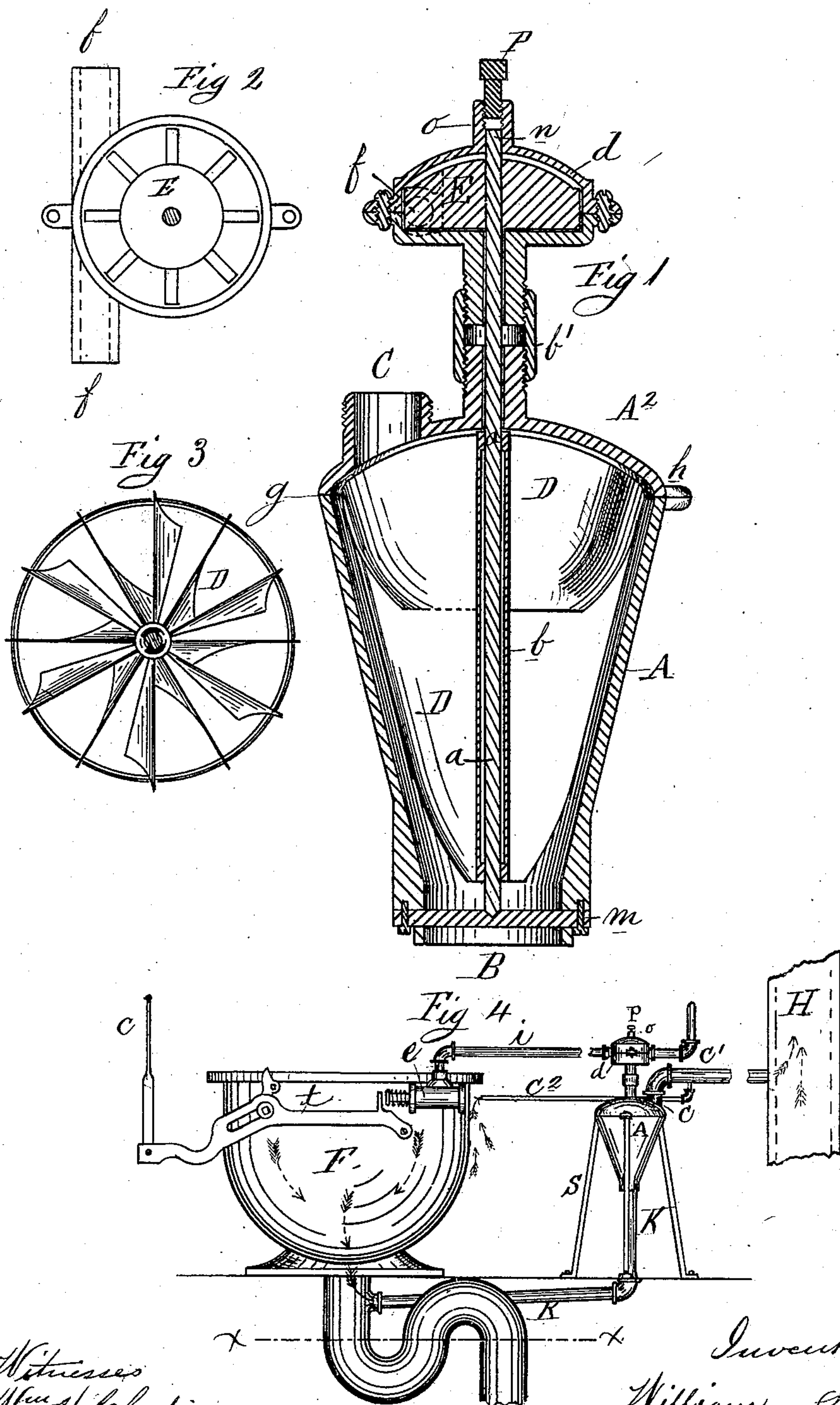


W. SELVEY.  
Water-Power Closet-Ventilator.

No. 206,491.

Patented July 30, 1878.



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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN WATER-POWER CLOSET-VENTILATORS.

Specification forming part of Letters Patent No. 206,491, dated July 30, 1878; application filed March 22, 1878.

*To all whom it may concern:*

Be it known that I, WILLIAM SELVEY, of Springfield, county of Hampden, and State of Massachusetts, have invented certain new and useful Improvements in Water-Power Ventilators for Water-Closets, Sinks, Drains, &c., which invention is fully set forth in the annexed specification and in the accompanying drawings.

In the drawings, which consist of four figures, Figure 1 is a vertical section of my ventilator complete. Fig. 2 is a plan view of the water-wheel case with its cover removed, the top of the water-wheel, and the water-pipe connections to said wheel-case. Fig. 3 is a plan view of the top of the fan. Fig. 4 shows the ventilator attached to a water-closet receiver and to the water-supply pipe thereof.

The object of my invention is to provide a means for thoroughly ventilating water-closets, &c., by forcibly drawing off, by the motion of the water ordinarily drawn for the use of a family, acting upon a water-wheel, foul odors or gases arising from water-closets or emanating from sewer-connections or damp cellars and closets, and discharging the same into a ventilating-flue.

In the drawings, A is the shell or case containing the fan. B is the inlet and C the outlet thereof. D is the fan. E is the water-wheel, furnishing the power for driving the fan D. *a* is the fan shaft or spindle. The sleeve *b*, to which the fan is fastened, is secured by any convenient means to spindle *a*, so as to leave a slight annular space between said sleeve and said spindle. Spindle *a* is stepped in bar *m*, which is secured across the lower end of case A, and also finds a side bearing at *n*.

F is the water-closet receiver. *c* is the handle, by which the valve at the bottom of receiver F is opened. *e* is a spring-valve, which is operated by handle *c*. *i* is a water-pipe, to which is connected the pipe *f f*, Fig. 2.

To the outlet C is connected a pipe, C<sup>1</sup>, for discharging the gases into the ventilating flue or chimney H. To the inlet is connected pipe K, which enters the pipe-outlet of the bowl or receiver just above the water-level (denoted by line *x x*) when the valve of the receiver is

closed. C<sup>2</sup> is a small pipe connected with pipe C<sup>1</sup>, for the purpose hereinafter specified.

Heretofore much difficulty has been experienced in trying to find some means to keep the foul gases incident to all sewer-connections and drain-pipes, &c., from rising therein and discharging into the room where they were located.

By means of stench-traps and various other appliances the difficulty has in a measure been overcome; but these have never given entire satisfaction, inasmuch as in the manner they are constructed, when they open to let anything pass by them, which is discharged into the pipe, abundant opportunity is oftentimes given for the gases arising therein to escape into the apartment.

My invention is designed to overcome all these difficulties, and to provide a ventilator which operates forcibly just at the moment it is most needed, and which is caused to operate, when set for a water-closet, by the same action which creates the necessity for it.

The body A is made of cast-iron, and is divided transversely at *g*, and consists of the said body and its cover A<sup>2</sup>, and is provided with ears or projections *h*, to permit of bolting the two parts tightly together.

The spindle *a*, bearing the fan D, is stepped in bar *m* and made to bear at the point *n*, requiring but little power to revolve it rapidly enough to produce the requisite draft of air. The water-wheel E and its case *d* are made, preferably, of brass, to prevent its rusting by the action of the water upon its surface.

The wheel-case is made in two sections, and fastened together in the same manner as the two portions of body A. The section of pipe *f* is cast onto the lower part of wheel-case *d*, as shown in Fig. 2. On the top and in the center of the wheel-case *d* is the projection *o*, serving as a bearing for the upper end of spindle *a*, a hole of the diameter of spindle *a* being drilled from the top of said projection through to the interior of the wheel-case *d*, the lower part of said hole serving as a bearing, *n*, for said spindle, and the upper part tapped to allow of the insertion of a screw, P, which serves as a brake or check to the fan D, when desired, by turning down the screw P un-



til it bears more or less on the top of spindle *a*. The wings of the fan should be so pitched as to secure the best upward draft of air. The wheel-case is secured to the body by coupling *b'*. It is unnecessary to put any packing around spindle *a* below the wheel-case *d* to prevent the slight escape of water through said bearing into the fan-case *A*, as a little water at bearing *n* and in the step of spindle *a* in bar *m* serves to lubricate the spindle, and any surplus runs off through pipe *K*.

In applying my ventilator to a water-closet, I prefer to place it inside the wooden casing, near the receiver, although it may be placed anywhere else, at any reasonable distance therefrom, if more convenient. If connected to the receiver by a lead pipe, so that it cannot thereby be supported in proper position, I screw the iron legs or supports *s* on the under side of the ears or projections *h*, as shown in Fig. 4, and place it where it can most conveniently be attached to the water-pipe *i*, supplying the receiver *F*, and connect said water-pipe to both ends of pipe *f* in such manner that all water passing through the pipe *i* to the receiver shall rapidly revolve water-wheel *E* and fan *D* on spindle *a*.

Thus, as soon as the handle *c* is raised to empty the receiver *F*, the spring-valve *e* is opened by the action of lever *t*, and the fan *D* revolves rapidly, drawing off all odors or gases through the pipe *K*, and forcing them into the ventilating-flue *H* through pipe *C*<sup>1</sup> before they can escape into the room.

In order to prevent any water, &c., from being drawn into the pipe *K*, I run said pipe at an upwardly-inclined angle from the receiver *F* to the ventilator-case *A*, and on the inside of the receiver I place a wire screen, or any other convenient guard, to prevent pieces of paper from being drawn into the pipe *K*, and thus impede the action of the fan *D*. I run a small pipe, *C*<sup>2</sup>, from pipe *C*<sup>1</sup>, and carry it to the receiver *F*, between said receiver and the wood casing, as such places, being generally damp and close, usually generate foul odors.

In houses where a tank placed on the upper floor is used as a reservoir, supplying the whole tenement, one of my large ventilators may be attached to the outlet of said tank, and a large pipe, connected to inlet *B*, be taken down to the basement, and on each floor smaller connections can be made and carried to sinks,

water-closets, small close closets, &c., for the purposes of ventilation. Thus, whenever the water flows or is drawn from the tank, the fan would be drawing off the vitiated air from those places all over the house into which these branch pipes had been carried, and thus in a great degree keeping the house freed from foul and impure air.

Applied to the crowded-tenement houses of the poorer classes, its value is incalculable as a preventive of disease.

The ventilator can be attached to a pump or an Artesian well, as well as to a water-main, and is thus placed within reach of those not living within reach of established water-works. Also, my ventilator may be connected, as before set forth, to the water-supply pipe of any building, so that when water be drawn through said water-pipe said water would run water-wheel *E* and operate fan *D*, and so draw off the foul air from any badly-ventilated place with which pipe *K* may be connected, and pass it off, as before described.

What I claim as my invention is—

1. The combination of the ventilator-case *A* *A*<sup>2</sup>, spindle *a*, fan *D*, water-wheel case *d*, tube *f* *f*, and water-wheel *E*, all constructed and operating substantially as and for the purpose described.

2. The combination, with the water-supply pipe *i*, of the water-wheel case *d*, water-wheel *E*, spindle *a*, fan *D*, and ventilator-case *A* *A*<sup>2</sup>, substantially as and for the purpose set forth.

3. The combination, with exhaust-pipe *K* and discharge-pipe *C*<sup>1</sup> and water-supply pipe *i*, of the ventilator-case *A* *A*<sup>2</sup>, spindle *a*, fan *D*, water-wheel *E*, and water-wheel case *d*, substantially as and for the purpose set forth.

4. The combination, with the water-supply pipe of a water-closet or of a building, of a water-wheel, *E*, and ventilating-fan *D*, arranged in cases *A* and *d*, and suitably connected with said water-supply pipe *i* and suction and discharge pipes *K* and *C*<sup>1</sup>, whereby, when water is set in motion in said water-supply pipe by the act of admitting water to the receiver, a fan is caused to rotate for the purpose of ventilation, substantially as set forth.

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