

May 14, 1935.

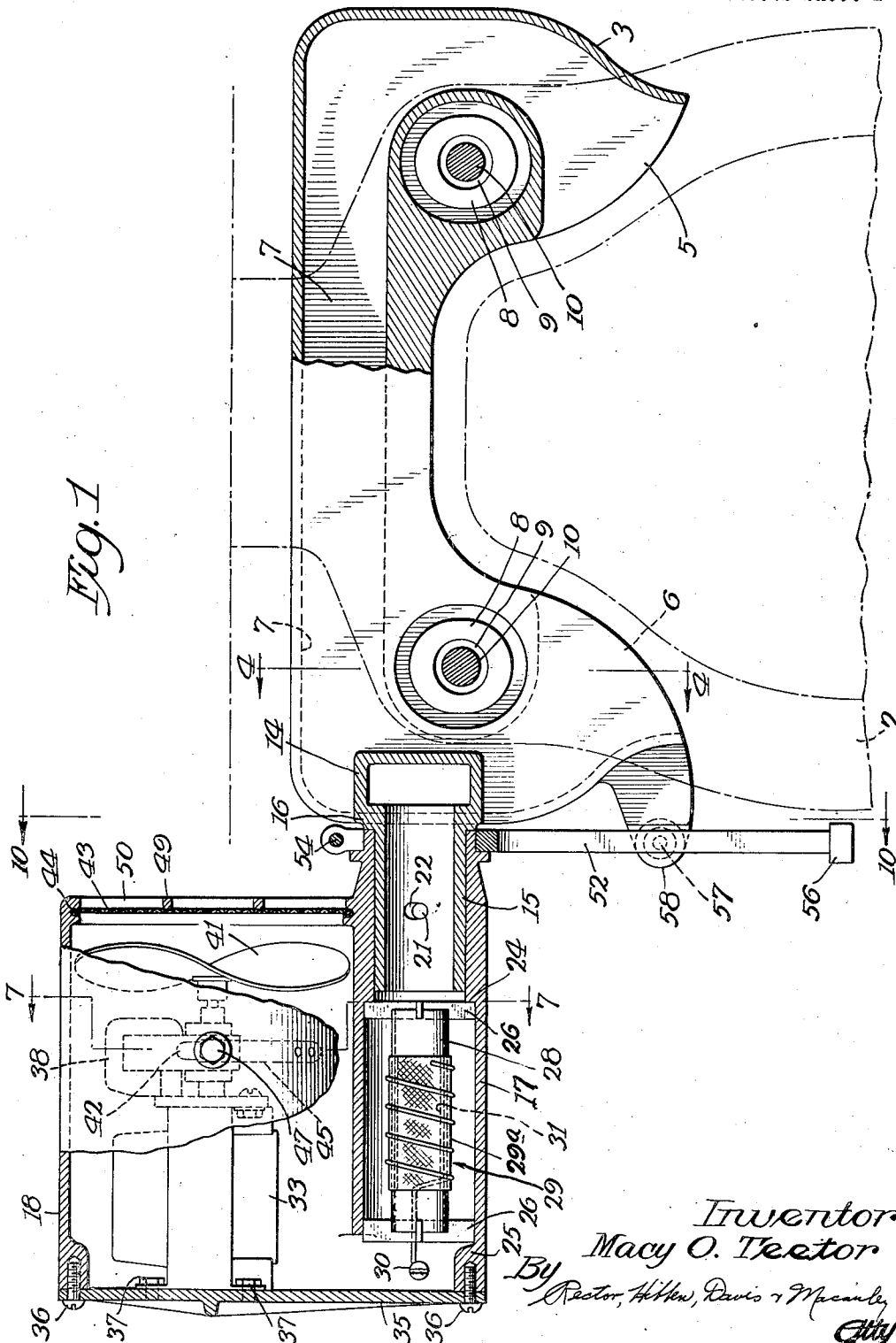
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2,001,592

VENTILATOR ATTACHMENT FOR TOILET SEATS

Filed July 27, 1933

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

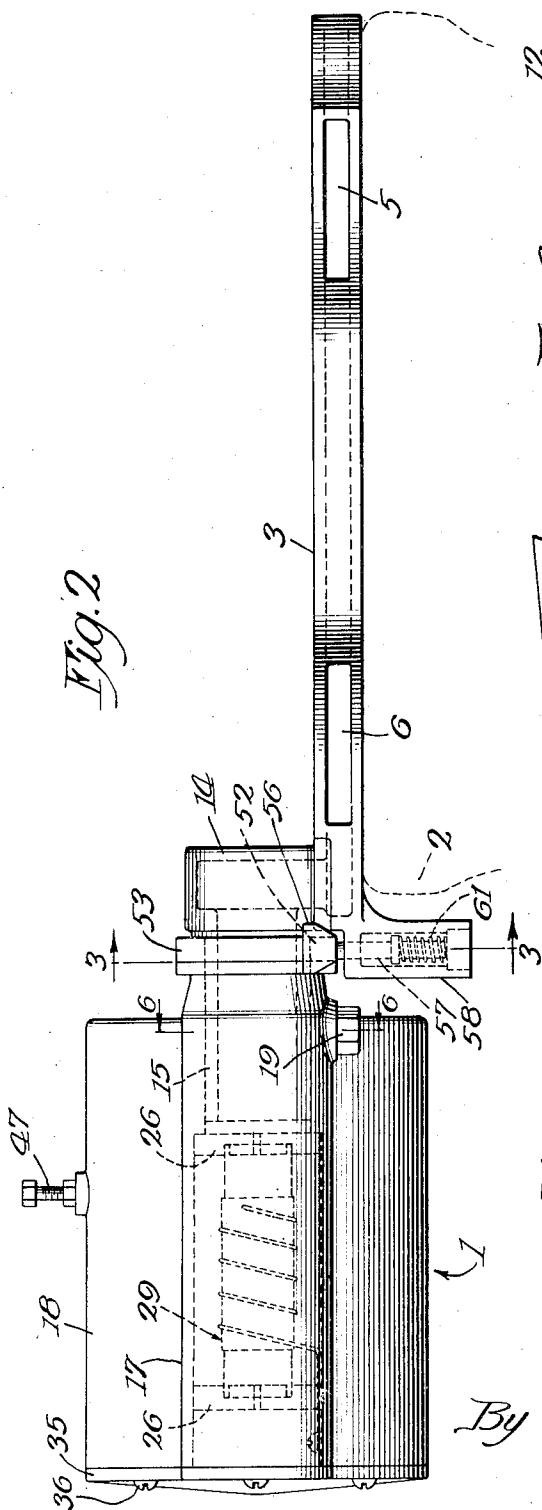


Fig. 2

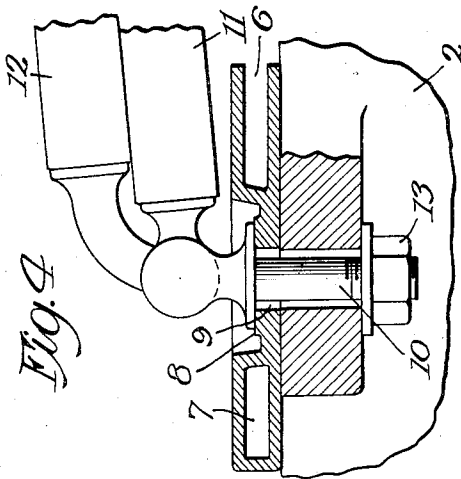


Fig. 4

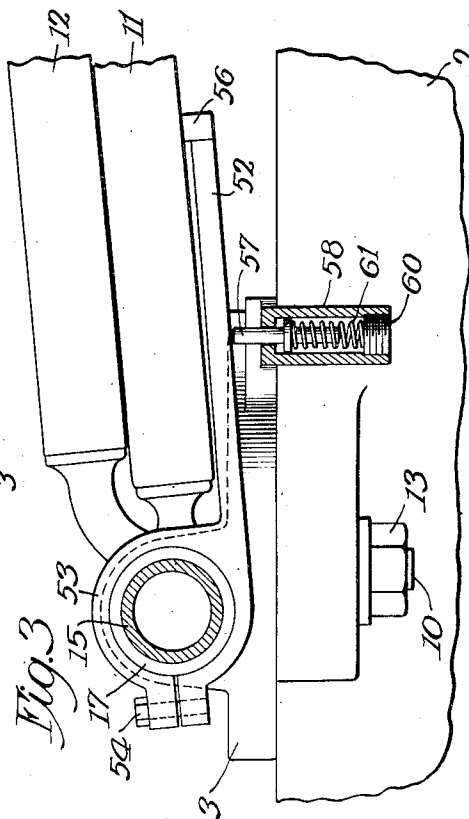


Fig. 3

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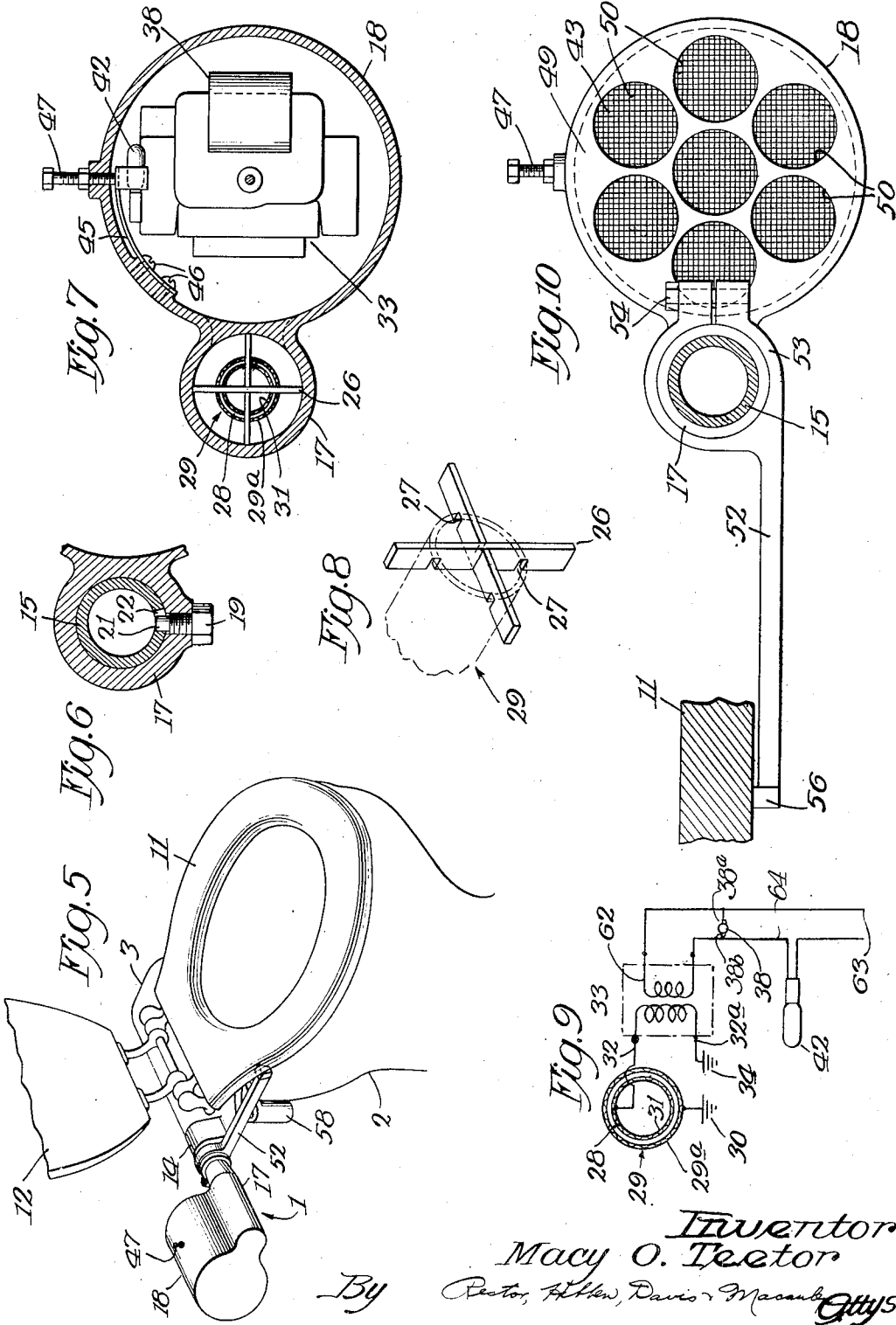
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VENTILATOR ATTACHMENT FOR TOILET SEATS

Filed July 27, 1933

3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,001,592

VENTILATOR ATTACHMENT FOR TOILET SEATS

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Application July 27, 1933, Serial No. 682,362

9 Claims. (Cl. 4—213)

This invention relates generally to a ventilator for attachment to a water closet or the like and has for its object to provide for the deodorization and purification of the foul air or gases.

5 One of the objects of this invention is to provide a ventilator unit attachable to the bowl of the toilet and operated by the seat thereof for deodorizing the gases prior to their introduction to the outside atmosphere.

10 Another object is to provide a ventilator attachment which can be readily fixed for permanent securement to standard toilet bowls without the necessity of providing additional attachments or requiring the modification or alteration of any of the toilet structure.

15 Another object is to provide an ozone ventilator for attachment to a toilet bowl whereby the foul air is withdrawn therefrom and deodorized by the ozonizer prior to its introduction to the pure air.

20 Another object is to provide a ventilator attachment for toilet bowls which is normally inoperative and which is placed and continued in operation only during the time the seat is occupied.

25 Another object of the invention is to provide a ventilator unit for attachment to a water closet whereby the depression of the seat rocks said unit bodily with respect to the bowl to thereby actuate the ventilating unit into operation and continue it in operation until the seat is again raised.

30 A further object of this invention is to provide a ventilator unit for attachment to water closets which will be positive and efficient in its operation; neat and compact in design; inexpensive in its manufacture; readily adaptable to any standard water closet; and which may be easily installed without requiring the services of a plumber or experienced workman.

35 More specifically, this invention relates to a ventilating unit for securement to a toilet bowl, which unit is provided with a nozzle attached to the rear of the bowl and which is in communication with an ozonizer and a suction device, both of which are operated by the depression of the seat and in turn draw the foul air and gases through the nozzle and ozonizer and expel it into the room in a deodorized state.

40 Heretofore, it has been proposed to provide ventilators for attachment to toilets or the like wherein the foul air is withdrawn from the toilet bowl and delivered to a stack, pipe or other medium which carries the gases exteriorly of the room. Devices of this character are decidedly

impractical, because, among other reasons, they are difficult and costly to install, particularly in completed toilet structures, in that they require serious modification of the existing structure. This particular objection to prior proposed structures has been obviated by the structure embodying the present invention, in that the ventilating unit can be readily attached to the standard bowl without a modification of the existing structure. The instant structure lends itself to ready attachability to any standard bowl by any unskilled person while at the same time the structure is very durable and efficient in operation.

In the drawings:

Fig. 1 is a plan view partially in section showing the ventilator unit mounted on the bowl;

Fig. 2 is a front elevation of the ventilating unit shown in Fig. 1;

Fig. 3 is a sectional view of the ventilator device taken on line 3—3 of Fig. 2;

Fig. 4 is a fragmentary section taken on line 4—4 of Fig. 1 showing the attaching of the unit to a toilet;

Fig. 5 is a perspective view of the toilet showing the ventilating device attached thereto;

Fig. 6 is a cross section on the line 6—6 of Fig. 2 showing the journal and sleeve connection;

Fig. 7 is a cross section on the line 7—7 of Fig. 1;

Fig. 8 is a perspective of the spider for the mounting of the ozonizer;

Fig. 9 is a diagrammatic view of the electrical circuit; and

Fig. 10 is a sectional view taken on the line 10—10 of Fig. 1.

Referring to Figs. 1 and 5 of the drawings, it will be seen that the ventilating unit, generally indicated by the numeral 1, is attached to a standard toilet bowl 2 by means to be described presently. The ventilating unit has a suction nozzle 3 seated on top of the rear portion of the toilet bowl, the forward edge of the nozzle following generally but rearwardly outset with respect to the contour of the rear top edge portion of the bowl. The nozzle for the most part is hollow and has two enlarged openings 5 and 6 and a connecting chamber 7. The solid portions of the nozzle are provided with depressions 8 having openings 9 through which are passed usual bolts 10 carrying the pintles to which the rear ends of the seat 11 and cover 12 are swingingly mounted in the customary or standard way. The bolts are passed through the openings of the nozzle and are secured to the top edge of the bowl by nuts 13. In this manner the entire ventilating attach-

ment is securely fastened and retained in its position by the standard means with which the toilet is initially equipped, additional or special fastening means being unnecessary.

5 Formed integrally with the suction nozzle 3 and communicating at its bottom with the air passage chamber 7 is an upstanding hollow arm 14 having a projecting tube 15 which serves as a fixed journal. Surrounding this journal 15 and
10 bearing against a shoulder 16 is a sleeve portion 17 formed as an integral part of a housing 18 in which is mounted the ozonizer and suction means presently to be described. The sleeve and housing are adapted to rock axially on said journal and are prevented from endwise movement by a
15 bolt 19 (Fig. 6) which is screw threaded into an opening in the sleeve 17 and which has a reduced stem 21 fitting within an enlarged opening 22 in the journal 15. The opening is enlarged sufficiently to permit the housing 18 to rock to effect the desired closing of a circuit as will presently be described.

The rear end of the sleeve is slightly enlarged as at 23 and is adapted to support therein the ozonizer structure 29 which will now be described. The enlarged sleeve is provided with a shoulder 24 and a boss 25 which serve to position spiders 26 (Figs. 1, 2, and 8). The spiders are cross-shaped and are provided with notches 27 which
30 receive therein the ends of the tubular glass or celluloid member 28 of the ozonizer.

The ozonizer illustrated in the drawing is one well known on the market but it is not desired that my invention be limited to the specific details thereof as any suitable form of ozonizer may be employed.

The specific ozonizer shown comprises the usual glass or insulating tube 28 (Figs. 1 and 9), about the outer face of the tube is an outer tubular electrode 29^a which is grounded as at 30, and
40 on the inner face of the tube is an inner tubular electrode 31, which is connected to one of the secondary terminals 32 of a transformer 33, while the other secondary terminal 32^a of the transformer is grounded at 34.

The casing 18 is provided with an outer end cover 35, secured to the casing by screws 36. The transformer 33, motor 38 and fan 41 are mounted as a unit and are supported upon the cover 35 by bolts 37. The fan 41 is secured to the armature shaft of the motor. The right hand end of the housing has formed integrally therewith a disk 49 having enlarged exhaust openings 50. A screen 43 is placed inwardly of
55 said disk and is secured in the housing by a groove 44.

Mounted above the motor in the casing 18 is a mercury switch 42 (best shown in Fig. 7) which is mounted on one end of a leaf spring 45 that is fastened at its opposite end to the housing by screws 46. An adjusting screw 47 may be employed to adjust the switch. The primary 62 (Fig. 9) of the transformer is connected in circuit with the mercury switch and motor.

To rock the unit bodily about the journal 15, I provide a lever 52 (Figs. 1, 3, 5 and 10) which has a split collar 53 securely embracing the sleeve 17 and held in fastened relation thereto by a bolt 54. The forward end of the lever 52 is provided with a lug 56 which contacts with the underside of the seat and which causes the lever to move through its orbit of travel when the seat is depressed. The lever is normally held in a slightly elevated position by means of a spring actuated plunger 57 which contacts with the un-
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derside of said lever. The plunger 57 with its spring 61 are mounted within a cylinder 58 depending from the suction nozzle 3. The spring 61 may be adjusted by the nut 60. The seat, when not occupied, may be held slightly elevated by the usual means or by the plunger 57 and lever 52 if desired.

Referring particularly to the circuit diagram of Fig. 9, it will be seen that the glass or insulating tube 28 of the ozonizer has an outer electrode 29^a which is grounded as at 30, and that the inner electrode 31 is connected to one of the secondary terminals 32 of the transformer, and that the other secondary terminal 32^a is grounded as at 34, while the primary 62 of the transformer is connected in circuit from a source of current supply 63 with one of the terminals 33^a of the motor 38. The mercury switch 42 and the other terminal 33^b of the motor are connected to the returning wire 64 of the circuit.

It will thus be seen that upon depression of the seat 11, lever 52 is moved downwardly against the tension of the spring 61 to thereby rock the housing 18 about its journal 15. The slight tilting of the housing closes the mercury switch 42 which in turn closes the circuit to operate the ozonizer 29 and the fan 41. The foul gases which are sucked from the toilet bowl into the openings 5 and 6 and chamber 7 of the suction nozzle 3 by means of the fan pass through the arm 12 and journal 15, around and through the ozonizer 29, which deodorizes the foul gases, through the housing and finally are expelled to the room atmosphere through the openings 50. In this manner obnoxious odors accumulated in the bowl are withdrawn therefrom and admitted to the room in a deodorized state.

It will be noted, from an inspection of the plan view in Figure 1 and the perspective view in Figure 5, that the housing 18 and its ozonizer 29, transformer 33, electric motor 38, and fan 41 constitute a deodorizing unit which is rockably supported upon the journal 15 in an unbalanced or off-center condition whereby it will constantly tend to rock or move in one direction. The lever 52, contacting the seat 11, will effect movement of this deodorizing unit in a different or opposite direction when the seat is occupied. The deodorizing unit is controlled by a mercury switch 42 which is actuated to render the unit operative and inoperative by movements of the deodorizing unit in view of the fact that the mercury switch is suitably mounted within the housing 18. This unbalanced or off-center supporting of the deodorizing unit guarantees the opening of the circuits to the ozonizer and its transformer and to the electric motor when the seat 11 is not occupied. A spring-pressed plunger 57 is provided to cause the seat 11 to be slightly elevated when it is not occupied, but this unbalanced or off-center condition of the deodorizing unit will effect opening of the circuits for the elements of the unit even should the spring 61 for the plunger 57 be broken or weakened so that the seat would not be elevated by the spring and plunger when it is unoccupied.

It will be noted that the journal 15 for the nozzle 3 and the mounting sleeve 17 for the housing 18 are provided with the elongated slot 22 and the pin 21, respectively, to limit rocking movement of the housing and its deodorizing unit in the direction of movement effected by the unbalanced or off-center mounting of the housing 18 and its unit.

It will be manifest from the foregoing descrip- 75

tion that my invention is admirably adapted to perform the objects first stated. It will be clear that changes may be made without departing from the spirit of my invention. For example, it is not intended to limit the invention in its broader aspects to a separate unit adapted to be attached to the toilet bowl, as the device may be incorporated in or formed as an integral part of the bowl by the toilet manufacturer.

I claim:

1. In a structure of the class described, a toilet bowl and a seat therefor, a nozzle secured to said bowl, said nozzle having a journal extending therefrom, a housing having a sleeve formed therewith by which said housing is rockably supported on said journal, a chamber formed as a continuation of said sleeve and adapted to support an ozonizer therein, a suction device mounted within the housing and in communication with said nozzle and ozonizer, and means secured to said sleeve and operated by said seat for rocking said housing about said journal for operating said suction device and ozonizer for withdrawing the foul air through said nozzle and ozonizer and passing it to the atmosphere in an ozonized condition.

2. In a structure of the class described, a toilet bowl and a seat therefor, a nozzle secured to said bowl, said nozzle having a journal formed integrally therewith and extending laterally therefrom, a housing having a sleeve formed integrally therewith to rockably support said housing on said journal, an ozonizing chamber formed as a continuation of said sleeve, an ozonizer mounted within said chamber, suction means mounted within said housing, and means connected to said housing for rocking said housing about said journal to actuate said suction means and ozonizing means for withdrawing the foul air from said bowl and passing the same through said ozonizer and to the atmosphere in an ozonized condition.

3. In a structure of the class described, a toilet bowl and seat therefor, a nozzle secured to said bowl, said nozzle having a journal formed integrally therewith and extending laterally therefrom, a housing having a sleeve by which said housing is adapted to be rockably supported on said journal, an ozonizing chamber directly communicating with said sleeve and said journal, an ozonizer mounted within said chamber, suction means contained within said housing and mounted on an exteriorly accessible support, and means operated by the depression of said seat for operating said suction device and ozonizer for withdrawing the foul air through said nozzle and ozonizer and passing it to the atmosphere in an ozonized condition.

4. In a structure of the class described, a toilet bowl and a seat therefor, a support connected to said bowl, a deodorizing unit movably mounted on said support in an unbalanced condition whereby it tends to move in one direction, means for connecting said unit to said seat for causing depression of said seat to effect movement

of the unit in a different direction, and control means actuated by the movement of the unit in said two directions for rendering said unit operative and inoperative.

5. In a structure of the class described, a toilet bowl and a seat therefor, a support connected to said bowl, a combined deodorizing and gas circulating unit connecting with the interior of said bowl and movably mounted on said support in an unbalanced condition whereby it tends to move in one direction, means for connecting said unit to said seat for causing depression of said seat to effect movement of the unit in a different direction, and control means actuated by the movements of the unit in said two directions for rendering said unit operative and inoperative.

6. In a structure of the class described, a toilet bowl and a seat therefor, a nozzle secured to said bowl to communicate with the interior thereof, a combined ozonizer and suction unit movably mounted on said nozzle in an unbalanced condition whereby it tends to move in one direction, means for connecting said unit to said seat for causing depression of said seat to effect movement of the unit in a different direction, and control means actuated by the movements of the unit in said two directions for rendering said unit operative and inoperative.

7. In a structure of the class described, a toilet bowl and a seat therefor, a support connected to said bowl, a housing rockably mounted on said support in an off-center position whereby it tends to move in one direction, a combined ozonizer and suction unit mounted in said housing to rock therewith, means for connecting said housing to said seat for causing depression of the seat to effect movement of the housing in a different direction, and control means actuated by the rocking movements of said housing for rendering said unit operative and inoperative.

8. In a structure of the class described, a toilet bowl and a seat therefor, a support connected to said bowl, a deodorizing unit rockably mounted on said support in an off-center position whereby it tends to move in one direction, said unit comprising an ozonizer, a suction fan and a motor to drive the fan, means for connecting said unit to said seat for causing depression of said seat to effect movement of the unit in a different direction, and control means actuated by the movements of the unit in said two directions for rendering said unit operative and inoperative.

9. In a structure of the class described, a toilet bowl and a seat therefor, a support connected to said bowl, a deodorizing unit movably mounted on said support in an unbalanced condition whereby it tends to move in one direction, means for limiting movement of said unit in said one direction, means for connecting said unit to said seat for causing depression of said seat to effect movement of the unit in a different direction, and control means actuated by the movements of the unit in said two directions for rendering said unit operative and inoperative.

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