May 26, 1925. 1,539,573

J. C. JEFFRIES

WATER CLOSET VENTILATOR

Filed Feb. 9, 1924

Fig. 1.

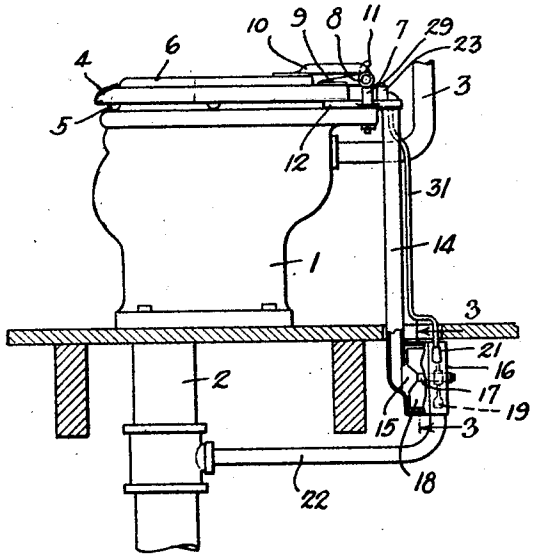


Fig. 2.

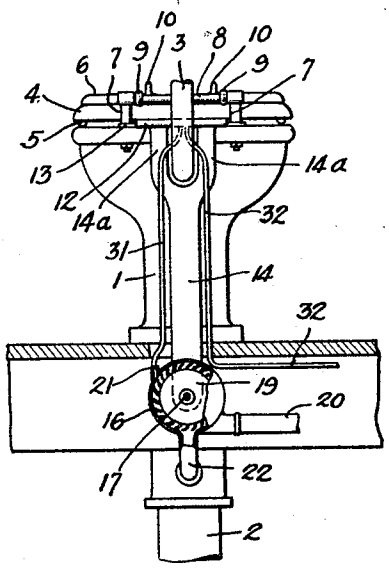


Fig. 4.

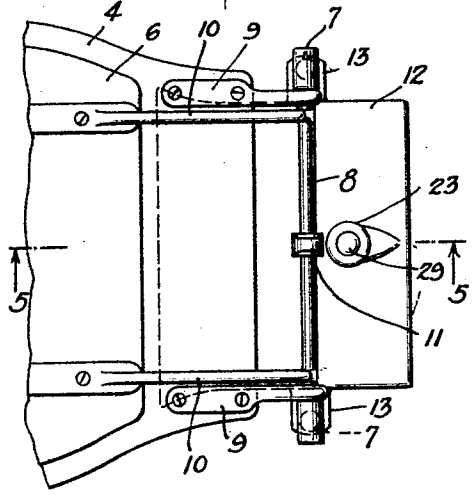


Fig. 3.

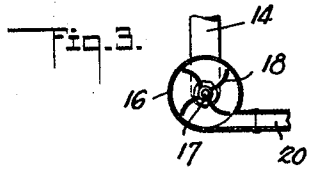
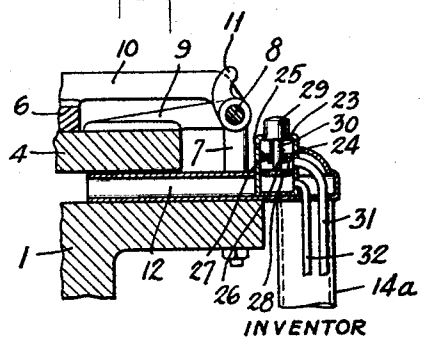


Fig. 5.



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UNITED STATES PATENT OFFICE.

JESSE C. JEFFRIES, OF BIG CREEK, CALIFORNIA.

WATER-CLOSET VENTILATOR.

Application filed February 9, 1924. Serial No. 691,550.

To all whom it may concern:

Be it known that I, JESSE C. JEFFRIES, a citizen of the United States, residing at Big Creek, in the county of Fresno and State of California, have invented certain new and useful Improvements in Water-Closet Ventilators, of which the following is a specification.

This invention is a ventilator adapted to be attached to a water closet for withdrawal of foul air from the bowl; and it is the object of the invention to provide an extremely simple and compact construction, including a fan for withdrawing the foul air, and a water motor for operating the same, said fan and motor being positioned below the flooring upon which the water closet stands, with a valve controlling the flow of said water motor, mounted on the closet bowl in rear of the seat, so as to be actuated by raising the cover for said seat.

It is a further object of the invention to withdraw the foul air from the water closet through a flattened air chamber projecting between the closet seat and the rim of the closet bowl, so as to open into said bowl, the air chamber communicating with the suction fan through a conduit extending upwardly from said fan, and having a forked upper end straddling the flushing pipe for the closet bowl and connected to said air chamber.

It is a still further object of the invention to provide an extremely simple but practical valve mechanism controlling the flow to the water motor, said valve mechanism including a casing mounted in the flattened air chamber in rear of the closet seat, so that the valve stem projecting from said casing may be actuated by an operating member fixed relative to the swinging closet seat cover, and said valve casing having intake and discharge pipes for the flow to the water motor, extending downwardly on opposite sides of the flushing pipe for the closet bowl, to a source of water supply and to the water motor respectively.

It is a still further object of the invention to provide simplified means for opening the water control valve by raising the seat cover, said operating means including a cam fixed upon a usual hinge rod journaled at the rear of the closet bowl, the seat for the closet bowl being loosely journaled on said hinge rod, and the seat cover being fixed to said rod, so that lifting said cover will turn the hinge rod and the cam fixed thereto, to cause engagement of said cam with the stem of the water control valve.

Further objects of the invention will be readily understood from the following description of the accompanying drawings, in which:

Fig. 1 is a side elevation of a water closet having the improved ventilator attached thereto.

Fig. 2 is a rear elevation of the same.

Fig. 3 is a detail section on the line 3—3 of Fig. 1.

Fig. 4 is a fragmentary plan view of the water closet and ventilator.

Fig. 5 is a vertical section on the line 5—5 of Fig. 4.

The water closet having the improved ventilator attached thereto, comprises a usual bowl 1, provided with a drain 2, and a flushing pipe 3 projecting rearwardly and upwardly from the rear of the bowl. A hinged seat 4 is spaced from the rim of the bowl by usual bumpers 5, and said seat is provided with a usual hinged cover 6.

The hinge mechanism for the seat and its cover comprises bearing bolts 7 fixed on the rear portion of the rim of the bowl at the respective sides thereof, with a hinge rod 8 journaled in said bearings and extending across the rear of the closet bowl. Bearing brackets 9, fixed to the seat of the closet, are loosely journaled on rod 8, and brackets 10 fixed to said rod and extending forward therefrom, are secured to the seat cover, so that raising said cover will turn the hinge rod.

A cam 11 is fixed to and extends rearwardly from the hinge rod, preferably midway of its length, the cam being adapted to engage the control valve of the ventilator, when the hinge rod is turned by lifting the seat cover, in order to open said valve and create a suction through the ventilator, as will be hereinafter described.

The ventilator comprises a flattened suction chamber 12, mounted on the rear of the closet bowl and extending forward between the rim of the bowl and the seat 4, said chamber being open at its front end which projects into the closet bowl, so that the foul air from the bowl may be drawn into said chamber. The suction chamber is provided with laterally extending ears 13

adapted to be engaged by bearing bolts 7, for retaining the chamber in place upon the closet bowl.

A conduit 14 extending vertically in rear of the closet bowl, has a forked upper end straddling the flushing pipe 3, the branches 14ª of said forked conduit communicating with the rear of air chamber 12.

The lower end of conduit 14 extends below the flooring upon which the water closet is mounted, and communicates axially with one end of a cylindrical casing, which has a transverse partition midway of its length, to form a suction chamber 15 into which conduit 14 opens, and a housing 16 at the opposite end of said casing.

A shaft 17 is journaled axially in the cylindrical casing, with a fan 18 fixed on said shaft in suction chamber 15, and a water motor 19 secured to said shaft in housing 16. The air drawn into suction chamber 15 by the fan, is discharged through a conduit 20 extending from the periphery of said chamber to a usual vent (not shown).

A nozzle 21 for discharging water against water motor 19, is mounted in the periphery of housing 16, and a water discharge conduit 22 extends radially from the bottom of said housing and is preferably connected to the drain 2 of the closet bowl.

It will thus be seen that flow of water through nozzle 21 will turn the water motor and the suction fan, and thereby create a suction through conduit 14 and air chamber 12, for withdrawing foul air from the closet bowl.

The valve mechanism actuated by cam 11, and controlling flow of water through nozzle 21 to the water motor, comprises a closed casing 23 mounted in chamber 12 in rear of cam 11, and preferably extending above said chamber. This casing has a horizontal partition 24 forming a valve seat, and a second partition 25 spaced above the same and forming a guide for valve stem 26 which extends through a suitable stuffing box 27. The valve stem has a valve head 28 cooperating with valve seat 24, and is provided at its upper end with a plunger 29 projecting through the top of casing 23, so as to be depressed by cam 11 when the seat cover is raised.

A coil spring 30 is mounted on the valve stem in the space between partition 25 and the top of casing 23, said spring abutting against plunger 29 so as to normally elevate the valve stem and close the valve, but being adapted to yield to permit opening of the valve when plunger 29 is depressed by cam 11.

Pipes 31 and 32 communicate with the spaces formed in the valve casing above and below valve seat partition 24, said pipes extending rearwardly from casing 23 and downwardly and outwardly through air chamber 12, and thence downwardly at opposite sides of flushing pipe 3 below the flooring upon which the water closet is mounted.

Pipe 31 leads to the nozzle 21, and pipe 32 is connected to a suitable source of water supply (not shown). It will thus be seen that the valve is normally closed, thereby shutting off the water to the water motor, so that the suction fan is inoperative, but that when the seat cover of the water closet is raised so that the closet may be used, cam 11 will open the valve, so that water may flow to the water motor, and thereby rotate the suction fan for drawing foul air from the closet bowl through chamber 12.

It will be apparent that various changes may be made in the construction, combination, and arrangement of parts as thus described, without departing from the spirit of the invention.

What is claimed is:

1. The combination with a water closet having a flushing pipe projecting therefrom, of an air chamber communicating with the closet bowl over the rim thereof, a conduit having a forked end adapted to straddle said flushing pipe and communicating with said air chamber at the respective sides thereof, a suction fan connected to said conduit, a fluid motor for operating the same, a valve casing in said air chamber medially thereof, said valve casing having a valve and a valve stem projecting therefrom and adapted to be actuated by lifting of the seat cover of the water closet for opening said valve, and intake and discharge pipes communicating with said valve casing and extending outwardly through said air chamber and thence along opposite sides of said flushing pipe for connection with a source of fluid supply and with said fluid motor respectively.

2. The combination with a water closet having a seat and a seat cover, of an air chamber communicating with the bowl of said closet between the rim thereof and said seat, means for creating a suction through said air chamber, suction controlling means on the rim of the closet bowl, a hinge rod journaled on the closet bowl, the closet seat being journaled on said rod, the seat cover being rigidly mounted on said rod, and a cam fixed to said rod and adapted to engage the suction controlling means for actuating the same when the hinge rod is turned by lifting of the seat cover.

3. The combination with a water closet having a seat and a seat cover, and a flushing pipe projecting from the bowl of said closet; of an air chamber communicating with the bowl of said closet between the rim thereof and said seat, a conduit having a forked end adapted to straddle said flushing pipe

and communicating with said air chamber at the respective sides thereof, a suction fan connected to said conduit, a fluid motor for operating the same, a valve casing in said air chamber medially thereof, said valve casing having a valve and a valve stem projecting therefrom, a hinge rod journaled on the closet bowl, the closet seat being journaled on said rod, the seat cover being rigidly mounted on said rod, a cam fixed to said rod and adapted to engage said valve stem for opening said valve when the hinge rod is turned by lifting of the seat cover, and intake and discharge pipes communicating with said valve casing and extending outwardly through said air chamber and thence along opposite sides of said flushing pipe for connection with a source of fluid supply and with said fluid motor respectively.

4. The combination in a water closet having a seat and a seat cover, of bearing bolts carried by said water closet, a hinge rod journaled in said bearings, the closet seat being journaled on said rod, the seat cover being rigidly mounted on said rod, a cam fixed to said rod, an air chamber mounted on said water closet, said air chamber communicating with the bowl of said closet over the rim thereof and under said seat, said bearing bolts engaging said air chamber for securing the same in position, means for creating a suction through said air chamber, and a rod controlling said suction creating means projecting above said air chamber so as to be engaged by said cam when the hinge rod is turned by lifting of said seat cover.

5. The combination with a water closet having a member overlying the same, of an air chamber mounted on said water closet in rear of said member and communicating with the bowl of said closet over the rim thereof and under said member, means for creating a suction through said air chamber, a fluid motor for actuating said suction creating means, a valve in said air chamber in rear of said overlying member, a valve stem for said valve projecting above said air chamber directly in rear of said member, a cam fixed relative to said overlying member adapted to directly engage said valve stem upon lifting of said overlying member for opening said valve, and a fluid conduit connecting said valve and said fluid motor.

In testimony whereof I have affixed my signature to this specification.

JESSE C. JEFFRIES.