(No Model.)

E. M. REYNOLDS.

VENTILATOR.

No. 557,607. Patented Apr. 7, 1896.

Fig. 1.

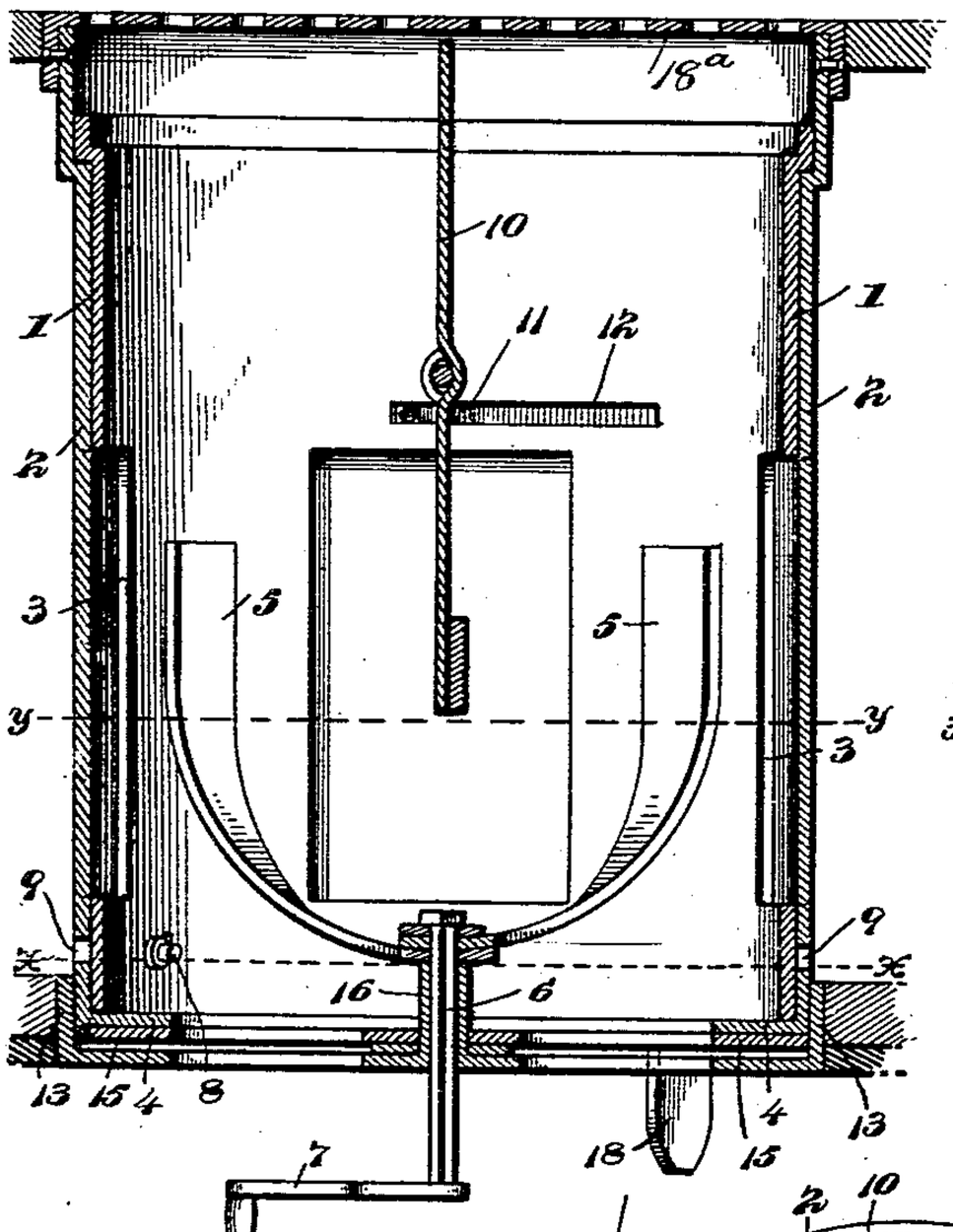


Fig. 2.

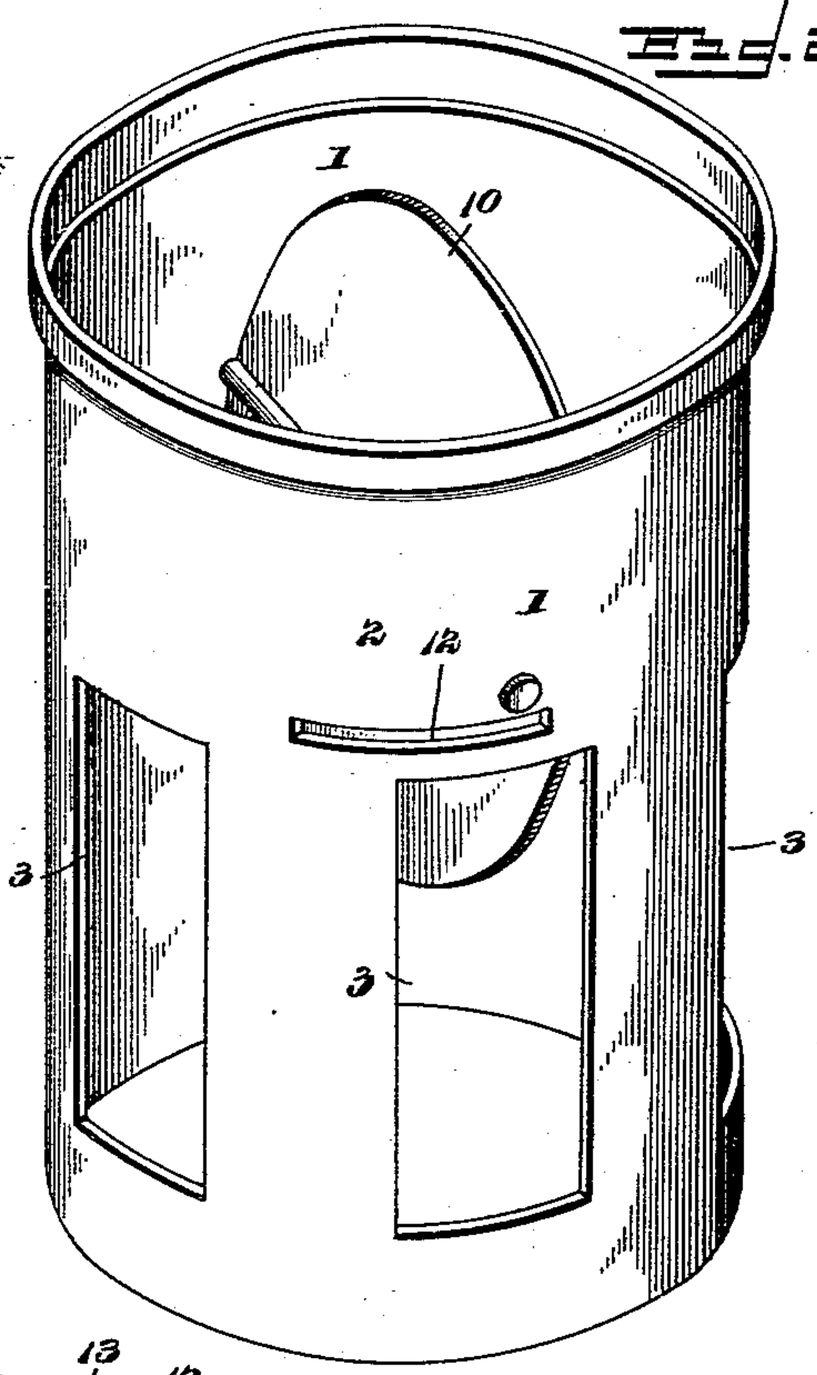


Fig. 5.

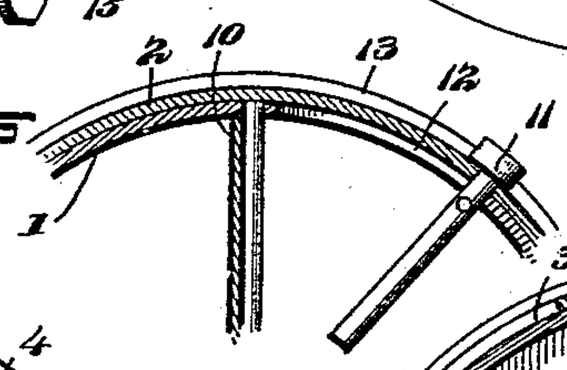


Fig. 3.

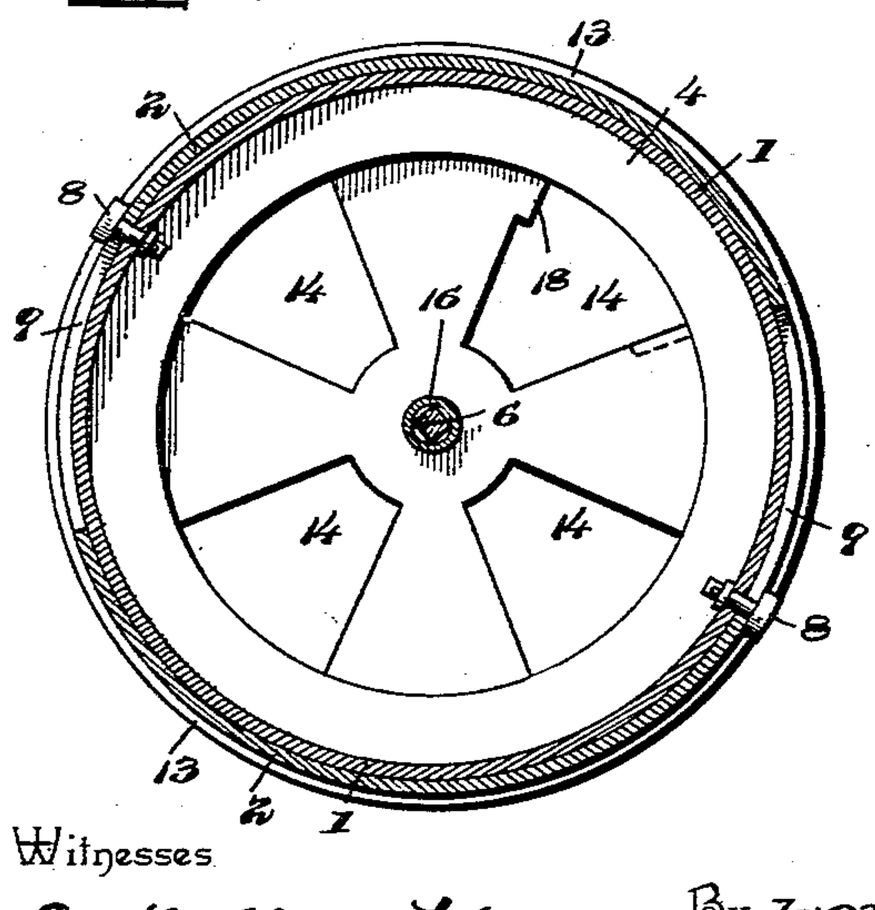
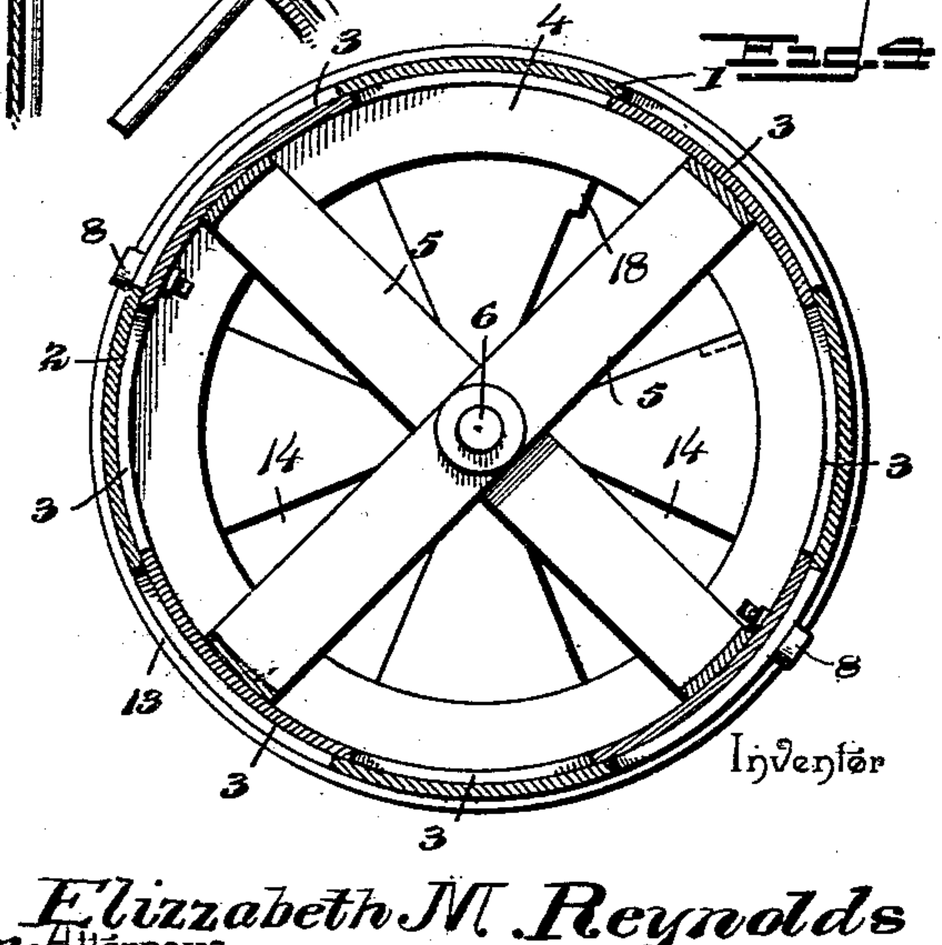


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

ELIZZABETH MATHEWS REYNOLDS, OF MEADVILLE, MISSOURI.

VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 557,607, dated April 7, 1896.

Application filed October 18, 1895. Serial No. 566,132. (No model.)

To all whom it may concern:

Be it known that I, ELIZZABETH MATHEWS REYNOLDS, a citizen of the United States, residing at Meadville, in the county of Linn and State of Missouri, have invented a new and useful Ventilator, of which the following is a specification.

This invention relates to ventilators whereby rooms and apartments are provided with escapes for foul and vitiated air without subjecting the occupant to drafts incident to the raising or lowering of windows and the opening of doors and by means of which the ventilation is effected in a gradual and imperceptible manner.

The principal feature of the invention is the construction of a ventilator to be located in the ceiling of a room and by means of which an upper room can be heated by the surplus air from a lower room and which when used for ventilating the said lower room will at the same time cut off the communication between the upper and lower rooms, thereby preventing the passage of noxious odors from the lower to the upper room when ventilating the former.

A further purpose of the invention is the construction of a ventilating device which will preclude leaving the top open when the device is used for ventilating and when the side openings are fully uncovered and which when the said side openings are closed will obviate the possibility of the upper end remaining shut, thereby attaining the desired results without any especial care on the part of the person manipulating the structure.

Other objects and advantages will become apparent as the nature of the invention is understood from the following description and the drawings hereto attached, in which—

Figure 1 is a vertical section of the ventilator, showing it applied. Fig. 2 is a perspective view of the inner cylinder. Fig. 3 is a horizontal section on the line X X of Fig. 1. Fig. 4 is a plan section on the line Y Y of Fig. 1. Fig. 5 is a detail view showing the relative disposition of the pin or valve-controller.

The device comprises concentric cylinders 1 and 2, the cylinder 1 being located within the cylinder 2, and these cylinders have registering openings 3 in their sides and intermediate of their ends, and these openings are so spaced apart that upon turning the cylinder 1 within the cylinder 2 the openings will be moved out of register and the sides of the cylinders closed. The cylinder 2 has an inner flange 4 at its lower end, which extends across and closes any space that may occur between the cylinders 1 and 2, and this flange 4 also serves as a support for the inner cylinder 1 and serves to strengthen and brace the outer cylinder 2. Curved braces 5 cross each other at a central point and have their ends secured to the inner sides of the cylinder 1, and a stem 6 is attached at its inner or upper end to the curved braces 5 at the point of crossing, and the outer end of the stem is fitted with a handle or crank 7, by means of which the stem 6 and the attached inner cylinder 1 are turned so as to bring the openings 3 into or out of register, as required.

In order to limit the relative turning of the concentric cylinders, any convenient means may be provided, and, as shown, consist of oppositely-disposed pins 8, secured at their inner ends to the cylinder 1, and slots 9 in the sides of the cylinder 2 for the pins 8 to operate in. These pins and slots are located in proximate relation to the lower ends of the cylinders 1 and 2, and the slots 9 extend transversely of the cylinder 2 a distance about equal to the width of the openings 3, so as to limit the turning of the cylinder 1 when the openings 3 are fully open or closed.

A valve 10 is located near the upper end of the cylinder 1 and is journaled in the sides of the latter, and this valve is counterbalanced or otherwise disposed, so that when relieved from any controlling influence it will normally remain open, thereby admitting of an unobstructed passage through the cylinder 1 of heated or fresh air. A pin or valve-closer 11 extends parallel with the axis of the valve 10 and is supported by the cylinder 2 and operates through a slot 12 in the cylinder 1, so as to admit of the latter turning without interfering in the least with the free movements thereof. This pin or valve-closer 11 occurs below the axis of the valve 10 and extends across the path of the valve and is adapted to close the latter when turning the cylinder 1 when bringing the openings 3 in register. Thus it will be seen that when the

openings 3 are uncovered the valve 10 is closed, thereby obstructing the vertical passage of air through the cylinder 1. When the openings 3 are in register, the upper end of the cylinder 1 is closed by the valve 10, and the vitiated air escapes from the room or apartment by entering the lower end of the cylinder 1 and passing out through the openings 3, as will be readily understood. When it is not required to ventilate the lower room and it is desired to heat the room immediately thereabove, the cylinder 1 is turned, by means of the handle or crank 7, so as to throw the openings 3 out of register, and this turning of the cylinder 1 brings the pin or valve-closer 11 parallel with the axis of the valve 10, and the latter opens automatically by reason of the superior weight of one side thereof or equivalent provisions for automatically actuating the same.

The lower end of the cylinder 2 is closed by a cap 13, which has openings 14, and a plate 15 is located between the cap 13 and the lower flanged end of the cylinder 2 and is provided with openings corresponding in position and number with the openings 14, and this plate 15, with its openings, forms a damper, by means of which the openings 14 may be shut or opened, as required. A short tube 16 is attached to the inner side of the cap 13, and the stem 6 operates therein and is braced thereby, and the damper-plate 15 is mounted upon the said tube and turns thereon in the operation of the plate 15. A projection 18 is attached to the plate 15 and provides means for turning the plate 15 when opening and closing the damper, as will be readily appreciated.

The device may be constructed of any suitable material and for the sake of simplicity and economy in construction is formed of sheet metal, and the parts being assembled in the manner set forth the device is placed in position between the floor and ceiling of a dwelling or building and made fast in any convenient manner. On reference to Fig. 1 it will be seen that the openings 3 occur between the floor and ceiling. Hence when said openings are in register the valve 10 is closed, and the foul air and noxious odors from the lower room escape through the openings 3 and out into the open air without passing through the cylinder 1 to the upper room. When it is required to heat the upper room and the air in the lower room is sufficiently pure, the openings 3 are closed, and, the valve 10 opening, the warm air passes from the lower room to that overhead, as will be readily understood.

The upper end of the cylinder 1 will be closed by a suitable grating 18ª, so as to prevent accidents resulting from persons or objects falling into the open end of the cylinder 1. The crank 7 and projection 18 can be operated by any means found best adapted for the purpose and usually will be reached by means of a pole, broom-handle or cane, whichever may be most convenient to hand.

The invention is susceptible of a variety of uses and applications, and in the adapting of the same for the required purpose it is obvious that changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed as new is—

1. A ventilator comprising concentric cylinders having openings in their sides which are adapted to be brought into or thrown out of register on the relative turning of the cylinders, a counterbalanced valve adapted to extend across the opening or space through the inner cylinder and normally open when the openings in the sides of the cylinders are shut, and a valve-closer carried by one of the cylinders and arranged to engage with the said valve and close the same and hold it in closed relation when the said side openings are in register and open, substantially as described for the purpose set forth.

2. A ventilator comprising concentric cylinders provided in their sides with corresponding openings and adapted to be relatively turned to bring the said openings into or out of register, means for limiting the turning of the two cylinders, a counterbalanced valve adapted to extend across the space through the inner cylinder, and a valve-closer carried by the outer cylinder and extending parallel with the axis of the valve when the latter is open, and adapted to operate across the path of the valve and close the latter when the cylinders are relatively turned so as to bring the side openings in register, substantially as set forth for the purpose described.

3. A ventilator comprising concentric cylinders which are adapted to be relatively turned, a damper carried by the relatively movable cylinder for opening and closing the space through the inner cylinder, a pivoted valve disposed within and supported by the inner cylinder and constructed to normally remain open, and a valve-closer attached to the stationary cylinder and adapted to extend across the path of the pivoted valve to close the latter on the relative turning of the cylinders to close the first-mentioned damper, substantially as set forth.

4. The herein-described ventilator, comprising concentric cylinders having corresponding openings in their sides, the outer cylinder having an inner flange at one end and the inner cylinder having crossing braces, a stem provided with a handle attached to the said crossing braces and adapted to turn the inner cylinder, pins provided on one cylinder and operating in slots formed in the opposite cylinder so as to limit the relative turning of the two cylinders, a cap fitted to a cylinder and having openings, a damper-plate for closing the openings in the said cap, a counterbalanced valve located within the inner cylinder and disposed so as to automatically open

on the turning of the cylinders so as to close the side openings, and a valve-closer carried by one of the cylinders and adapted to operate across the path of the counterbalanced valve and close the latter on the turning of the cylinders to bring the side openings in register, substantially as set forth for the purpose described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ELIZZABETH MATHEWS REYNOLDS.

Witnesses:
SUSAN A. FINN,
MRS. M. E. HARVEY.