Nov. 10, 1931. C. C. NORRIS ET AL 1,831,257

VENTILATING ATTACHMENT FOR TOILET SEATS

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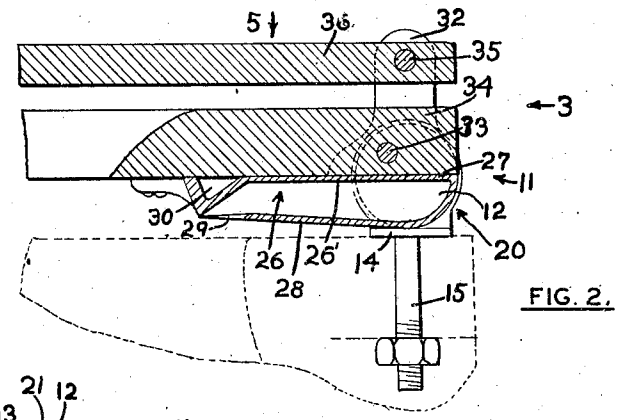


FIG. 2.

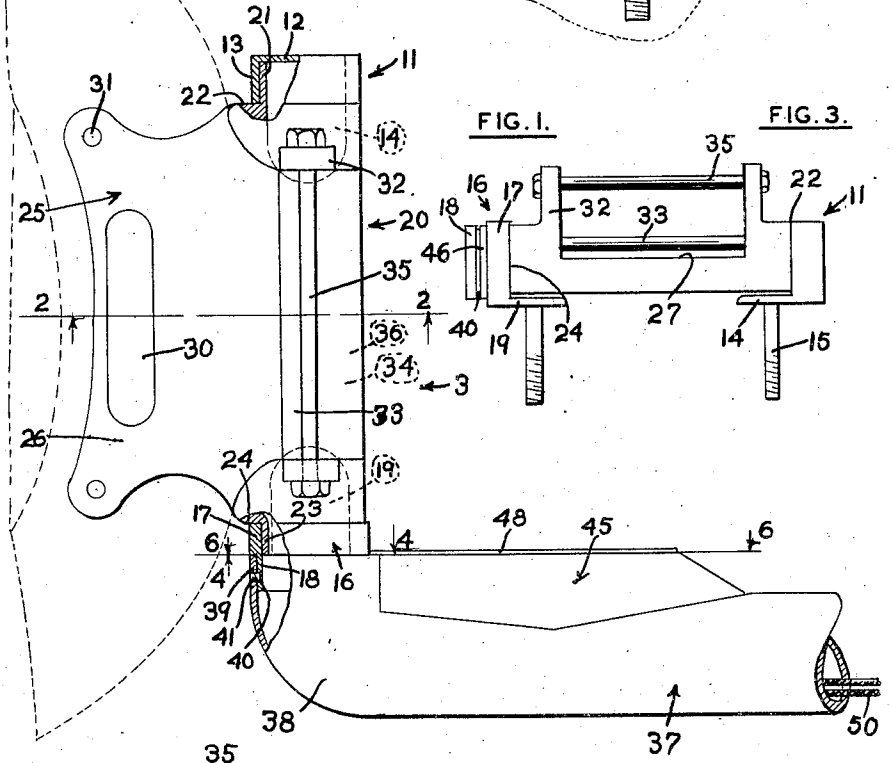


FIG. 1.

FIG. 3.

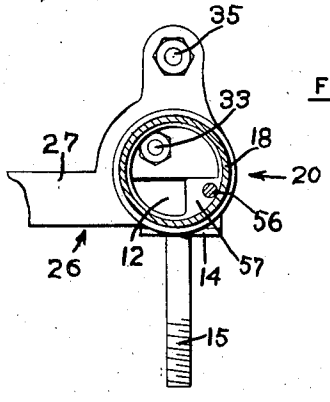


FIG. 4.

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FIG. 5.

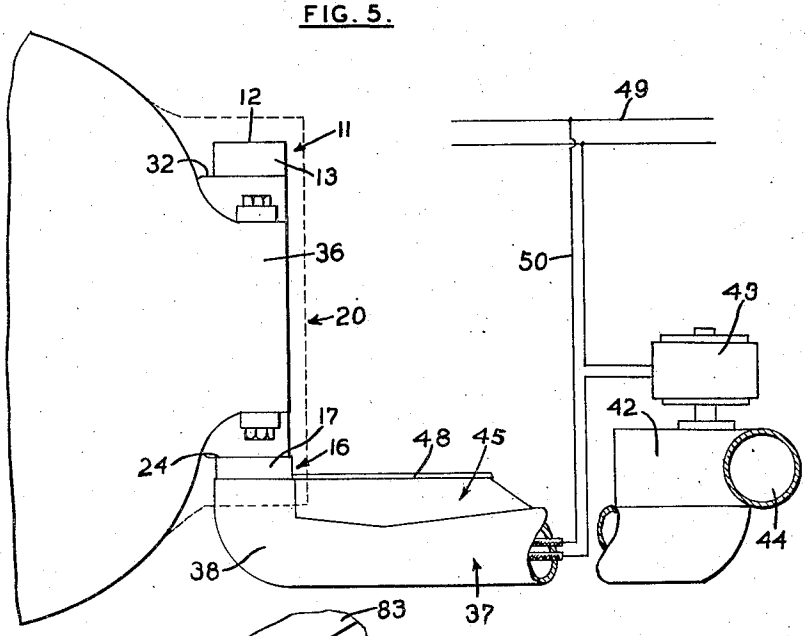


FIG. 13.

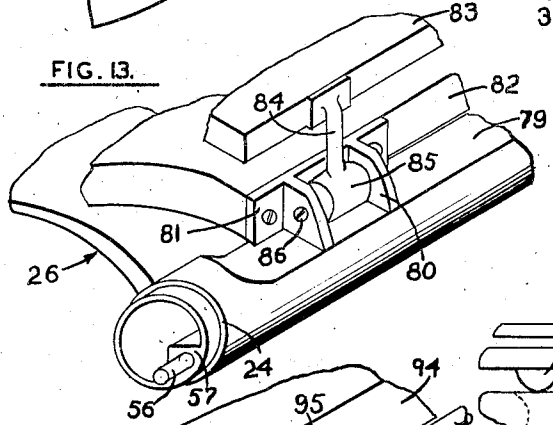


FIG. 15.

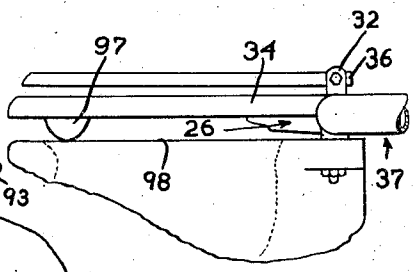
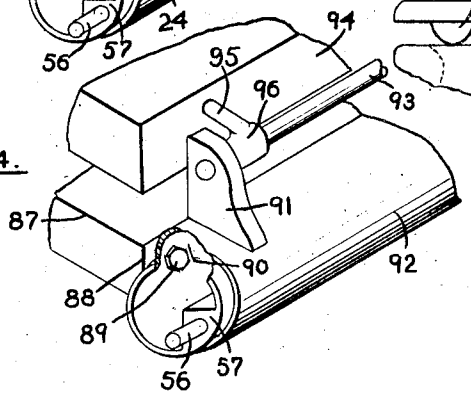


FIG. 14.



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FIG. 6.

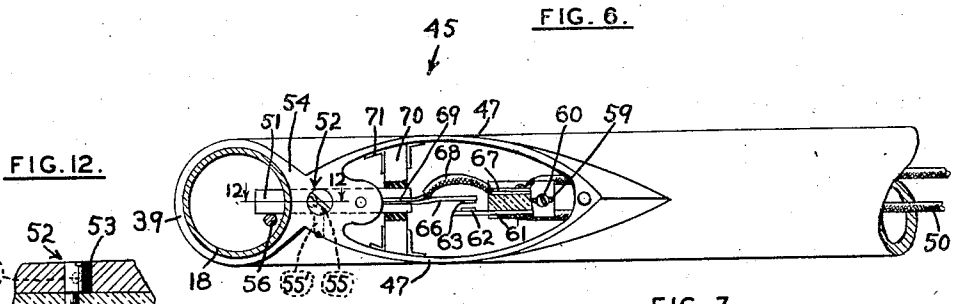


FIG. 12.

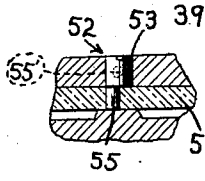


FIG. 7.

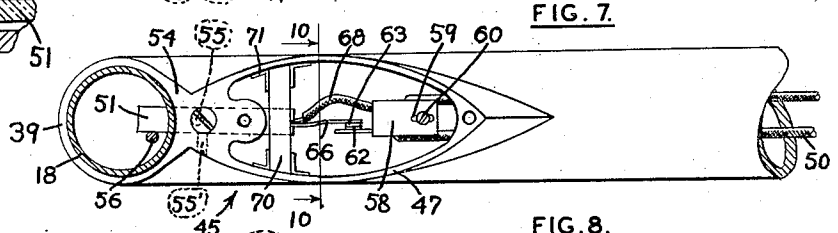


FIG. 8.

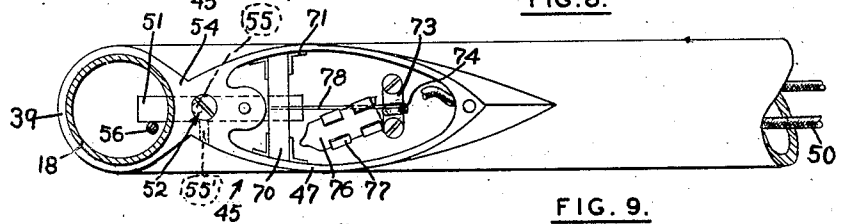


FIG. 9.

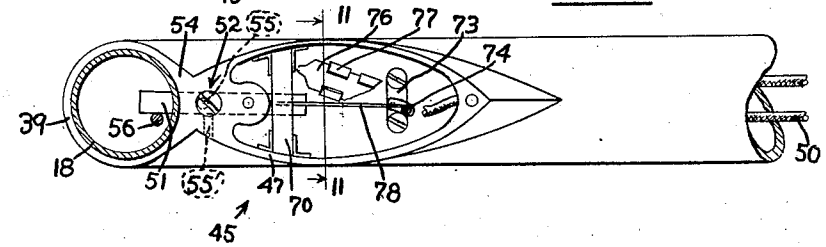


FIG. 10.

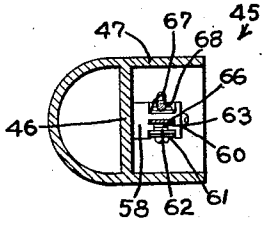
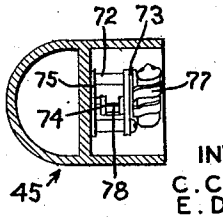


FIG. 11.



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UNITED STATES PATENT OFFICE

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VENTILATING ATTACHMENT FOR TOILET SEATS

Application filed July 24, 1929. Serial No. 380,629.

Our invention pertains to a ventilating attachment for toilet seats somewhat of the type set forth in U. S. Patent 1,666,465, dated the 17th of April, 1928, issued to Charles C. Norris.

An object of our present invention is an improved form of hollow pintle which forms the pivot for the seat, the pintle being mounted in a suitable manner on the toilet bowl and also in an improved connection of the hollow or tubular pintle, to the fixed air conduit leading to an exhaust motor discharging to a discharge flue.

Another object of the present invention is an improved manner of mounting the hollow pintle on the bowl, in which bearings are provided and bolted to the bowl, one of these bearings forming a closure for the end of the pintle and the other forming a bearing for the hollow pintle, and also a connecting means for the fixed duct drawing the air from the hollow pintle.

A further object of our invention comprises the manner of attaching the hollow pintle to the seat, in which a chamber extends from one side of the pintle partly under the rear portion of the seat and has an air opening leading to the bowl. A number of detail improvements feature the manner of bolting the seat to the hollow pintle, as by bolts extending inwardly from the sides and screws or bolts extending from the hollow pintle or bracket thereon into the rear end of the seat.

Another object of our invention comprises the manner of mounting and construction of the electric switch for controlling the current to the exhaust electric motor. Such switch is mounted in a switch housing attached to or forming a compartment in the fixed exhaust duct which is connected to the hollow pintle. The switch is operated by a lever and the lever actuated by the slight depression of the seat when the seat is brought into engagement with the bowl. The seat normally when out of use is positioned slightly above the bowl, by resilient spacers.

Our invention as applied to toilet seats is illustrated in the accompanying drawings, in which,

Figure 1 is a plan of our attachment;

Fig. 2 is a vertical section on the line 2—2 of Fig. 1 in the direction of the arrows, presuming the seat and cover secured to the attachment;

Fig. 3 is an end view taken in the direction of the arrow 3 of Fig. 1, omitting the air duct;

Fig. 4 is a detail vertical section on the line 4—4 of Fig. 1, taken in the direction of the arrows;

Fig. 5 is a plan taken in the direction of the arrow 5 of Fig. 2 and also showing the air conduit, the exhaust blower and the electric wiring;

Fig. 6 is a detail vertical section on the line 6—6 of Fig. 1 in the direction of the arrows, showing a contact type of switch with the contact opening;

Fig. 7 is a view similar to Fig. 6, with the contact closed;

Fig. 8 is a view similar to Fig. 6, showing an electric switch with the circuit open;

Fig. 9 is a view similar to Fig. 8, showing an electric switch with the circuit closed;

Fig. 10 is a detail transverse section on the line 10—10 of Fig. 7 in the direction of the arrows;

Fig. 11 is a section on the line 11—11 of Fig. 9 in the direction of the arrows;

Fig. 12 is a detail section on the line 12—12 of Fig. 6, showing the eccentric construction for shifting the switch lever;

Fig. 13 is a partial perspective view, showing our attachment as applied to a different type of seat and cover;

Fig. 14 is a partial perspective view, showing our attachment applied to still another type of seat and cover;

Fig. 15 is a side elevation, showing the mounting of our invention on a bowl.

Our attachment is applied to the bowl by using at one end of the tubular pintle a bearing 11 which is illustrated as having an end wall 12 and an inwardly turned annular flange 13, thus forming a cup. Extending underneath there is a plate 14 from which projects a bolt 15. At the other end there is a bearing 16 which has preferably a ring 17 and an inner cylindrical projection 18. This also has a plate 19 with a similar bolt to 15.

These bolts are attached to the toilet bowl by nuts or the like. They form a bearing for the tubular pintle 20, which pintle has an end section 21 fitting in the cup bearing 11, there being a shoulder 22 allowing the correct seating of the pintle in the bearing. At the opposite end the pintle has a bearing section 23 seated inside of the ring 17 and also having a shoulder 24 forming a limit in the seating.

Extending forwardly from the pintle there is an air intake structure 25. This has a flat top 26 which merges into the flat top 27 of the pintle. It is also provided with a bottom plate 28 with the opening 29 therein. A depression 30, V-shaped in cross section, has the lower edge of the V forming one side of the opening 29. There are screw holes 31 for the insertion of screws through the air intake into the bottom of the seat.

The flat top 27 of the pintle only extends between the upwardly extending lugs 32 and there is a bolt 33 having a head on one end and a nut on the other extending through these lugs from the interior of the circular pintle and through the rear end 34 of the seat. There is also a bolt 35 through the upper part of the lugs 32 which forms a pivot for the cover 36. By this construction the cover and the seat being secured to the tubular pintle may be pivoted upwardly or swung downwardly over the bowl turning on the bearings 11 and 16 respectively which are securely bolted to the bowl. A tubular air duct designated generally as 37 (note Figs. 1 and 5) has an elbow 38 and an inner cylindrical section 39 which fits on the section 18 of the bearing 16. There is an annular groove 40 in this section 18 which is engaged by a set screw 41, thus holding the duct 37 in a secure position on the bearing.

The duct is fixed immovably and is connected to a blower housing 42 having a blower fan therein, this blower being driven by an electric motor 43 and discharging into a discharge flue 44. The motor and discharge flue may be located in any desired position.

The duct 37 has a switch housing 45 built integral therewith. This housing has a flat base 46 and side walls 47 which merge into the walls of the duct 37 and is provided with a cover 48 making an enclosure for the switch. Electric leads for the motor come from the power line 49 (note Fig. 5); there being leads 50 which extend to the motor and through the duct 37 entering the switch housing from the discharge end of the duct.

The contact switch construction of Figs. 6 and 7 employs a switch operating insulating lever 51 which is mounted on a pivot pin 52, this pivot pin having a cylindrical pin 53 extending through a hole in part of the casting 54 and having an eccentric 55 thereon which engages the insulating lever 51. The pin is held locked by a set screw 55′ extending through the side of the casting. By slightly turning the pin by means of the kerf in the end, the position of the lever 51 may be slightly adjusted. One end of this lever is positioned to engage a fixed contact pin 56 which is mounted in the cylindrical end of the hollow pintle, being secured in the lug 57. When the seat extends above the bowl but out of contact therewith, before weight is put on the seat, the switch is open. A slight movement caused by the depressing of the seat tilts the lever 51 through the pin 56 bearing thereagainst and rocks this lever.

The switch employs an insulating block 58 which is provided with a slot 59 and mounted by a screw 60 in the switch housing. The electric leads are connected to conducting strips 61 so that the slight adjustment of the block 58 adjusts these bars. One of the bars has a contact 62 to be engaged by a moving contact 63 on a conducting bar 66 which is attached to the switch operating lever 51. Another conducting strip 67 is connected to the block 58 and hence to one of the leads and has a flexible connection with a strip 68 leading to the switch lever 51. The adjustability of the block 58 is to accommodate the slight shifting of the operating lever 51. The two strips 66 and 68 make an electric contact as indicated at 69 in the end of the switch operating lever 51. A rubber partition 70 is secured in the switch housing between brackets 71 and has an opening for the switch lever. This rubber distorts slightly in the movement of the lever but prevents moisture passing from the hollow pintle into the switch compartment.

By the above construction it will be seen that when the switch is in the open position, the seat being slightly above the bowl and when weight is applied to the seat by a person sitting thereon, the seat is depressed until the pin 56 operates the switch lever 51 sufficiently to bring the contacts 62 and 63 into engagement, thus establishing a circuit through the leads 50 which extend through the air duct 37, thence into the switch housing and by means of the switch block 58 and the strips 61 and 67, 66 and 69, complete the circuit. The electric motor 43 is then energized and the operating of the suction fan 42 draws air through the opening 29 into the hollow pintle and thence into the duct 37 and discharging the air through the discharge flue 44. The slight lifting of the seat off the bowl by the release of the weight thereon, causes the opening of the switch and stopping of the motor.

In Figs. 8, 9 and 11 we show a construction in which a mercury switch may be utilized instead of the contact switch of Figs. 6, 7 and 10. This employs a pair of studs 72, which studs are connected to the base 46 of the switch housing and have a plate 73 mounted thereon. A crank 74 is pivotally mounted in the plate 73 and also in the plate 75 at-

tached to the base 36. The tube 76 carrying the mercury is mounted in a holder 77 which is rigidly connected to the crank 74, the tube has electrical connections leading to the contacts inside of the tube adapted to engage mercury free to flow in such tube. The switch lever 51 has a resilient arm 78 rigidly connected thereto, the outer end of this arm being connected to the arm 74. Therefore when the lever 51 is rocked the crank is shifted to either one position or the other in reference to the horizontal and thus changes the inclination of the tube having the mercury.

In Fig. 8 this shows the position with the circuit open and in Fig. 9 the position with the circuit closed. In this construction the pivotal mounting of the lever 51 may be varied as above described. The mercury switch may be slightly shifted on the base 46 to accommodate such changes.

On account of the great variety of constructions of toilet seats and covers, it is necessary to make our attachment in various designs in order to fit these, but we utilize the principles of construction set out above. Some of these modified forms are illustrated in Figs. 13 and 14 in which in one form the flat top 79 of the tubular pintle is illustrated as having a bracket construction 80 connected thereto, such bracket having a plate 81 which is attached to the rear end 82 of the seat. The top 83 has an arm 84 connected thereto, this arm having a knuckle 85 which is mounted on the hinged pintle 86, thus allowing tilting of the cover independent of the seat.

In the construction shown in Fig. 14, the seat 87 has its rear edge 88 substantially in the same plane as the tubular pintle and is secured thereto by having bolts 89 extending through a portion 90 of the pintle from the inside, these bolts being secured in the seat. The bolts are adjacent the upper ends of the pintle so that they may be tightened up by a special wrench before the bearing cap 11 is attached and before the conduit 37 is connected in position. In this case there are lugs 91 on the upper surface of the tubular pintle 92. A rod 93 connects these lugs and a cover 94 is connected by bolts or screws 95 extending into the rear end of the cover and having hubs 96 on the rod 93.

It will be noted by our construction that the ring-like bearings may be inserted on either end of the tubular pintle. The bearing for the closure forms a closure for the end of the pintle and therefore the air duct may be connected at either side of the toilet bowl. The pin for shifting the switch lever may be attached to either end of the tubular pintle.

In Fig. 5 is illustrated the manner of resiliently holding the seat on the bowl to allow depression thereof to close the switch. In this illustration a rubber button 97 is attached to the underside of the seat and bears against the upper edge 98 of the bowl. This rubber has sufficient resistance to hold the seat with the circuit open, however, when pressure is placed on the seat, the rubber compresses and allows a slight tilting downward of such seat, sufficient to close the switch, giving the circuit to the electric motor operating the exhaust fan.

Various changes may be made in the principles of our invention without departing from the spirit thereof as set forth in the description, drawings and claims.

We claim:

1. A device as described, having an air intake device attachable to a toilet bowl, an electrically controlled suction device, an electric switch having a pivotally mounted control lever, and means actuated by the pivoting of the air intake device relative to the bowl to open and close the said switch.

2. A device as described, comprising an air intake device for connection to a toilet bowl, an air duct leading therefrom, a suction device connected to the air duct, an electric switch having a mounting on the said duct, and an operative means between the air intake device and the switch to control the switch by the pivoting movement of the intake device relative to the bowl.

3. A device as described, comprising a hollow air intake device adapted for connection to a toilet bowl and to the seat, to pivot with the seat, an air duct leading to an electrically operated suction means, an electric switch mounted on the duct, and means interconnecting the air intake device and the switch to operate the switch on the pivoting movement of the seat relative to the bowl.

4. A device as described, comprising a bearing structure attachable to a toilet bowl, a hollow pintle mounted thereon, adapted for connection to a seat and having an air intake, an air duct connected to the pintle, an electric air suction means, an electric switch mounted on the duct, and an operative connection between the pintle and the switch to control the switch on the pivoting movement of the seat relative to the bowl.

5. A device as described, comprising bearing structures having means for attachment to a toilet bowl, a hollow pintle mounted in said bearings, the pintle having an air intake structure and being adapted for connection to a seat, a fixed air duct connected to the pintle, an electric switch mounted on the duct, a pivotally mounted lever controlling the switch, and means mounted on the pintle controlling the lever on the pivoting movement of the seat relative to the bowl.

6. A device as described, comprising bearing structures adapted for connection to a toilet bowl, a hollow pintle pivotally mounted on said structures, an air intake device connected to the pintle, the pintle being adapted

for connection to a seat, an air duct connected to one of the bearing structures, an electric control air suction means, a switch housing mounted on the duct, an electric switch therein, a lever pivotally mounted in the housing and extending into the air duct, and an interconnecting means between the pintle and the lever to operate the lever on pivoting movement of the seat relative to the bowl.

7. A device as described, comprising a ring-like bearing structure having means for attachment to a toilet bowl, a tubular pintle having a journal at each end in the said bearings, an air intake device connected to the pintle and adapted to be positioned underneath a seat, there being means to connect the pintle to the seat, a fixed air duct connected to one of the bearings, an electrically controlled air suction device connected to the duct, an electric switch mounted in a switch housing on one side of the duct, the switch having a pivotally mounted lever extending into the duct, a projecting device mounted on the pintle and positioned to engage the projecting end of the lever on pivoting movement of the seat relative to the bowl.

8. A device as described, comprising a pair of ring-like bearings, one of which has a closure end, means to attach said bearings to a toilet bowl, a hollow pintle journaled in said bearings, the closed end of one of the bearings forming a closure for the pintle, a hollow air intake structure connected to the pintle, a seat connected to the pintle, the said structure extending underneath the seat, an electric motor operating a suction blower connected to the duct, a switch housing having an electric switch with electric leads to a source of supply and to the motor, the switch having a pivotally mounted contact device operated by a pivotally mounted lever, the lever extending from the housing into the air duct, and a pin extending from the pintle, positioned to engage the said lever and open and close the switch on movement of the seat relative to the bowl.

9. A device as described, comprising in combination a pair of ring-like bearings with means to secure same to a toilet bowl, a tubular pintle having a journal in said bearings, said pintle and bearings allowing reversal for the bearings to fit either end of the pintle, and one of the bearings having a closure for the open end of the pintle, an air intake structure extending from the pintle and adapted to fit underneath a toilet seat, an air duct connected to one of the bearings and means operated by the turning motion of the pintle to establish an air suction through the duct, the pintle and the air intake.

10. In a device as described, a pivotally mounted seat having an air suction means connected thereto, an electric control device to create the suction, a switch, a pivotally mounted lever to operate the switch, the pivot of the lever being shiftable for purposes of adjustment, and means to operate said lever by the tilting movement of the seat.

11. In a device as claimed in claim 10, the switch being mounted in a housing, the lever extending into said housing, and a rubber partition in the housing having an opening, the lever extending through said opening, the rubber partition being stretchable and compressible to allow movement of the lever.

12. In a device as described, a toilet seat having an air suction means connected thereto, an electrical control means to create the said suction, an electric switch, a pivotally mounted lever to operate the switch, the pivot of the said lever having a cylindrical portion mounted in a fixed structure, and an eccentric portion forming the journal for the lever, means on the lever to open and close the said switch, and means to operate the lever.

13. In a device as described, a toilet bowl having an air suction means connected thereto, electrically controlled means to create suction, an electric switch connected to the electrical means, a housing for the switch, a pivotally mounted lever, one end of the lever extending into the housing and another end extending out of the housing, the switch being operated by the movement of the lever.

14. A device as described, a hollow pintle structure adapted for connection to a toilet seat, a pair of journal structures adapted to mount either end of the pintle structure and connectible to a toilet bowl, an air duct having a housing thereon with an electric switch, an electrical control device to operate a suction connected to the duct, the duct being attachable to either of the journal structures, at either end of the pintle, a removable pin securable in either end of the pintle, and a lever extending from the switch housing into the duct, positioned to be engaged by the said pin.

15. A device as described having in combination a toilet bowl with a seat having a pivotal connection thereto, an air intake attachment secured to the seat, an electrically controlled suction device, an electric switch having a pivotally mounted control lever, a cushion positioned between the seat and the bowl, means actuated by the compression of the cushion and pivoting of the seat in reference to the bowl to operate the said lever and thereby open and close the said switch.

In testimony whereof we have signed our names to this specification.

CHARLES C. NORRIS.
ERIC DAVID MORSE.