years been highly prized and with the extent of the more complicated and restricted quarters, particularly apartment houses, hotels, commercial buildings and even duplex houses, there has been an increased tendency to place the bathroom, and particularly toilet rooms on the inside of the various structures. This has increased the ventilating problem for interior toilets and there is an urgent need for means which will remove the offensive odors from toilets as now arranged. I am well aware that many attempts have been made in the past to provide devices for this purpose, those which have been subject to inspection however have been characterized by many faults. Many of the devices resort to power driven means which are both costly in first installation and expensive to maintain. Other devices are provided which by their mere complexities so increase the first cost as to make them unsalable. There is quite a development of water flushing types of ventilators. Most such designs however are characterized by constructions that are difficult to maintain in a sanitary condition and they require special toilet bowls and the like which adds a great deal to the cost of the installation.

Many other water flushing types while removing a large portion of the offensive odors either do not remove them all or are not arranged so adequate trapping can be maintained and the odors return in part when the suction is stopped.

My invention relates specifically to a ventilating means which employs a water jet as the motive energy and it is characterized by providing a device which is simple to install, cheap to maintain, removes all of the offensive odors, can be adequately provided with traps so as to insure meeting all the requirements of the various building codes and further does not require a special toilet bowl.

Other and more specific objects will be apparent from the following description taken in connection with the accompanying drawings, wherein

Figure 1 is an elevation thru an installation embodying my principles, certain parts being shown in section to better illustrate the construction. Figure 2 is a vertical sectional view thru the jet pipe and jet of my device. Figure 3 illustrates a desirable type of water control valve for use in conjunction with my jet and nozzle. Figure 4 illustrates in vertical partial sectional

view a toilet using my device. Figure 5 is a sectional view along the lines 5-5 of Figure 4. Figure 6 is an exploded view showing in section the component parts of my nozzle. Figure 7 illustrates the type of overflow valve used with my device. Figure 8 illustrates, in fragmentary detail, and in section the valve operating means employed in my device. Figure 9 illustrates a modified form of toilet suitable for use with my device.

Referring to the drawings, throughout which like reference characters indicate like parts, 10 designates a conventional type of toilet bowl. This is supplied with the usual sewer pipe 11 and water supply pipe 12. In addition it is provided with the usual hinged seat 14 and the seat cover 15.

Normally, the toilet seat 14 is so disposed upon hinge 16 that it is raised from the toilet bowl as illustrated in Figures 1 and 4, and then as the user of the toilet places their weight on seat 14 the outstanding pin 18 is forced against abutment 20 of arm 21. This arm is pivoted on hinge 16 and when acted upon by pin 18 is actuated to lift upwardly on the valve control rod 22. This control rod in turn opens the valve 24 so that water under pressure can flow from the supply pipe 25 thru the valve port 26 into the jet supply pipe 27. Within the housing of valve 24 is provided a compression spring 29 which acts to normally press the port 26 downwardly out of alignment with pipes 25 and 27 so as to shut off the water supply and further acting thru lever 21 maintains the seat cover 14 in a slightly raised position except when a user is occupying the seat. As soon as a user sits on seat 14 the water passing thru valve 24 enters the jet nozzle 30. The details of construction employed here are probably best illustrated in Figure 6 in which a restricting nozzle effect is provided in nozzle member 32, the water then passes thru a plurality of orifices in the aperture plate 34 which seats within recess 35 of member 32. Attention is particularly invited to the fact that the orifices 36 are disposed so as to direct a plurality of water streams to a central point as is illustrated in Figure 2 at 38. The nozzle is completed by the director pushing 40 and the cap member 42 which is adapted to engage threads 43 of member 32. It will be understood it is believed 50 that the tubular portion of member 40 passes thru the bore 44 of member 2.

The effect of the plurality of streams passing thru orifices 36 and meeting at 38 is to break up the solid streams at 38 and form a finely di-

vided spray indicated at 46 which as the water is under considerable pressure creates an appreciable vacuum that causes the flow of air in the direction indicated by arrows in Figure 2.

5 The partial vacuum created in the suction pipe 47 siphons out the gases in the toilet bowl 48. In my preferred construction pipe 47 is connected to the normal water discharge or flushing pipe 52 from tank 50 after the showing of

10 Figure 1. It is thus possible to use the standard toilet bowl as the water discharge channel 53 is already cast into the toilet bowl and provides a very convenient means for drawing out the unwanted gases. It will be understood of course

15 that when the toilet is flushed passage way 53 will be flooded with water under pressure from tank 50. No harm can be done however as a return bend or inverted trap 55 is employed which is carried upwardly sufficiently to prevent

20 water being drawn thru pipe 47 and any water in the form of spray which might be drawn thru pipe 47 will be discharged out thru the jet tube 56 and will then pass thru pipe 58, trap 59 into sewer 11. Normally, however, the toilet is not

25 flushed until the user has arisen from seat 14. This automatically shuts off the water which provides the siphon and there will be no tendency whatever for any water to be drawn thru this way.

30 In practically every supply tank there is provided an overflow pipe 60 which is in free communication with the toilet bowl and is to take care of any failure of the normal functioning of the water shutoff within the tank proper.

35 This of course would provide a supply of air which might interfere with the siphoning of the gases out of bowl 48 and to prevent the inflow of air at this point I have provided the valve arrangement indicated in Figure 7. This consists essentially of a band 62 which is secured

40 to the overflow pipe 60 and which has hingedly secured to it a light valve member 63 which I normally surface with a rubber or other yieldable gasket material 64. In order however to

45 permit the overflow pipe 60 to function in case of failure of the water shutoff valve, I provide a buoyant float 66 arranged on a downwardly extending arm 67 so that if the water level should rise to a point where it would be necessary for

50 the overflow pipe to function the flotation provided by float 60 will be sufficient to raise valve 63 and permit the normal overflow. At all other times however the valve is held closed by gravity.

55 The detail functioning of my device is essentially that, as soon as the toilet is used and seat 14 depressed valve 24 is opened providing the suction jet. This in turn produces a partial vacuum in pipes 47 and thru pipe 52 to the toilet bowl 48. The gases are then drawn up

60 thru the normal water channel 53 and expelled out thru pipe 56. The gases themselves will be forced up and out vent 70. The water used in producing this suction and any water that might

be drawn thru the system in the form of spray and the like, in event the toilet is flushed while the siphon is operating, will be discharged out thru pipe 58, trap 59 and into the sewer. As soon as the user arises from seat 14 spring 29

5 closes the valve shutting off the jet supply and returning seat 14 to its partially raised position. In this connection it is believed it will be apparent from a study of Figure 8 particularly that the valve control mechanism in no way inter-

10 feres with the normal full raising of seat 14.

In Figure 9 I have illustrated a modified form of toilet bowl which would be desirable if a manufacturer were to build a separate or special toilet bowl for use with this device. It is essentially the same as bowl 10 excepting that a separate air suction channel similar to 53 is provided. It would then follow that the usual water supply pipe 52 would not be interfered with and a separate air suction pipe 72 would be provided

20 which in turn would be directly connected thru the inverted trap 51 to pipe 47.

The foregoing description and the accompanying drawings are believed to clearly disclose a preferred embodiment of my invention but it will

25 be understood that this disclosure is merely illustrative and that such changes in the invention may be made as are fairly within the scope and spirit of the following claims:

Having thus fully described my invention, what

30 I claim as new and desire to secure by Letters Patent is:—

1. A ventilating system for toilets comprising a tank and bowl and a flushing pipe connecting said elements, a suction pipe connected to the

35 flushing pipe below the tank and an inverted U-shaped portion in the suction pipe above said connection, a jet-tube connected with the suction pipe and an outlet for water therefrom, a ventilating pipe connected to the jet-tube, a

40 main water supply pipe to the tank, a ventilating water supply pipe connecting the main water pipe with said jet tube, a valve in the ventilating water supply pipe, a depressible seat for the bowl and operative connections between said

45 seat and valve, and a water-spray device in said jet tube mounted in the junction of the jet-tube and ventilating water supply pipe.

2. In a ventilating system for toilets, the combination with a flush pipe, a sewer-pipe, and a

50 vent pipe, of a suction pipe connected to the flushing pipe and having an inverted U-shaped portion above the connection, a jet-tube connecting the lower ends of the suction pipe and the vent pipe and a return water pipe connecting said jet tube and sewer pipe, a water supply

55 pipe connected to the jet-tube and means for controlling passage of water therethrough, a nozzle mounted in the junction of the jet-tube and water supply pipe, and a spray device mounted on said nozzle and projecting into the jet-

60 tube.

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