

Oct. 11, 1966

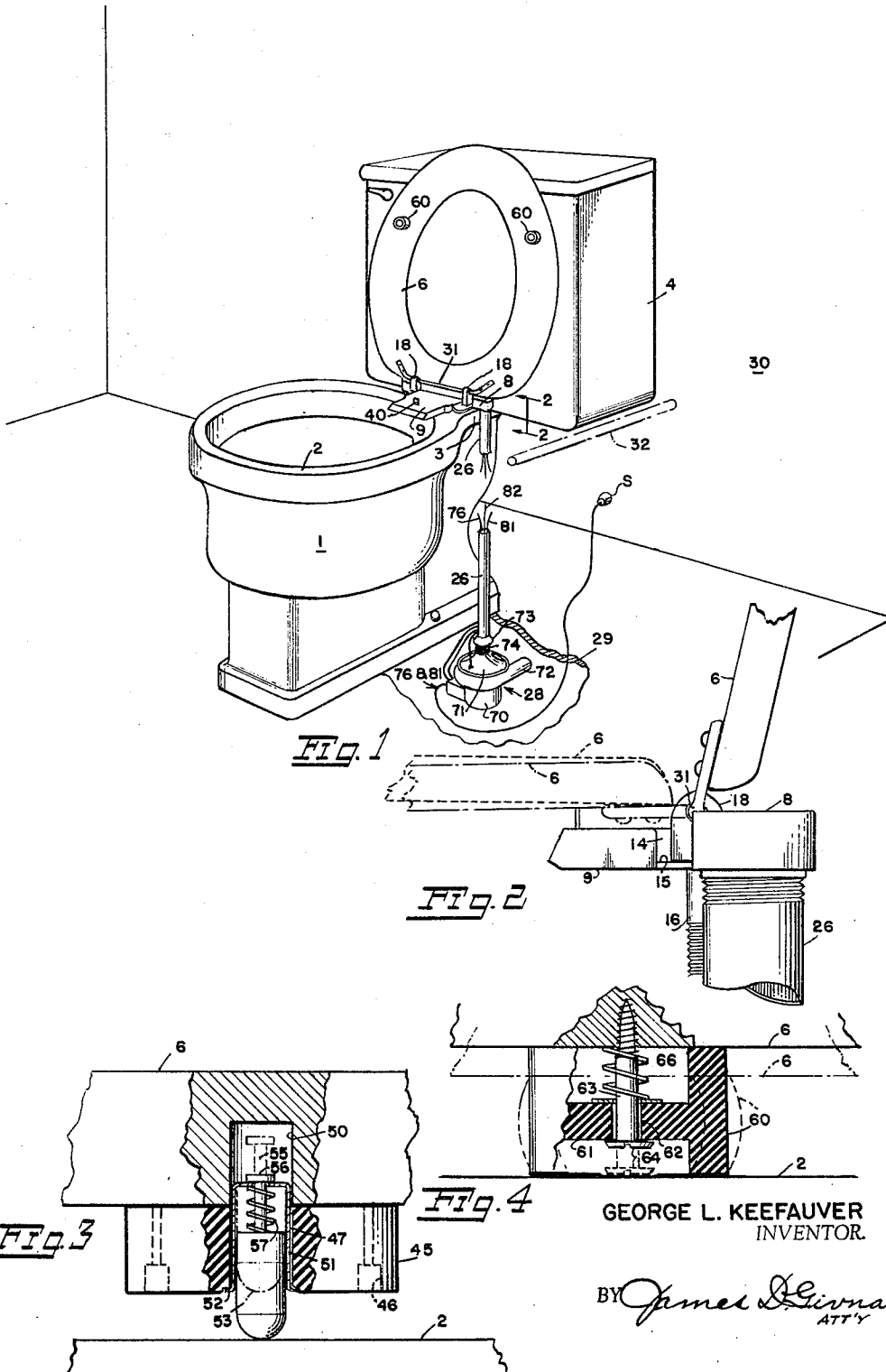
G. L. KEEFAUVER

3,277,499

DEVICE FOR VENTILATING TOILET BOWLS

Filed Oct. 22, 1963

2 Sheets-Sheet 1



Oct. 11, 1966

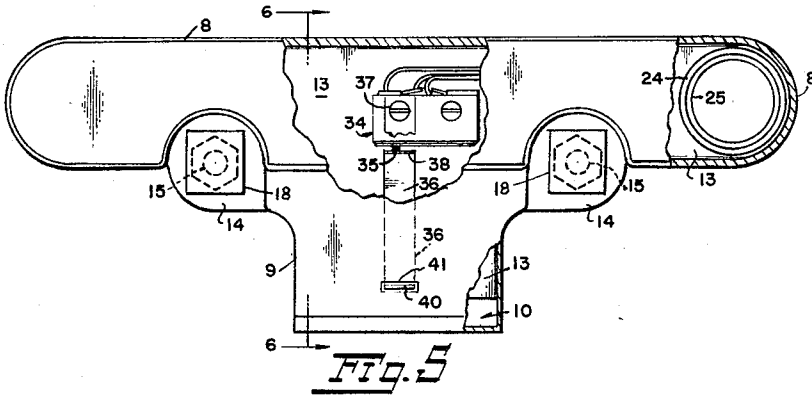
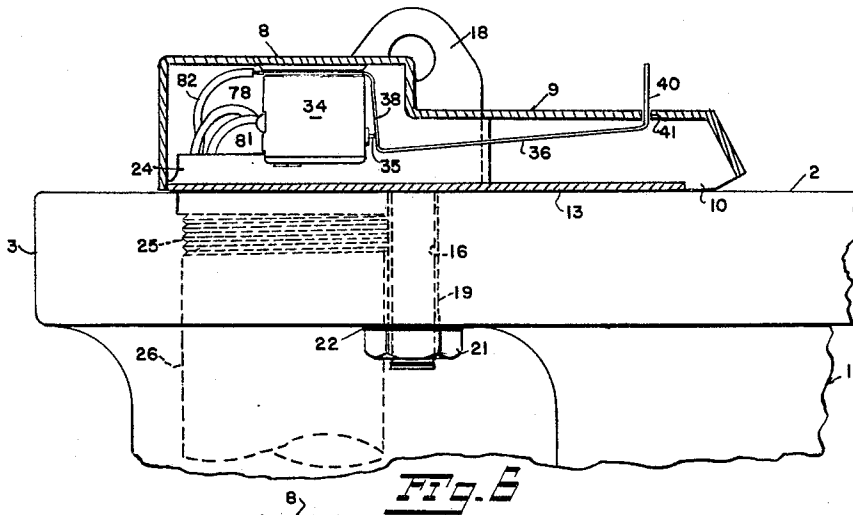
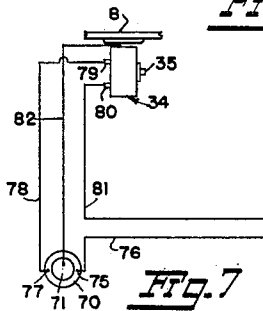
G. L. KEEFAUVER

3,277,499

DEVICE FOR VENTILATING TOILET BOWLS

Filed Oct. 22, 1963

2 Sheets-Sheet 2



GEORGE L. KEEFAUVER
INVENTOR.

BY *James E. Givnan*
ATTY

1

3,277,499

DEVICE FOR VENTILATING TOILET BOWLS

George L. Keefauver, Prineville, Oreg., assignor to Pure-O-Vac, Inc., Van Nuys, Calif., a corporation of California

Filed Oct. 22, 1963, Ser. No. 317,981

1 Claim. (Cl. 4-213)

This invention relates generally to improvements in water closets and more particularly to motor-driven blower means in circuit with a course of current through a switch operable by a toilet seat, when occupied, to ventilate the toilet bowl, the improvements being applicable to ordinary toilet bowls by simply changing the mounting of the seat.

One of the principal objects of the invention is to provide a ventilating device of the class described in a simplified form adapted for inconspicuous installation, and one which is of efficient, durable and inexpensive construction and powered by a motor-driven blower wherein the motor is silent in operation as is the switching mechanism which puts the motor into operation.

The foregoing and other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof and in which:

FIGURE 1 is a perspective view of a conventional toilet equipped with a ventilating device made in accordance with my invention.

FIGURE 2 is a fragmentary detailed view on an enlarged scale taken approximately along the line 2-2 of FIGURE 1.

FIGURE 3 is a fragmentary sectional detail view on an enlarged scale of a toilet seat bumper.

FIGURE 4 is a view similar to FIGURE 3 showing a modified form of toilet seat bumper.

FIGURE 5 is a top plan view on an enlarged scale of the ventilator with fragments broken away to reveal internal parts.

FIGURE 6 is a sectional end elevational view on an enlarged scale taken approximately along the line 6-6 of FIGURE 5 and showing the ventilator applied to the top rear of the toilet bowl which is shown fragmentarily, and

FIGURE 7 is a wiring diagram.

Referring now more particularly to the drawings wherein like reference characters designate like parts, reference numeral 1 indicates a toilet bowl which generally can be of the usual configuration having a top rim 2 integrated with a rearwardly extending shelf 3 upon which a flush tank 4 may or may not be mounted.

The ventilator as shown in FIGURE 5 is somewhat T-shaped and includes a flat hollow housing or hood 8 integrated with and opening into a downwardly opening intake head 9 extending forwardly of the rearwardly inside curvature of the bowl 1 and thus in communication with the interior of the bowl through an opening 10 between the forward edge of a closure plate 13 and the forward end of the intake head.

At the intersection of the housing 8 with the intake head 9 the adjacent sides thereof are recessed and flattened as at 14. The bottom of the housing and head matches the configuration of the closure plate 13 which is apertured as at 15 to match corresponding apertures in the flattened portions 14 of the ventilator for the reception of bolts 16 which depend from hinge members 18 and extend downwardly through openings 19 in the rearwardly extending portion 3 of the bowl rim 2 and therebelow provided with nuts 21 and rubber washers 22, or the like, to protect the surface of the rearward bowl extension 3. Thus

2

the housing 8, intake head 9 and hinge members 18 are securely mounted upon the bowl as a unitary fixture.

One end of the closure plate 13 is provided with an internally threaded flanged opening 24 for securement to the externally threaded top end 25 of an outlet pipe 26 whose bottom end is in open communication with a motor-driven blower assembly indicated generally at 28 which may be disposed below the floor 29 adjacent the bowl 1, or if more convenient or desirable located on the exterior of a wall 30 by means of an outlet pipe 32, shown in broken lines, extending through the wall and connected by any suitable means such as an elbow, not shown, with the opening 24 in the housing 8.

The seat 6 is hingedly attached by means of a rod or hinge pin 31, to the hinge members 18 and may thus be raised and lowered in the conventional manner without disturbing the fixedly mounted ventilator assembly.

The inside of the housing 8, substantially at the center thereof (see FIGS. 5 and 6), has secured to and depending from the top wall thereof a microswitch 34 provided with the usual operating plunger 35 extending outwardly from the side of the switch and in the path of flexion of a switch arm 36 preferably made of flat spring steel secured at its inner end to the switch as at 37 and extending downwardly therefrom as at 38 in confronting relation to the switch plunger 35 then outwardly and upwardly therefrom to its upwardly bent outer end portion 40 which extends upwardly through an opening 41 in the intake head 9.

A pair of either of the seat bumpers illustrated in FIGURES 3 and 4 is attached to the underside of the seat 6 and arranged one each on each side thereof and spaced apart within the circumferential extent of the seat a greater distance than the spacing between the ends of the housing 8 and that of the holddown bolts therebetween, as shown in FIGURE 1. By this arrangement an applied seat load is balanced by both bumpers and thus prevents tilting of the seat and transmission of any resultant twisting stresses on the housing 8, its integral head 9 and related parts, and eventual loosening of the holddown bolts 16 and nuts 21.

The bumper shown in FIGURE 3 comprises a main body 45 preferably made of live rubber secured by screws extending through openings 46 therein and into the underside of the seat 6. The center of the body 45 is provided within an opening 47 extending entirely therethrough and secured therewith, by a forced fit or suitable adhesive and extending above the body and into a downwardly opening recess 50 in the seat, is a downwardly opening cylinder or cage 51, flanged outwardly as at 52 at its bottom end. A plunger 53 is slidably mounted within the cylinder 51 and has on its top end a stem 55 extending upwardly through the top of the cylinder and provided with a head 56. The stem is surrounded by a compression spring 57 whose one end bears against the top of the plunger 53 and whose opposite end bears against the underside of the closed top end of the cylinder 51. The spring maintains the plunger 53 in contact with the rim 2 of the bowl 1 and the seat 6 elevated therefrom as shown. The weight of an occupant upon the seat will of course cause the spring 57 to compress by the downward movement of the cage 51 relative to the plunger. Removal of the weight from the seat will enable the spring to restore the seat to its normal elevated position relative to the bowl rim 2.

The modified form of seat bumper shown in FIGURE 4 comprises a cylindrical body 60 made of live rubber integrally molded with an internal web 61 having an opening 62 extending therethrough. The body 60 is secured to the bottom of the seat 2 by a single screw 63 extending upwardly through the opening 62 in the web 61 and provided with a head 64 below the web. A compression

spring 66 is interposed between the bottom of the seat and the web 61 and encircles the screw 63 with one of its ends bearing against the top of the web and its opposite end against the underside of the seat. When the weight of a user is imposed upon the seat the resultant downward pressure upon the bumper 60 will cause its cylindrical body to distort into the compressed position indicated by dotted lines sufficiently to allow the head of the screw 63 to come into contact with the rim of the bowl 2. Here as in the first form of seat bumper, removal of the weight from the seat will allow the bumper 60 along with the spring 66 to restore the seat to its normal full line position shown.

The blower-motor assembly 28 includes a motor 70 coupled to a blower 71, having an outlet 72 which may be of any desired length. The inlet side 73 of the blower is connected to and in open communication with the bottom end of the outlet pipe 26 by a hollow live rubber coupling 74 to insulate the pipe against operational noises of the motor and/or blower.

As illustrated in FIGURES 1 and 7, one side 75 of the motor 70 is in circuit with a current source S through an electrical conductor 76 and its opposite side 77 is connected by conductor 78 to one side 79 of the microswitch 34 whose opposite side 80 is connected by conductor 81 to the other side of the source, and a bridge conductor 82 interconnects the housing 8 and the blower housing 71.

From the foregoing it will be readily apparent that when the seat 6 is weighted downwardly into the broken line position shown in FIGURE 2, its resultant downward pressure upon the outer vertical end portion 40 of the switch arm 36 will move the arm downwardly to cause deflection of portion 38 thereof sufficiently to press the plunger 35 of the microswitch 34 inwardly to close the circuit through the switch to the motor 70 to put the same into operation. The weight imposed upon the seat to actuate the switch arm and switch, as aforesaid, will also cause either pair of seat bumpers 45 or 60 to bear squarely upon the rim 2 of the bowl 1 and by thus balancing the seat load will prevent twisting damage to the housing 8 or head 9. Removal of the weight will, of course, cause either the spring-urged plunger 53 of the bumper 45 of FIGURE 3, or the housing 60 and spring 66 of FIGURE 4 to restore the seat 6 to its dotted line position and thus break the electrical circuit to the blower motor 70.

While I have shown particular forms of embodiment of my invention, I am aware that many minor changes

therein will readily suggest themselves to others skilled in the art without departing from the spirit and scope of the invention. Having thus described my invention what I claim as new and desire to protect by Letters Patent is:

A ventilating attachment for the bowl of a water closet having a flat top rim, a flat rearwardly extending portion and a substantially circular seat, said attachment including a flat housing extending across said rearward extension of the bowl and an integral air intake head extending forwardly into communication with the interior of the bowl, means securing said housing intermediate the ends thereof at both sides of said head to said rearward extension of said bowl rim and also hingedly attaching said seat to said extension, a pair of bumpers secured to the underside of the seat one at each side thereof and spaced apart a greater distance than said housing and head securing means, whereby to balance the seat under imposed load conditions and thus prevent tilting of the seat and resultant transmission of twisting stresses to said housing and head, each of said bumpers comprising a cylindrical resilient body having an internal transverse web intermediate the ends thereof, said web having an opening therethrough, a screw fastener extending upwardly through said opening in the web secured to the under side of said seat and provided with a head below the web, and a compression spring surrounding said fastener and interposed between said web and said seat with one of its ends bearing against the top of the web and its opposite end against the underside of the seat, whereby both of said resilient bumper bodies will compress under a load imposed upon the seat to position said screw fastener heads in engagement with said rim of the bowl to balance the seat load across the centerline thereof.

References Cited by the Examiner

UNITED STATES PATENTS

1,798,457	3/1931	Cole	4-213
1,861,501	6/1932	Lowther	4-213
2,726,405	12/1955	Smith et al.	4-213

LAVERNE D. GEIGER, *Primary Examiner.*

H. GROSS, *Assistant Examiner.*