

No. 754,695.

PATENTED MAR. 15, 1904.

W. J. POWERS, DEC'D.

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VENTILATING DEVICE FOR WATER CLOSETS.

APPLICATION FILED NOV. 29, 1901.

NO MODEL.

Fig. 1.

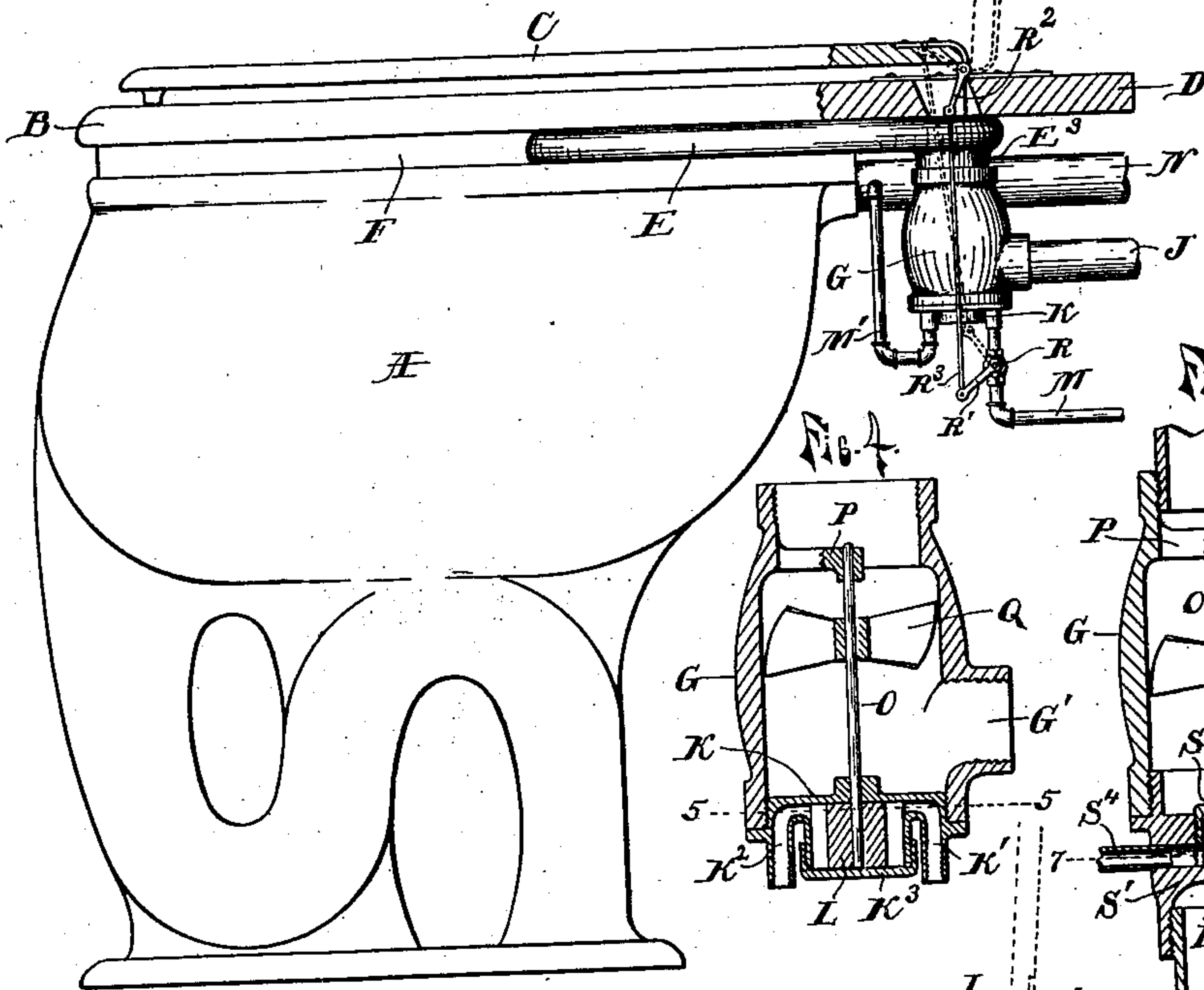


Fig. 4.

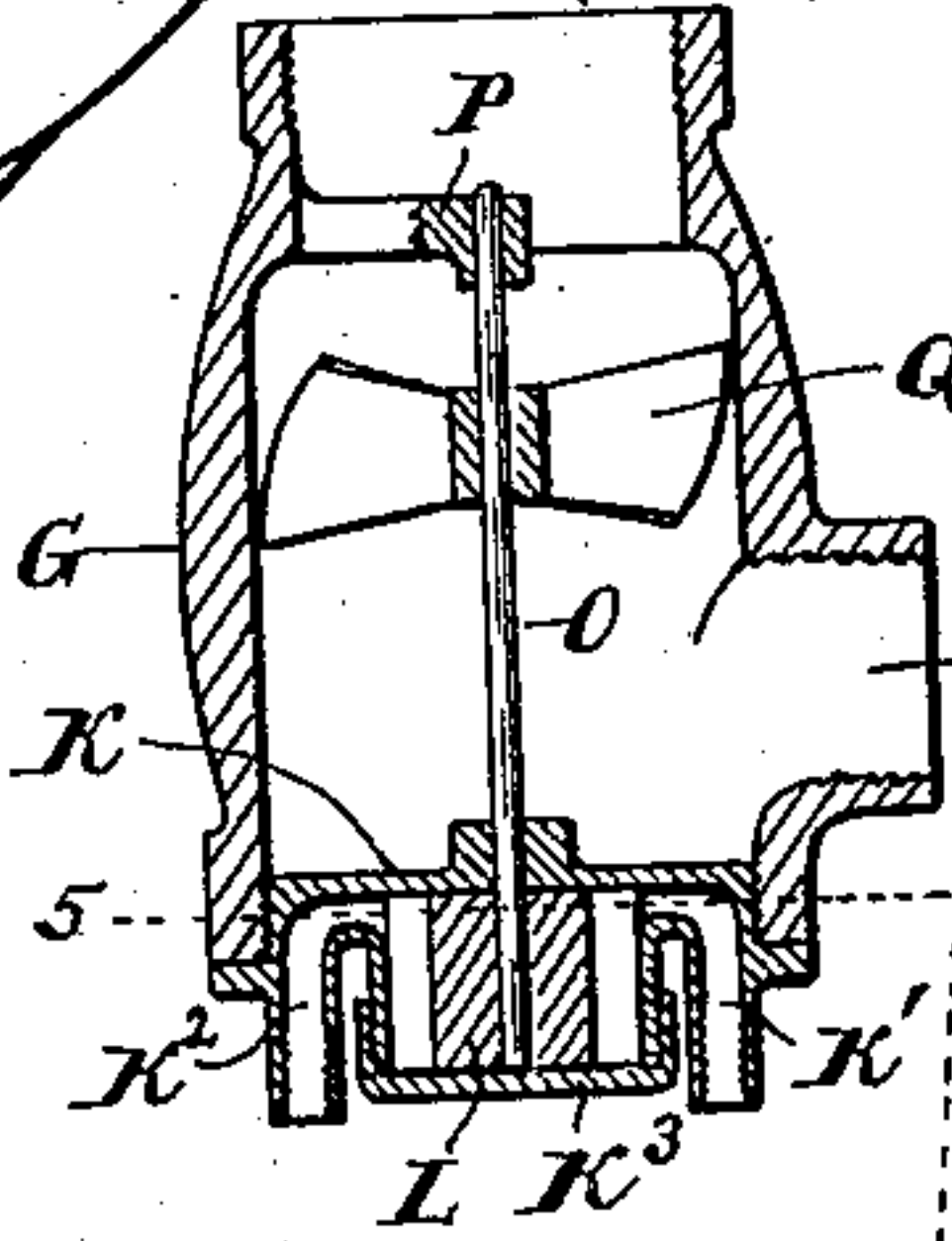


Fig. 6.

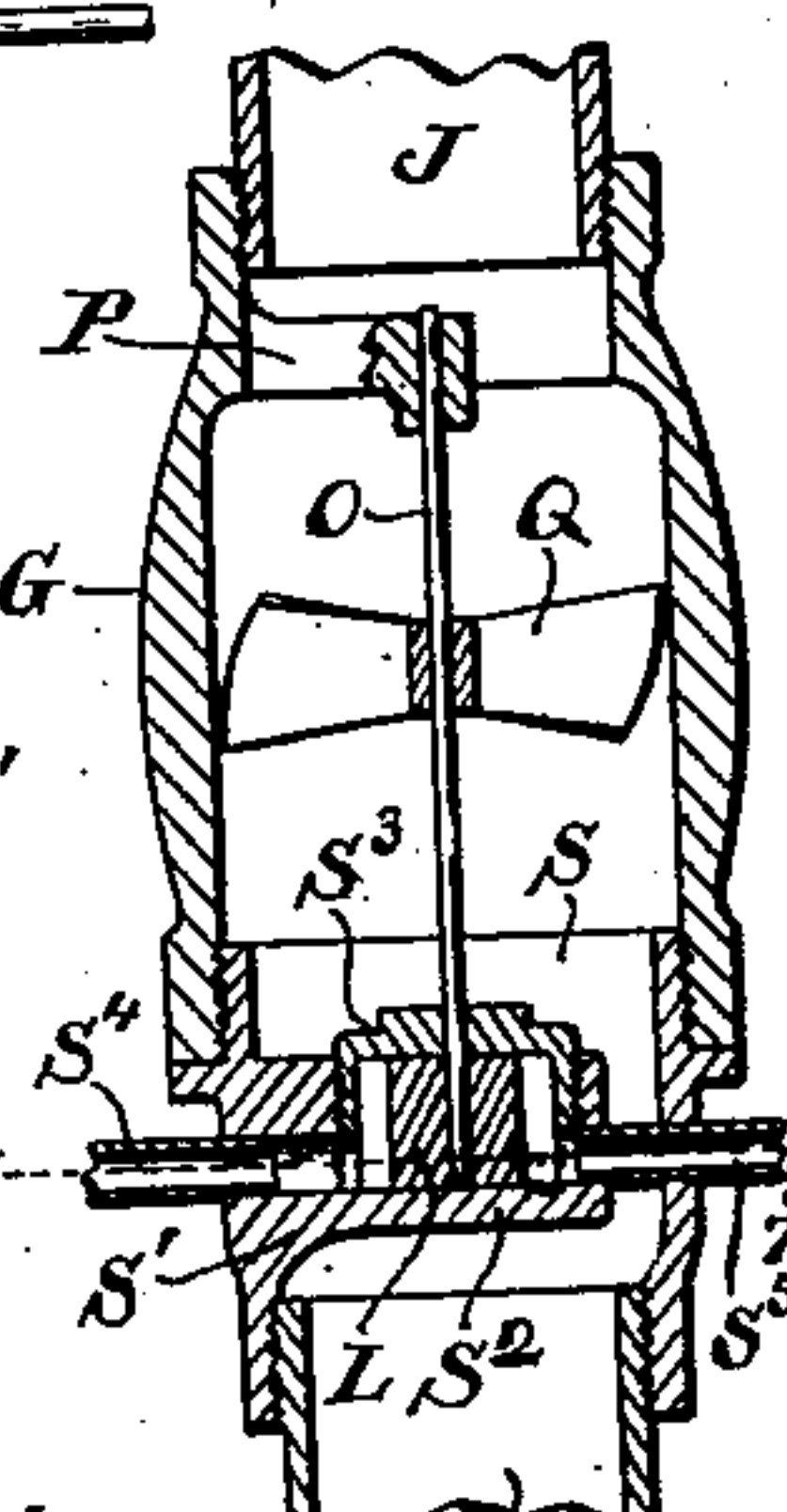


Fig. 2.

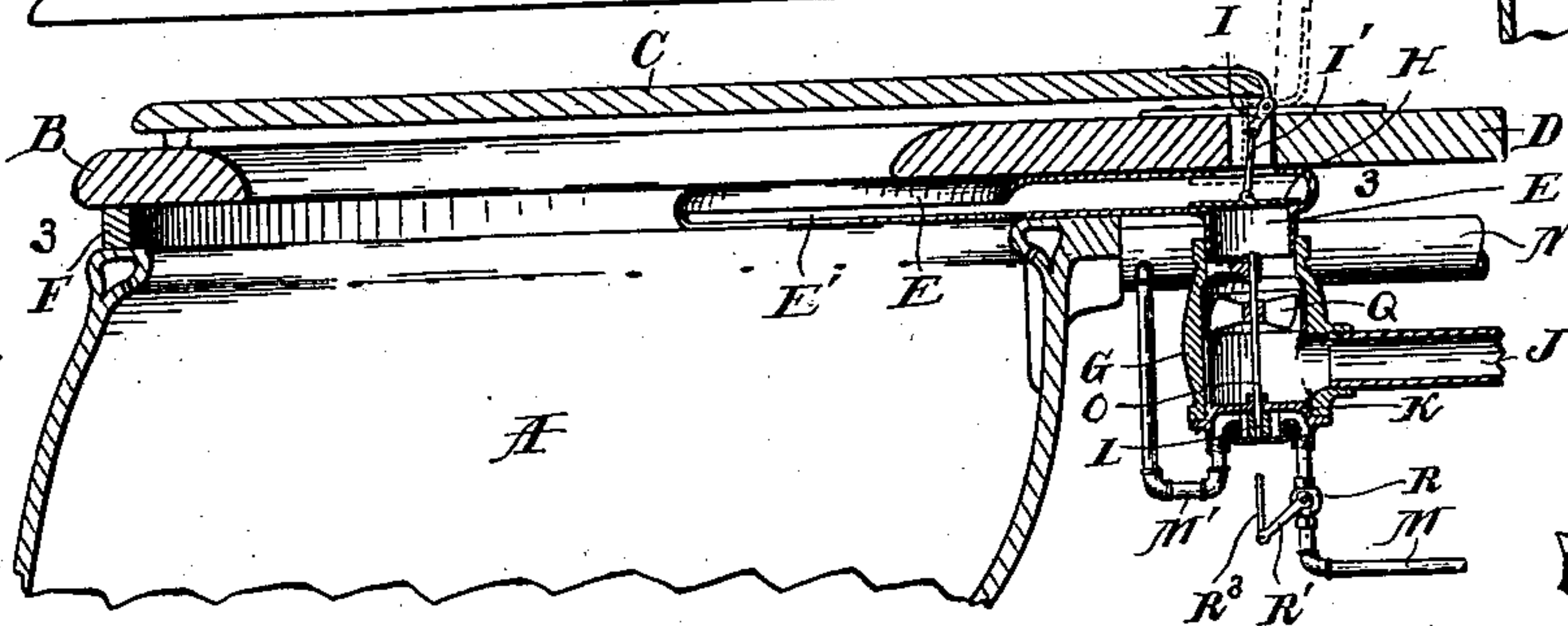


Fig. 5.

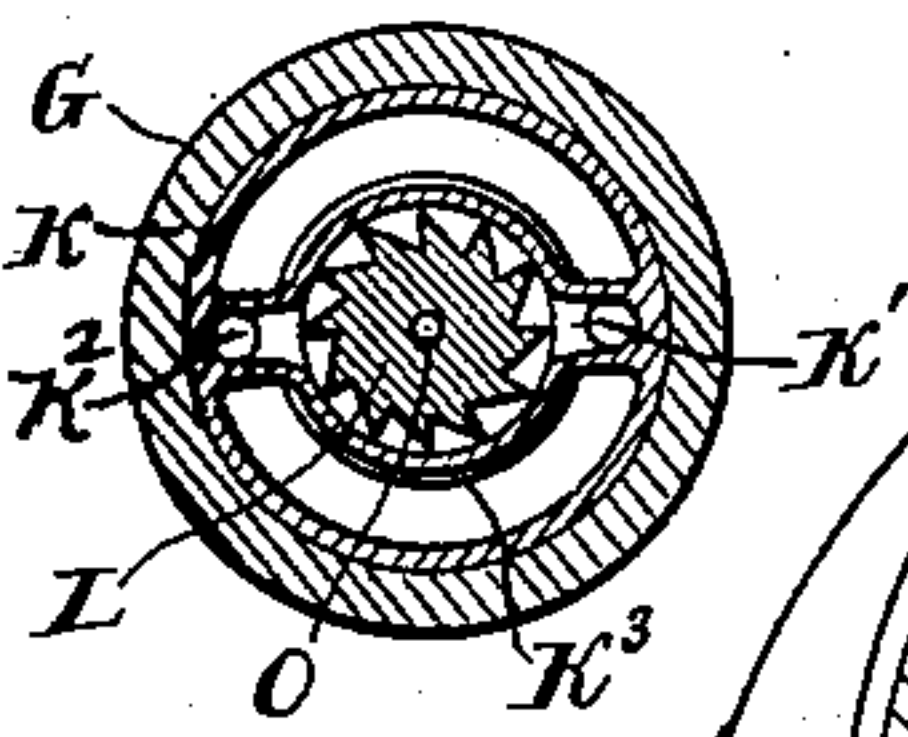
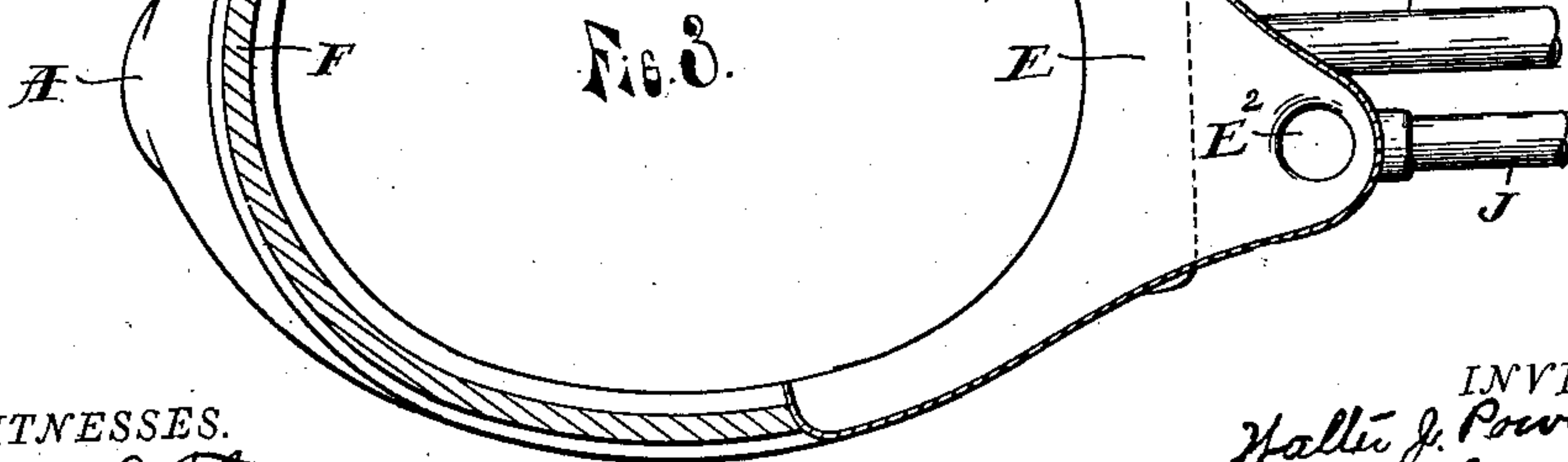
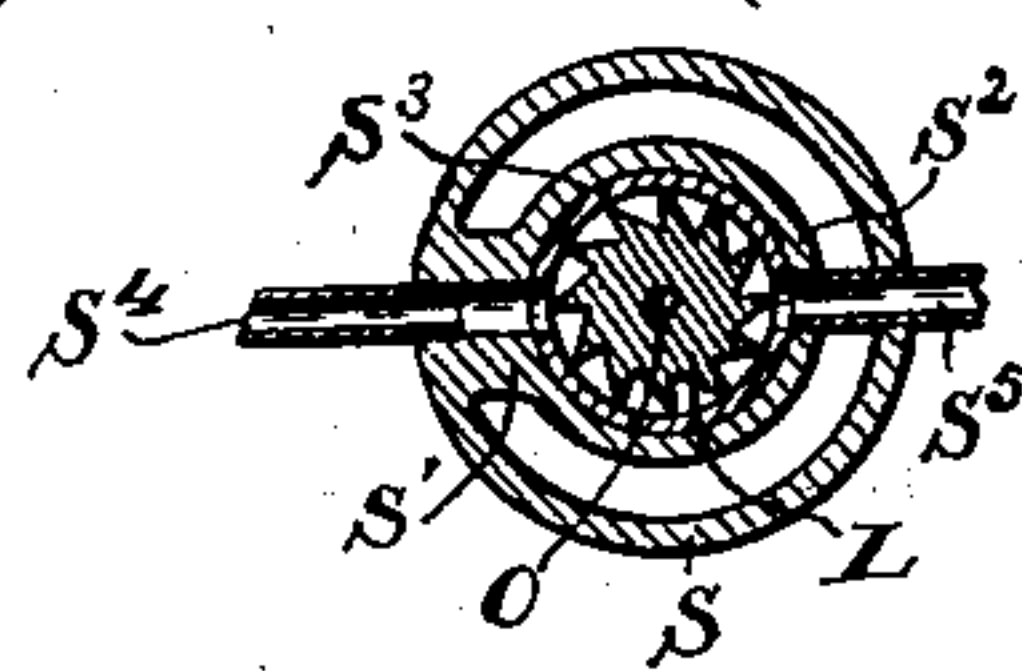


Fig. 7.



WITNESSES.

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UNITED STATES PATENT OFFICE.

JAMES H. POWERS, OF DETROIT, MICHIGAN, ADMINISTRATOR OF WALTER J. POWERS, DECEASED, ASSIGNOR TO JOHN J. FOSTER, OF WINDSOR, ONTARIO, CANADA.

VENTILATING DEVICE FOR WATER-CLOSETS.

SPECIFICATION forming part of Letters Patent No. 754,695, dated March 15, 1904.

Application filed November 29, 1901. Serial No. 84,198. (No model.)

To all whom it may concern:

Be it known that WALTER J. POWERS, deceased, late a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, did during his lifetime invent certain new and useful Improvements in Ventilating Devices for Water-Closets, &c., of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to improvements in sanitary devices for removing the foul air and gases from water-closet bowls while being used; and its object is to provide a device so constructed that it may be readily attached to any form of bowl that has a fan-casing forming a fitting adapted to be carried in stock by the trade and that is so constructed that the lowering of the seat-cover closes the passage between the bowl and ventilating-pipe to prevent the escape of the foul air, and the raising of said seat-cover opens said passage and at the same time sets the ventilating-fan in motion. To this end he provided a sheet-metal conduit adapted to be secured upon the rise of the bowl beneath the seat, and to this conduit is connected the ventilating-pipe in which is the fan for exhausting the air from the bowl and its actuating-motor. Said fan and motor are inclosed within a suitable casing, which forms a section of the ventilating-pipe, and are fixed upon a common shaft in the axis of the casing, a housing being provided for the motor with said casing. The controlling-valve for said motor is opened and closed by a rod connecting said valve and the seat-cover, and a plate adapted to close the opening from the conduit into the ventilating-pipe is also connected to said seat-cover, so that when the cover is down the gases cannot escape from the ventilating-pipe and when it is raised the opening is uncovered and the motor set in motion, all as will hereinafter more fully appear, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a device embodying his invention with a portion of the seat and cover broken away to show the con-

struction. Fig. 2 is a vertical section of the same through the fan and motor casing; Fig. 3, a section on the line 3 3 of Fig. 2. Fig. 4 is an enlarged vertical section through the axis of the fan-casing; Fig. 5, a section on the line 5 5 of Fig. 4. Fig. 6 is a vertical section showing a modified construction of fan-casing, and Fig. 7 a section of the same on the line 7 7 of Fig. 6.

A is a water-closet bowl of the ordinary construction, B the seat hinged to the frame D, and C the seat-cover, also hinged to said frame.

E is a sheet-metal conduit supported upon the rim of the bowl at the rear end thereof and is extended laterally along the same about one-half the distance around the opening therein, its forward side being curved to conform to the curvature of said opening and slitted adjacent to the rim of the bowl to form a narrow passage E', through which the foul air is drawn. A strip of wood or other suitable material F is also secured to the rim of the bowl, with its ends abutting against the ends of the laterally-extended portions of the conduit E, and forms a support for the seat and, together with said conduit, fills the space between said seat and the rim of the bowl. Said conduit is also extended rearwardly beyond the bowl and provided with an opening E² in its bottom, which opening has a downwardly-extended flange E³ to connect with the upper end of the fan-casing G.

To close the opening E² and prevent the escape of gases from the ventilating-pipe when the closet is not in use, a plate H is provided and secured to the hinge of the cover C, and turning on the hinge-pivot in a fixed relation to said cover is the arm I, to the outer end of which is pivoted a rod I', which rod is pivoted at its opposite end to the plate H and is adapted to lift the same to uncover the opening E² when the cover is raised.

The fan-casing G forms an elbow for the ventilating-pipe J, which pipe is screwed into an opening G' in the side of said casing, and into the lower end of the casing is screwed a head on which is formed the housing K for

the motor-wheel L, passages K' and K², leading to and from the housing, being also formed in said head, into which passages the water-supply pipe M and waste-pipe M' are screwed, the said motor-wheel being driven by the pressure of the water in the pipe M, which water is discharged into the closet-bowl through the pipe M' and the ordinary flushing-pipe N of the closet to which the pipe M' is connected. A cap K³ on the housing retains the wheel L therein and furnishes an end bearing for the same, said wheel being secured upon the end of a shaft O, which extends upward in the axis of said casing and is rotative in a bearing in the housing K and a bearing in the end of an arm P, extending inward from the side of the casing. A fan-wheel Q, secured on said shaft O above the opening G' in the casing, is driven by the motor to draw the air from the bowl and force the same out through the ventilating-pipe. To control the motor, a valve R is inserted in the water-supply pipe M, the stem of said valve being provided with an operating-arm R', and secured to the hinge of the cover C is an arm R², similar to the arm I, a rod R³ being provided to connect the arms R' and R², so that when the cover is raised the valve R will be opened to set the motor in motion.

It may in certain instances be desirable to insert the fan-casing G in the straight portion of the vent-pipe as a section thereof and not form the same for use as an elbow, in which case it may be constructed as shown in Figs. 6 and 7, the opening G' in the side of the casing being dispensed with and a fitting S screwed into the bottom of said casing. Projecting inward from the side of the fitting S is a bracket S', having a circular head S², which is bored out to form a housing for the motor-wheel, a cap S³ being provided to retain said wheel within its housing. A passage is bored through the side of the fitting and neck of the bracket into the chamber of the motor-casing, and into this passage is screwed the water-supply pipe S⁴, and the waste-pipe S⁵ is extended through the side of the fitting and screwed into the housing at the opposite side. This casing thus forms a section of the ventilating-pipe and may be placed in the main vertical pipe or in the branch thereof leading to the closet in a horizontal position. The waste-pipe S⁵ may be dispensed with in this construction and the water allowed to flow down the ventilating-pipe into the sewer, or where the casing is placed in the branch it may be allowed to flow into the bowl.

The fan, the casing, and the ventilating-pipe have a common axis. By placing within the axis of the casing the shaft upon which the fan is secured, the axis of said casing and of the ventilating-pipe being coincident, a casing having a diameter which is but little greater than the diameter of the ventilating-pipe is

required and a very neat and compact fitting is secured, which may be inserted in any suitable place in the ventilating-pipe.

What he claimed as his invention is—

1. In combination with a ventilating-pipe, a fan-casing forming a section of and in axial line with said pipe, a shaft extending longitudinally within the axis of said casing and mounted at one end in a bearing within said casing, a fan-wheel mounted upon said shaft within said casing, and means mounted on the same common shaft and in axial line with said pipe and fan-wheel for actuating said shaft and fan-wheel, said means being disposed beyond the end of said casing and a housing for said means formed in part by the bottom of said casing.

2. In combination with a ventilating-pipe, a fan-casing formed by a section of said pipe and having its fan-chamber concentric with the axis of said pipe, a housing on said casing and having its upper wall formed by the bottom wall of the casing, a shaft extending longitudinally within the axis of said chamber and projecting into said housing, said housing having a bearing for one end of the shaft, the other end of the shaft having a bearing in the opposite end of said casing, a fan-wheel mounted on said shaft, and a motor-wheel carried by said shaft within the housing and below the bearing of the lower end of said shaft.

3. In combination with a ventilating-pipe, a fan-casing forming a section of said pipe, a housing at one end of said casing and having its upper wall formed by the bottom wall of the casing, passages leading to said housing, a shaft disposed longitudinally of said casing and having a bearing at one end in the wall of said housing and at the other end within said casing, a closure for the lower end of the housing, a motor-wheel within said housing, and a fan-wheel in said casing, said motor and fan-wheel being mounted upon said shaft in axial line with said housing and casing, the closure for said housing forming a bearing for said shaft.

4. In a ventilating device for water-closets, in combination with the bowl, seat, and ventilating-pipe of a water-closet, a sheet-metal conduit adapted to be inserted between the seat and the upper rim of the bowl at the rear side of said bowl and open at its forward side and connected at the rear of the bowl with said ventilating-pipe, a filling-strip on the rim of the bowl with its ends abutting said conduit and supporting said seat, and means for exhausting the air from said bowl through said conduit.

5. In a ventilating device for water-closets, in combination with the bowl, seat, and ventilating-pipe of a water-closet; a sheet-metal conduit adapted to be secured to the rear side of the bowl-rim beneath the cover, which conduit is extended laterally along the rim at each side of the bowl, is provided with an elongated

opening in its curved inner side adjacent to the rim of the bowl, and is extended rearwardly beyond the bowl-rim and provided with a flanged opening for the attachment of the ventilating-pipe; and means for exhausting the air from the bowl through said conduit.

6. In a ventilating device for water-closets, in combination with the bowl, seat, seat-cover, and ventilating-pipe of a water-closet; a sheet-metal conduit adapted to be secured to the rim of said bowl at the rear thereof and extended rearwardly beyond the same and provided with a flanged opening for the attachment of the ventilating-pipe, a plate to close said opening, a rod pivoted to said plate and to the said seat-cover, and means for exhausting the air from the bowl when the said cover is raised.

7. In a ventilating device for water-closets, in combination with the bowl, seat, seat-cover, and flush and ventilating pipes of a water-closet; a sheet-metal conduit adapted to be secured upon the rim of the bowl beneath the seat and provided with an inner curved edge having an elongated opening adjacent to the bowl-rim, said conduit being also provided with a rearward extension having a flanged opening in its bottom, a plate to close said

flanged opening, an arm on the pivot of the seat-cover, a rod connecting said arm and plate, a fan-casing having an upper open end to receive the flange of said flanged opening and having an opening in its side to receive the ventilating-pipe, a housing in the lower end of said casing provided with an intake and a discharge-opening, a water-supply pipe communicating with the intake-opening, and a waste-pipe connecting the discharge-opening with the flush-pipe, a vertical shaft journaled in bearings in the axis of the casing, a fan-wheel mounted in said shaft, a motor-wheel secured in said shaft within said housing, a valve in the said water-supply pipe, an operating-arm on the stem of said valve, an arm secured to the pivot of the seat-cover, and a rod connecting the arm on the cover and the arm on the valve.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES H. POWERS,
Administrator of the estate of Walter J. Powers, deceased.

Witnesses:

OTTO F. BARTHEL,
JOSEPH A. NOELKE.