July 5, 1938. W. HERRMANN 2,122,687

VENTILATED TOILET BOWL

Filed May 15, 1936 3 Sheets-Sheet 1

Fig-1

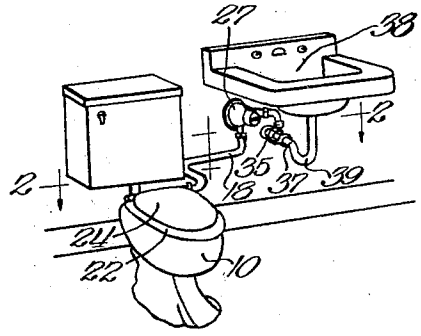
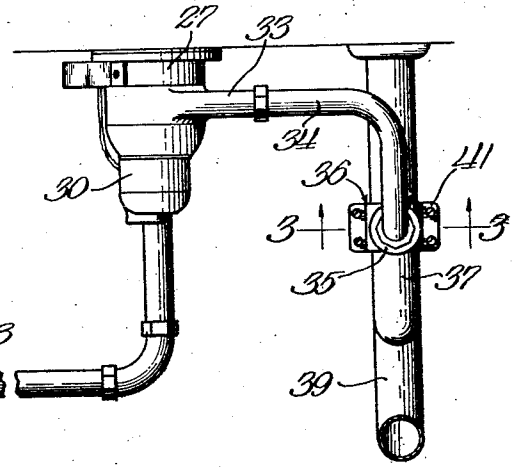


Fig-2



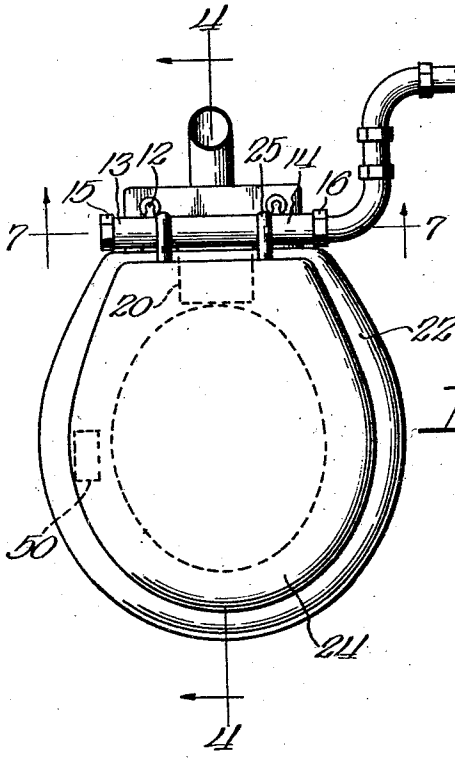
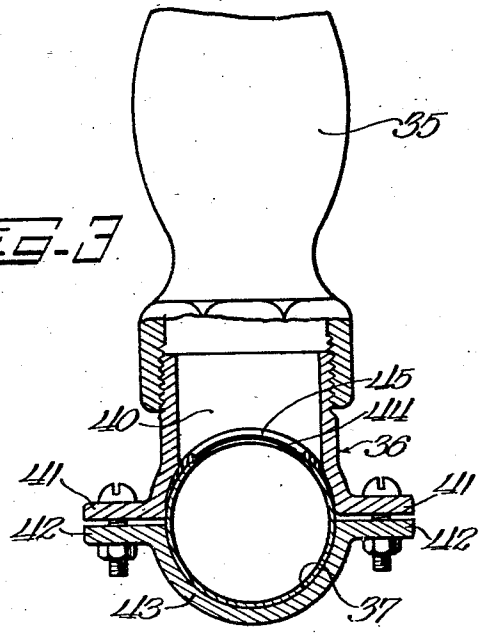


Fig-3



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Filed May 15, 1936 3 Sheets-Sheet 2

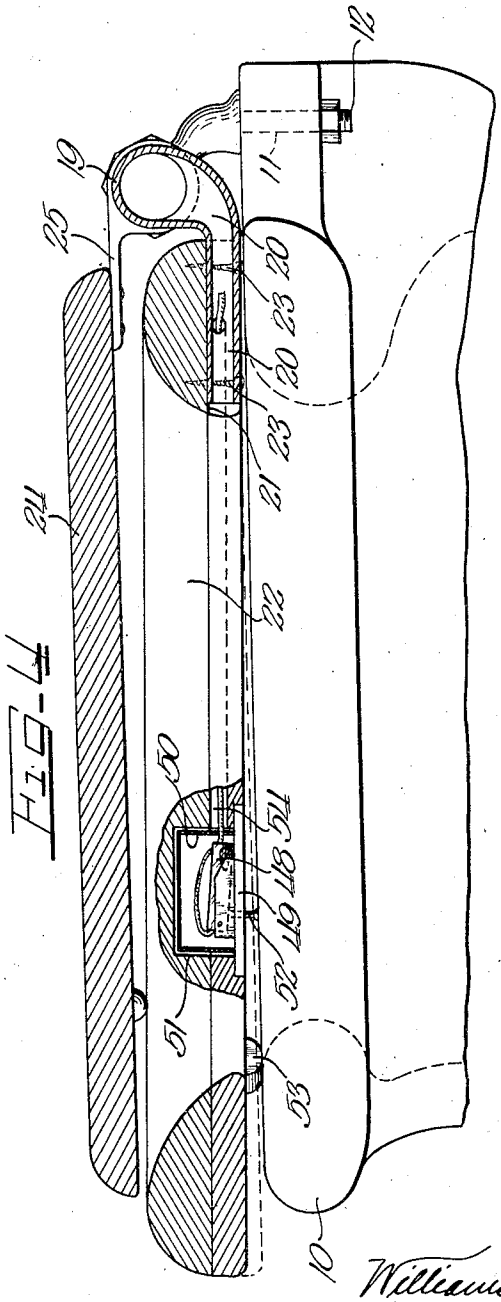


FIG. 4

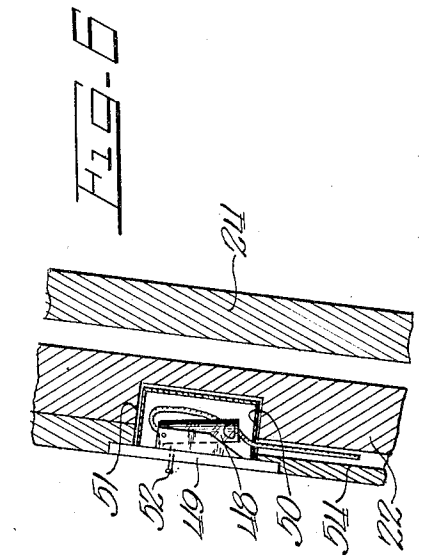


FIG. 6

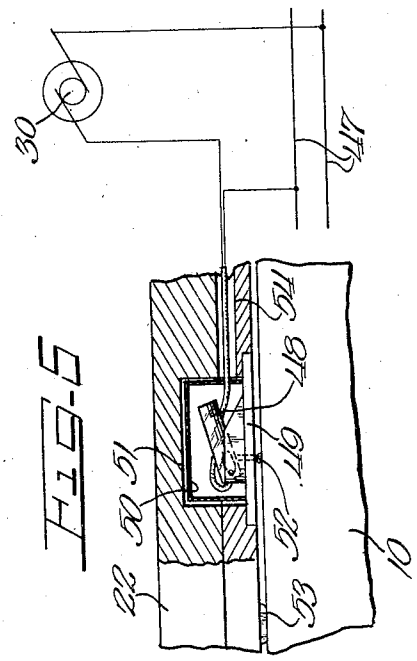


FIG. 5

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VENTILATED TOILET BOWL

Filed May 15, 1936 3 Sheets-Sheet 3

FIG-7

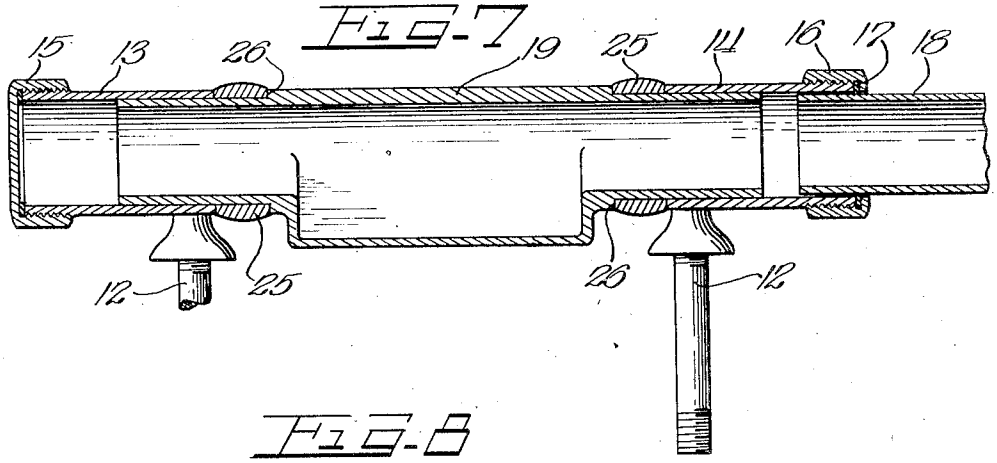


FIG-8

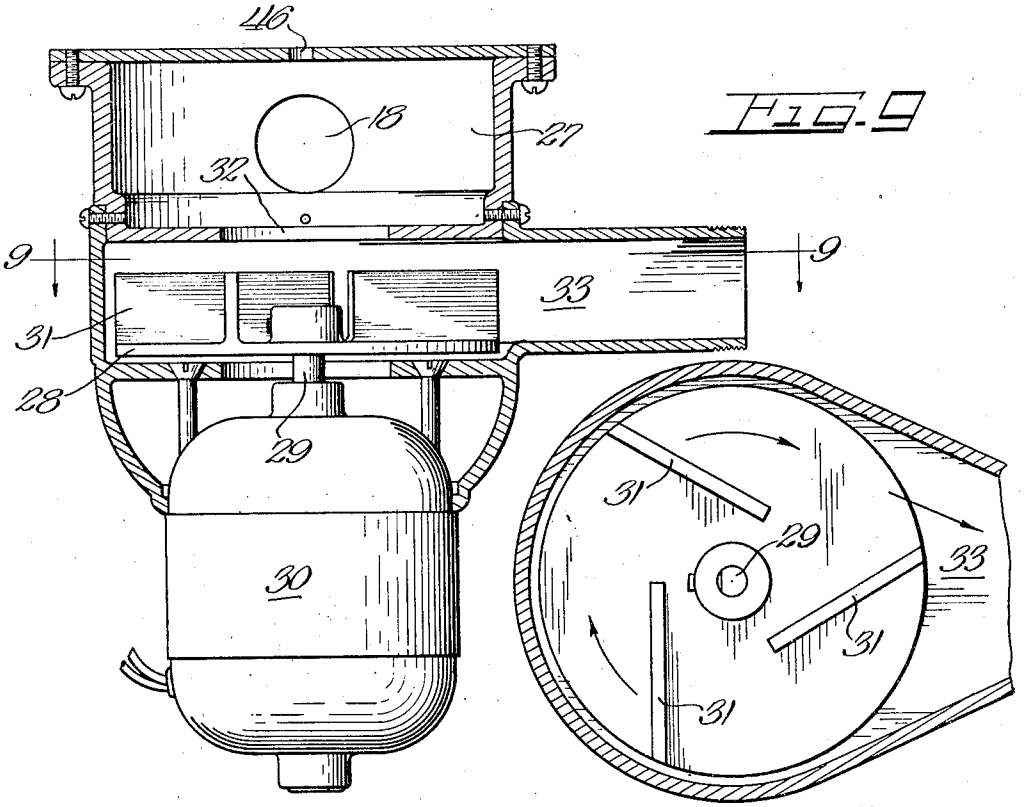


FIG-9

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Patented July 5, 1938

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UNITED STATES PATENT OFFICE

2,122,687

VENTILATED TOILET BOWL

William Herrmann, Chicago, Ill.

Application May 15, 1936, Serial No. 79,963

3 Claims. (Cl. 4—213)

This invention relates to a toilet bowl and has for its principal object to provide an improved toilet bowl whereby objectionable effluvia and gases are withdrawn and prevented from becoming disseminated throughout the atmosphere of the room in which the bowl is located and throughout the home or building.

A further object of the invention is to provide an improved ventilating apparatus for toilet bowls which can be applied to existing toilet bowls without interfering with any plumbing connections.

A further object of the invention is to provide an improved toilet bowl seat which can be applied to existing toilet bowls to provide for the ventilation thereof.

A further object of the invention is to provide an improved power-driven ventilating system for a toilet bowl which is automatically put into operation when the toilet is used and is automatically stopped when the toilet bowl is no longer being used.

Other objects, advantages and capabilities of the invention will appear from the following description of a preferred embodiment thereof, taken in conjunction with the accompanying drawings, in which:

Figure 1 is a perspective view showing in general a toilet bowl equipped with my invention, together with means for disposing of the withdrawn air;

Fig. 2 is a plan view thereof, on a larger scale, showing the general arrangement;

Fig. 3 is a sectional detail showing the manner in which the outlet pipe is connected to the waste pipe of a wash basin;

Fig. 4 is a longitudinal sectional view through the toilet seat and cover;

Fig. 5 is a fragmentary view thereof showing the wiring connections;

Fig. 6 is a fragmentary sectional view showing the arrangement of the valve and seat when the latter is in elevated position;

Fig. 7 is a longitudinal sectional view through the pivotal mounting of the seat;

Fig. 8 is a sectional view through the fan or blower, and

Fig. 9 is a sectional view through the fan, taken on the line 9—9 of Fig. 8.

Referring to the accompanying drawings, the reference numeral 10 designates a conventional toilet bowl which is provided with openings 11 for the reception of bolts whereby a seat may be pivotally mounted. In the preferred embodiment of the invention bolts 12 are provided which are integral or rigidly secured to aligned pipe elements 13 and 14. The pipe element 13 is closed by cap 15. The remote end of the pipe element 14 receives a packing nut 16 which compresses packing 17 around the end of a pipe 18 which is inserted into the pipe element 14. The ends of the pipes 13 and 14 are alike, so that if desired the packing nut 16 and exhaust pipe 18 may be connected to the pipe 13, thereby situating the exhaust line and fan to the left of the toilet bowl, instead of to the right as shown in Figs. 1 and 2. When the exhaust line is connected to the pipe 13, the opening at the end of the pipe 14 is closed by the cap 15. The two adjacent ends of the pipe elements 13 and 14 receive the reduced ends of a hollow element 19, as best shown in Fig. 7. The hollow element 19 is provided with a forward extension 20, best seen in Figs. 2 and 4, which extends forwardly within a slot 21 on the underside of the toilet seat 22. The seat 22 is rigidly secured to the forward extension 20 by means of screws 23. It will be understood that the tubular elements 13 and 14 and the hollow element 19 constitute the hinge for the seat 22, the tubular elements 13 and 14 and the parts of the hollow element 19 extending thereinto being round in cross-section and providing a free working fit for the swinging of the toilet seat. The extension 20 terminates at a point forward of the rear edge of the bowl so that air may be withdrawn through the pipe 18 from the interior of the bowl. The conventional cover 24 may be provided with eyes 25 which are rotatably mounted on the tubular element 19. As best shown in Fig. 7, these eyes may be suitably located between shoulders 26 on the hollow element 19 and the inner ends of the tubular members 13 and 14.

The pipe 18 is connected to the inlet side of a fan or blower 27. The blower comprises a disc 28 carried by the shaft 29 of an electric motor 30. The disc 28 carries suitable vanes 31. It will readily be understood with reference to Figs. 8 and 9 that when the motor 30 is put into operation air is drawn inwardly from the pipe 18 and through an opening 32 to the center of the disc 28 and that the vanes 31 expel the air through an outlet 33. The outlet 33 is connected by means of a pipe 34 to the exterior of the building. It is preferred to connect the pipe 34 to the drainage system of the building so that the expelled air may be passed upwardly through the conventional ventilating stack and expelled to the atmosphere above roof level. Thus, the pipe 34 may be connected to any suitable sewage or drainage pipe, but in this case it is essential that

a check valve 35 should be provided to prevent foul air or gases from working into the house when the fan is not in operation.

In the embodiment of the invention illustrated, the pipe 34 is connected to the check valve 35 and the check valve in turn is connected to a saddle fitting 36 which is adapted to seat upon the outlet pipe 37 of a wash-basin 38 at a point on the sewer side of the conventional water-sealed trap 39. The saddle fitting 36 may comprise a threaded tubular portion 40 which is provided with an outer end conformed to sit upon the pipe 37, as shown in Fig. 3. At this end is provided a pair of opposite flanges 41 which may be connected by bolts to flanges 42 of a strap member 43 which extends around the opposite side of the pipe 37.

To make the connection, a suitable hole 44 is made in the pipe 37 and a gasket 45 of rubber or other suitable material is applied therearound. Then the upper portion of the saddle member 36 is applied upon the gasket. Finally, the upper member is firmly bolted to the strap member 43 compressing the gasket 45 all around the opening 44. The fan and motor may be rigidly mounted upon the wall, for example by a bolt or the like extending through an opening 46 provided on the inner face wall of the unit, as shown in Fig. 8.

The motor 30 is driven from the power lines 47 and its operation is controlled automatically by means of a switch 48, which may suitably be a mercury switch. The mercury switch is pivotally mounted upon a base 49 and is enclosed in a housing 50. The seat 22 is provided with a recess 51 which receives the housing 50 so that the switch is completely enclosed within the seat. A pin 52 projects downwardly through the plate 49 and is adapted to engage the edge of the bowl, as shown in Figs. 4 and 5. The seat 22 is maintained in the slightly elevated position shown in full lines in Fig. 4 by means of very soft rubber bumpers 53. When a person sits on the seat 22 the bumpers 53 are compressed and the seat moves down slightly into the position shown in Fig. 5 or in dotted lines in Fig. 4. As a result of the engagement of the pin 52 with the bowl, the mercury switch 48 is tilted through a suitable angle throwing the mercury from the right-hand side (Fig. 4) to the left-hand side (Fig. 5), in which position it completes the circuit and starts the motor 30. The wires from the switch 48 preferably extend through a slot 54 within the interior of the seat 22 and then through the conduit system 20, 19, 18 to the fan 27, from which they emerge to be connected to the motor 30.

When the seat 22 is elevated to its utmost position the switch 48 is located so that the mercury therein is remote from the contacts of the switch and unable to complete the circuit. Thus, the motor 30 automatically works when a person sits on the seat 22 and at no other time. It starts operating immediately a person sits down and ceases immediately the person gets up.

Although the invention has been disclosed in connection with the specific details of a preferred embodiment thereof, it must be understood that such details are not intended to be limitative of the invention except in so far as set forth in the accompanying claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a toilet device, a bowl, a seat hinged thereto, a motor driven fan adapted to withdraw foul air from the bowl, a mercury switch within the body of said seat to control said motor driven fan, a pin extending downwardly from said mercury switch, said pin adapted to contact the edge of said bowl and be elevated with respect to said seat when said seat is depressed, the elevation of said pin adapted to tilt said mercury switch into circuit closing position, resilient means normally to elevate a portion of said seat above said bowl, and said mercury switch automatically becoming unresponsive to the movement of said pin when the seat is in raised position.

2. In combination with a water closet bowl and its seat, a conduit through which gases may pass from the bowl, said conduit communicating with the bowl above the normal level of water therein, draft producing means associated with the conduit and adapted when actuated to establish a draft from the bowl through the conduit, means whereby the draft producing means may be set in operation while the seat is occupied, the last said means comprising a mercury switch within the body of the seat, said switch adapted to be tilted into circuit closing position by a member extending from the lower surface of the seat and coacting with the rim of the closet bowl, and said mercury switch adapted to become inoperative when the seat is in raised position.

3. In a toilet device, a bowl, a seat, a hinge securing the seat to the bowl, said hinge being hollow, an air conduit extending forwardly from said hinge, means to connect a conduit to either end of said hollow hinge, the other end of said hollow hinge being closed, a blower associated with the conduit and adapted when actuated to establish a draft from the bowl through the conduit, means whereby the blower may be set in operation while the seat is occupied, the last said means comprising a mercury switch within the body of the seat, said switch adapted to be tilted forwardly into circuit closing position by a pin extending from said mercury switch through the lower surface of the seat and contacting the rim of the closet bowl, a rubber bumper resiliently to hold the forward end of said seat spaced from said closet bowl when the seat is unoccupied, the depression of said seat raising said pin relative to said seat and tilting said mercury switch into circuit closing position, and said mercury switch automatically becoming unresponsive to the movement of said pin when the seat is in its raised position.

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