June 27, 1933. W. J. CONNORS 1,915,776

TOILET VENTILATOR

Filed Sept. 19, 1932 2 Sheets-Sheet 1

Fig. 1

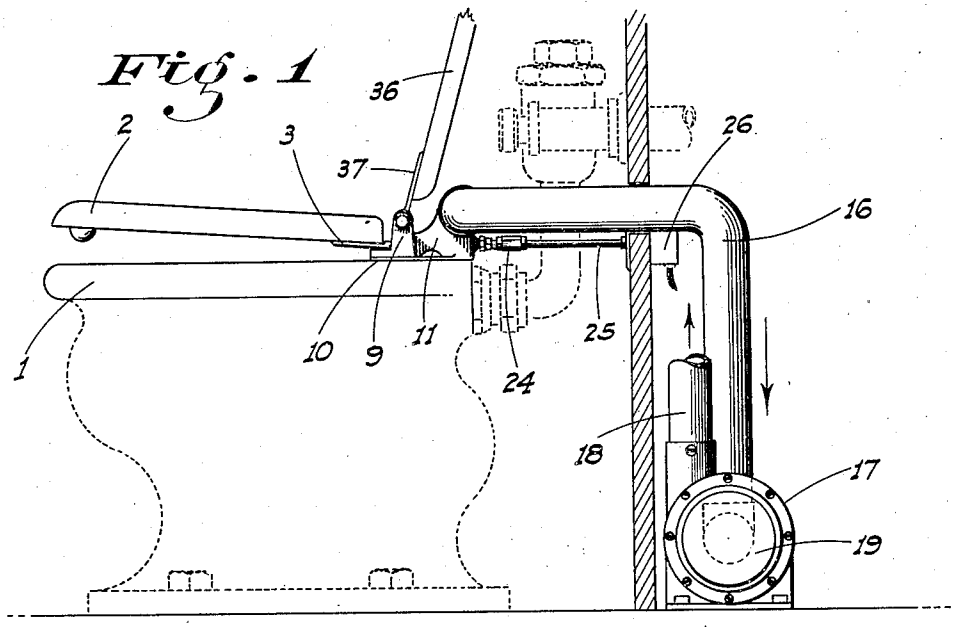


Fig. 8

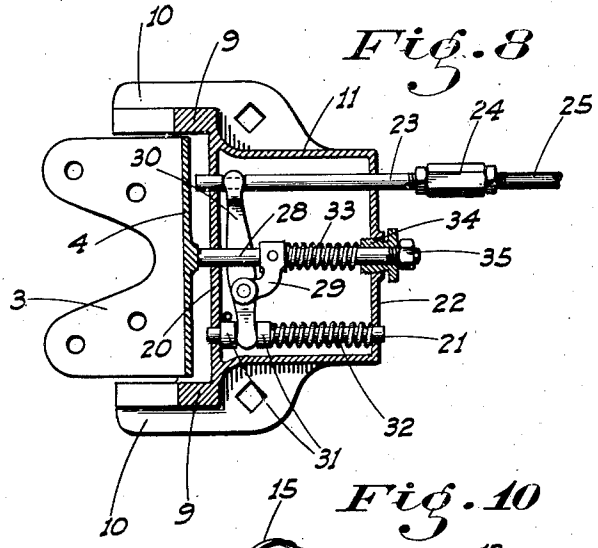


Fig. 9

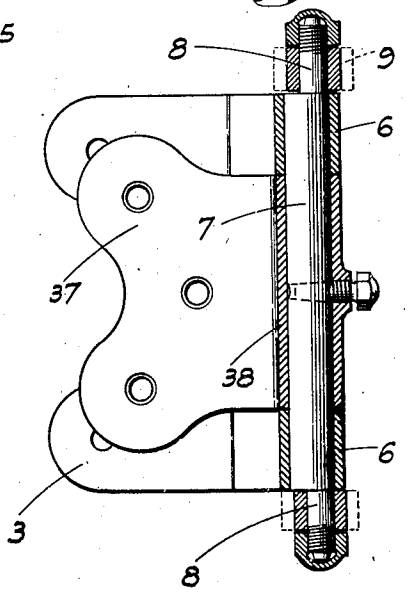
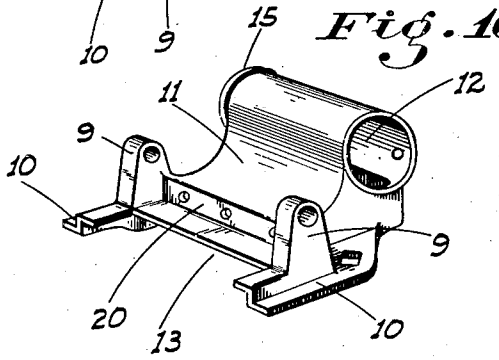


Fig. 10



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June 27, 1933. W. J. CONNORS 1,915,776

TOILET VENTILATOR

Filed Sept. 19, 1932 2 Sheets-Sheet 2

Fig. 2

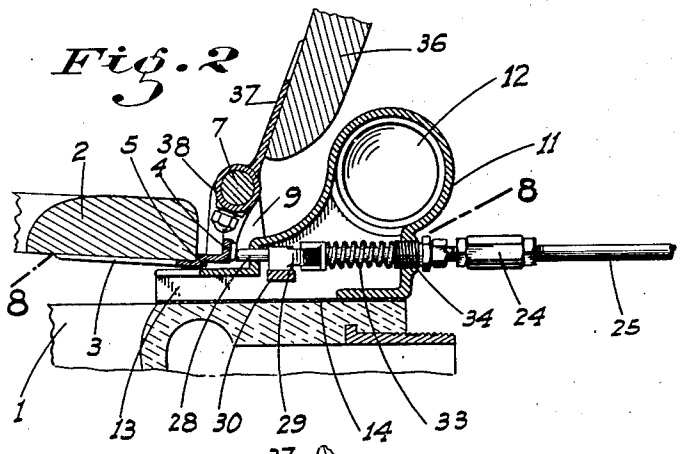


Fig. 3

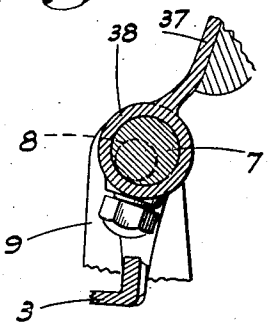


Fig. 4

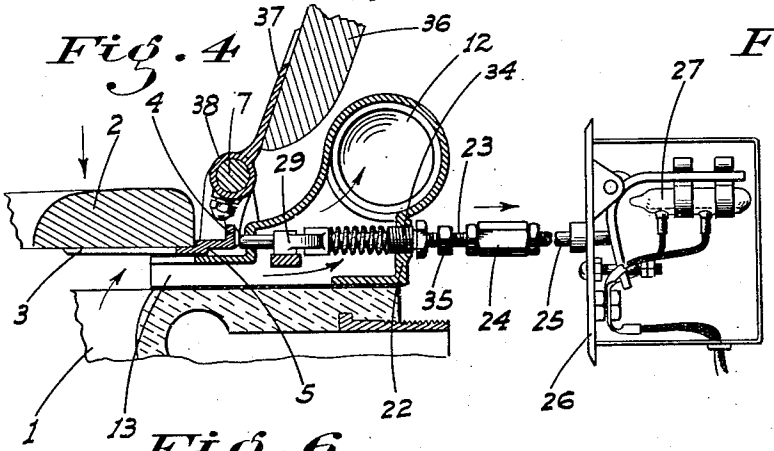


Fig. 5

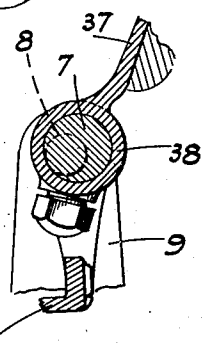


Fig. 6

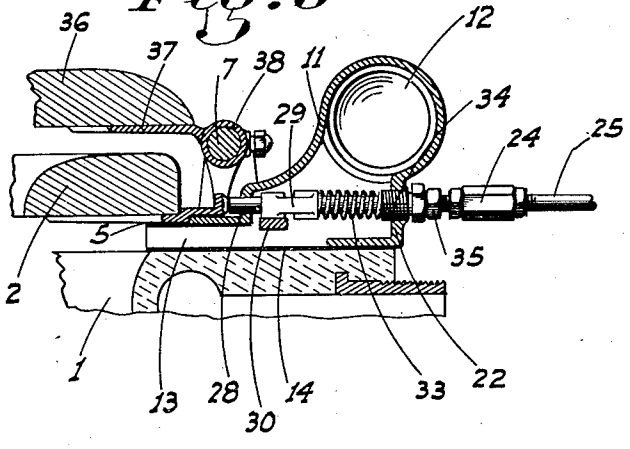
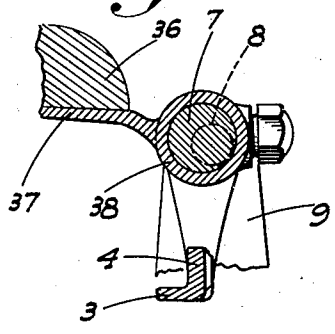


Fig. 7



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Patented June 27, 1933 1,915,776

UNITED STATES PATENT OFFICE

WILLIAM J. CONNORS, OF SAN JOSE, CALIFORNIA

TOILET VENTILATOR

Application filed September 19, 1932. Serial No. 633,731.

This invention relates to toilet ventilating devices and particularly represents improvements over the structure shown in my Patent No. 1,887,498, dated November 15, 1932.

In this previous device the toilet seat was normally raised somewhat from the bowl regardless of the position of the seat cover, the ventilating apparatus being actuated by the depression of the seat by a weight on the same or on the cover. This I found in practice to be objectionable since I have observed that mothers, for instance, frequently use the covered seats as a means on which to stand their small children while rearranging their garments and performing similar services. Also, men sometimes place their feet on the covered seat to retie their shoe laces and perform like operations. In such cases the seat of course was depressed by the weight thereon and the ventilating mechanism was operated even though the toilet was not actually being used. An unnecessary expense in current consumption and wear of the moving parts of the mechanism were thus incurred.

One of the main objects of the present invention therefore is to eliminate the above objectionable features by mounting the seat cover in connection with the seat in such a way that the seat will be raised or tilted and in a position to actuate the ventilating mechanism, only when the cover is raised, as is necessary when using the toilet. On the other hand when the cover is lowered the seat will be automatically lowered so that it rests on the bowl and at the same time will be shifted horizontally so that such lowering movement of the seat will not operate the ventilating mechanism.

Also, in the previous device the switch throw rod was so operated that a considerable depressing movement of the seat was necessary to give the rod the stroke of the proper length to actuate the switch. Another object of this present invention is to improve this feature by arranging a stroke increasing mechanism between the seat and the rod so that a relatively small depressing movement of the seat is sufficient to move the rod through its necessary stroke.

The advantages of the previous device with respect to the interchangeability of the air conduit and switch rod from one side to the other of the main casing, depending on different installation requirements, are retained in this improved structure as well as the other advantages of the former device.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Fig. 1 is a side outline of a toilet of standard form shown equipped with my improved ventilating apparatus and with the seat cover raised.

Fig. 2 is a fragmentary cross section with the parts as in Fig. 1.

Fig. 3 is an enlarged fragmentary cross section showing the position of the eccentric hinge pin relative to the seat and cover hinges when the parts are in the position shown in Fig. 2.

Fig. 4 is a view similar to Fig. 2 showing the cover raised by the seat depressed, the mechanism being shown in connection with the preferred type of motor switch.

Fig. 5 is a view similar to Fig. 3 showing the position of the eccentric pin with the parts as in Fig. 4.

Fig. 6 is a view similar to Fig. 4 showing the seat cover lowered.

Fig. 7 is a view similar to Fig. 5 showing the position of the eccentric shaft when the parts are as in Fig. 6.

Fig. 8 is a sectional plan of the casing and mechanism therein taken on the line 8—8 of Fig. 2.

Fig. 9 is a plan view of the hinge and eccentric pin unit partly in section, the pin being in the position occupied relative to its bearings when the seat cover is lowered.

Fig. 10 is a perspective view of the combination housing, air passage member, and hinge pin support.

Referring now more particularly to the characters of reference on the drawings, the numeral 1 denotes a toilet bowl, and 2 its seat, both these parts being of conventional or standard form. The seat is secured to a hinge plate 3 screwed to the bottom of the same at the back, a right-angle flange 4 projecting upwardly from said plate along the back of the same behind the seat. In front of the flange a rearwardly facing ledge 5 is formed, along the bottom of the plate. Transversely spaced sleeves 6 are formed in connection with the plate at the ends of and above the flange which sleeves engage a hinge pin 7. This pin is eccentric to its end portions 8 which are journaled in supporting brackets 9. These brackets project upwardly from and are formed on the base flanges 10 of a casting 11. The casting rests on and is secured to the bowl at the back by bolts or the like in the same manner as the usual hinge pin brackets are mounted.

Formed in the casting rearwardly of the brackets is a chamber 12 extending transversely of the bowl, from which chamber a passage 13 leads to the forward end of the casting. The passage at said end its of rectangular shape and while shallow in height extends practically the full width of the casting between the brackets, as shown in Fig. 10. The bottom of said passage is formed by the top surface of the bowl or by a gasket 14 which is disposed between the bowl and the flanges 10 and secured in connection therewith by the holding bolts. The height of the passage is such that the hinge plate 3 may pass over the top of the passage, as shown in Fig. 4 when the ventilating mechanism is being operated.

The chamber 12 is initially open at both ends, one end being closed by a removable plug 15. A conduit 16 is connected to the other end of the chamber and extends thence to the intake of a standard form of suction fan 17 from the outlet of which another conduit 18 extends upwardly to the exterior atmosphere through the roof of the building. The fan is driven by an electric motor 19 mounted as a unit therewith. The motor and fan unit, being of a small and compact type and especially quiet in operation, may be mounted in any convenient location without any annoying noise being emitted with its operation.

The casting 11 above the forward end of the passage 13 and back of the hinge plate flange 4 is formed with a low vertical wall 20. A horizontal rod 21 extends between and is supported by said wall and the back wall 22 of the casting below the chamber 12, said rod being disposed toward one end of the casting. Similarly mounted in the casting toward the opposite end is another rod 23, connected by a turnbuckle 24 to an extension rod 25 of insulation material. At its rear end the rod 25 is supported by and is slidable in the housing 26 of a switch 27 which is interposed in the motor circuit. This switch is of the self-opening type, being closed by the rearward movement of the rod 25.

Slidably mounted in the casting centrally between the rods 21 and 23 is another rod 28, projecting through the front wall 20 and normally engaging the hinge flange 4. Fixed on the rod 28 intermediate its ends is an arm 29 which projects forwardly and in the direction of the rod 21 and at its outer end is pivoted to a lever 30 intermediate the ends of the same. This lever extends between the rods 21 and 23 under the central rod and is swivelly anchored to the rod 21 by means of spaced collars 31 on the rod and between which the lever is disposed. A compression spring 32 on the rod forces the adjacent collar forwardly and also acts to prevent rearward movement of the rod or said end of the lever.

The other end of the lever swivelly engages the rod 23, as shown in Fig. 8. A compression spring 33 about the rod 28 between its rear adjustable bearing 34 and the arm 29 acts to force the rod forwardly and has sufficient strength to raise the seat somewhat; the form of movement being limited by an adjustable stop 35 fixed on the rear end of the rod 28.

It will thus be seen that when the seat is depressed while in contact with the rod 28, the lever will be moved against the resistance of the spring and a switch closing movement will be imparted to the switch rod. The extent of movement of this rod is greater than that of the rod 28 on account of the stroke increasing connection of the arm 29 with the lever. The rod 28 engaging the seat hinge flange centrally of its length, the lifting pressure on the seat is symmetrically disposed relatively to its area and there is no tendency for said seat to be canted more to one side than the other. The rods 23 and 21 are the same size in diameter so that they can be interchanged at will. The central rod 28 always remains in the same position, the arm 29 being merely turned from one side to the other when thus shifting the position of the other rods.

A cover 36 is provided for the seat as usual. To mount the cover I provide a hinge plate 37 extending under and secured to said cover and having a sleeve 38 along its back edge to fit between the sleeves 6 of the seat hinge; said sleeve 38 engaging and being clamped to the pin 7. It will be noted that the plate 37 is offset from the horizontal plane of the center of the sleeve 38, or in other words is not radial with said sleeve. The plate will therefore be higher in one position than the other when the sleeve is reversed on the pin. This enables the same hinge connection for the cover to be used with seats of different thicknesses, such as are liable to be encountered; and this feature in

turn enables the original seat and its cover to be used when installing the ventilating apparatus.

The cover hinge sleeve is fixed on the eccentric hinge pin in such a position relative to the end portions 8 that when the cover is raised (and the pin correspondingly turned) the seat hinge flange 4 is not only moved into pressing contact with the rod 28, but is raised or tilted at its front end somewhat as shown in Figs. 1 and 2. The hinge plate is then above the level of the top of the chamber 13 at its front end. The depression of the seat by the weight of an occupant then causes said flange to press back against the rod 28, as shown in Fig. 4, closing the switch 27 in the manner previously described and thus setting up a circulation of air from the bowl to the external atmosphere through the various passages and conduits in the system.

When however the cover is lowered the eccentric pin is turned forwardly and down relative to the portions 8. This imparts a corresponding movement to the seat which is hung from the pin, and the seat rests on its own weight on the bowl while the flange 4 is drawn forwardly and out of contact with the rod 28. At the same time due to the lowering movement of the seat and hinge plate the ledge or shoulder 5 is positioned so that it alines with and abuts against the front edge of the top wall of the chamber 13 as shown in Fig. 6. This prevents the seat having any rearward horizontal movement, such as might otherwise be accidentally imparted thereto and which would set the ventilating mechanism in operation.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described my invention what I claim as new and useful and desire to secure by Letters Patent is:

1. In a toilet bowl ventilator having a movable control member, a seat for the bowl arranged when depressed from a predetermined position to move said member, a cover for and movable relative to the seat, and connection means between said cover and seat arranged so that the seat will be disposed in said predetermined position only when the cover is raised.

2. In a toilet bowl ventilator having a control member behind and movable rearwardly relative to the seat of the bowl, a hinge plate for the seat having an element to engage the front end of said member, a cover for and movable relative to the seat and cooperating connections between the cover and hinge plate arranged so that if the cover is raised, the seat will be disposed with a forward and upward tilt with the element engaging the member, and if the cover is lowered, the seat will be also lowered and at the same time advanced so as to move the element clear of the member.

3. In a toilet bowl ventilator having a control member behind and movable rearwardly relative to the seat of the bowl, a hinge plate for the seat having an element to engage the front end of said member, a hinge pin above said element, sleeves formed with the plate and turnable on the pin, means turnably supporting the pin in eccentric relation to its axis, and means for turning the pin; the latter being disposed relative to the forward end of the control member so that if the pin is turned in one direction, the element will engage said member and the seat if unoccupied will be disposed with a forwardly and upward tilt, and if the pin is turned in the opposite direction the seat will be advanced so that the element clears the member and the seat will drop of its own weight to rest on the bowl.

4. A structure as in claim 2, with a fixed stop engaging the element when the seat is in the latter position, whereby to prevent rearward horizontal movement of the seat.

5. In a toilet bowl ventilator having a control member behind and movable rearwardly relative to the seat of the bowl, a hinge plate for the seat having an element to engage the front end of said member, a hinge pin above said element, sleeves formed with the plate and turnable on the pin, means turnably supporting the pin in eccentric relation to its axis, a cover for the seat, and means rigidly connecting the cover to the hinge pin; the latter being disposed relative to the forward end of the control member so that if the cover is raised, the element will engage said member and the seat if unoccupied will be disposed with a forward and upward tilt, and if the cover is lowered, the seat will be advanced so that the element clears the member and the seat will move of its own weight to a resting position on the bowl.

6. A toilet bowl ventilating apparatus comprising a hollow body adapted to be mounted on the bowl at the back, said body forming a suction passage to communicate with the bowl, electrical means to create a tendency to vacuum in the passage, a switch for said means disposed back of the body, a seat for the bowl, a hinge mounting for the seat, including a vertical element below the hinge axis, a spring advanced rod mounted in the body centrally of its width and engaging said element, whereby rearward movement of said element will push the rod rearwardly, a switch actuating rod slidably mounted in the body toward one end and parallel to the first

named rod, and connection means between said rods to transmit movement imparted to the central rod to the switch rod.

7. A toilet bowl ventilating apparatus comprising a hollow body adapted to be mounted on the bowl at the back, said body forming a suction passage to communicate with the bowl, electrical means to create a tendency to vacuum in the passage, a switch for said means disposed back of the body, a seat for the bowl, a hinge mounting for the seat, including a vertical element below the hinge axis, a spring advanced rod mounted in the body centrally of its width and engaging said element, whereby rearward movement of said element will push the rod rearwardly, a switch actuating rod slidably mounted in the body toward one end and parallel to the first named rod, and connection means between said rods to transmit movement imparted to the central rod to the switch rod to a greater amount and in the same direction.

8. A structure as in claim 6, with means mounting said switch rod and connection means to permit said rod to be interchanged in position from one side to the other of the central rod without disturbing the latter.

9. A structure as in claim 6, in which said connection means comprises a lever extending transversely of the body across the central rod, said lever at one end having swivel connection with the switch rod, means anchoring the opposite end of the lever, and an arm secured on the central rod and swivelly connected to the lever intermediate its ends.

10. In a toilet-bowl ventilator, a seat for the bowl, a cover for the seat raisable relative thereto, means between the seat and cover to cause the seat to be tilted upwardly when the cover is raised and to be lowered to rest on the bowl when the cover is lowered, and means to actuate the ventilator operated by the lowering of the seat from a tilted position independent of the cover.

11. In a toilet-bowl ventilator, a movable control member for the ventilator, a seat for the bowl mounted for upward tilting movement and arranged when tilted to engage said member and so that when the seat is depressed by a weight thereon said member will be moved, a cover for the seat raisable therefrom, and means actuated by a closing movement of the cover for lowering the seat and also moving the same clear of said member.

12. In a toilet-bowl ventilator, a movable control member for the ventilator, a seat for the bowl mounted for upward tilting movement and arranged when tilted to engage said member and so that when the seat is depressed by a weight thereon said member will be moved, and mechanical means operable at will to move the seat clear of the member and also cause said seat to be lowered to rest on the bowl.

In testimony whereof I affix my signature.

WILLIAM J. CONNORS.