

J. KEITH.
VENTILATOR.

APPLICATION FILED APR. 25, 1911.

1,028,221.

Patented June 4, 1912.

3 SHEETS-SHEET 1.

Fig. 1.

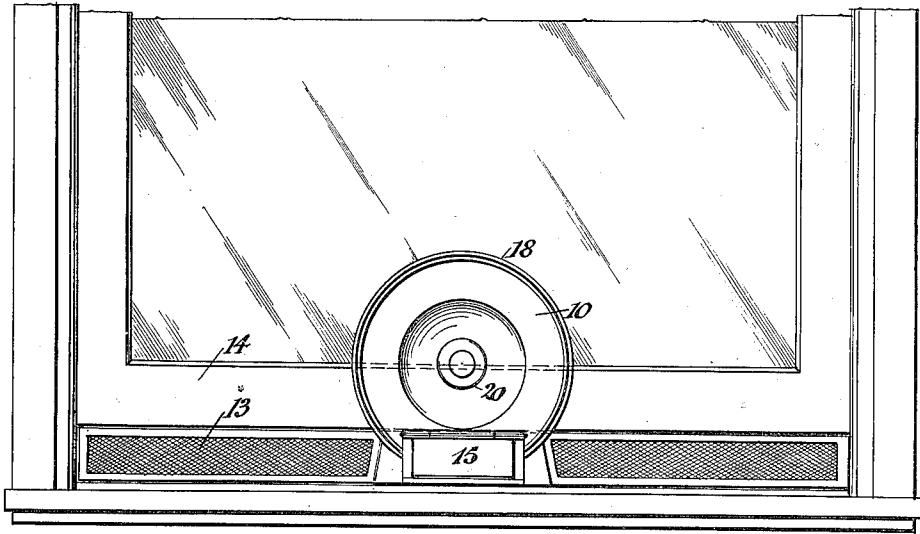


Fig. 2.

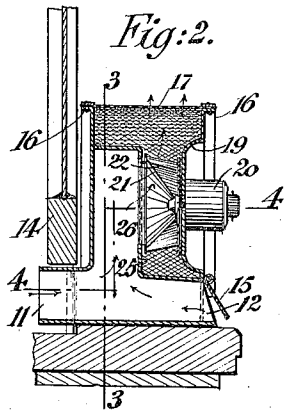


Fig. 3.

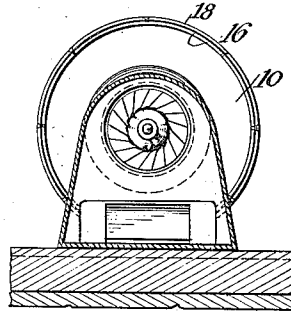
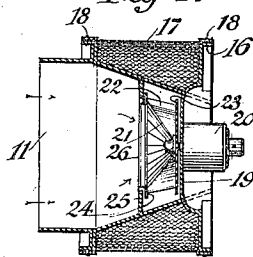


Fig. 4.



Witnesses:
John H. Storing
Alfred R. Anderson

Inventor
James Keith
By his Attorney *Wm. J. O'Sullivan*

Fig. 5.

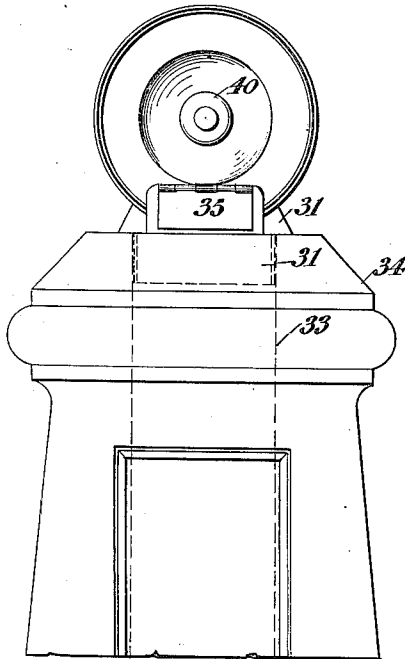


Fig. 6.

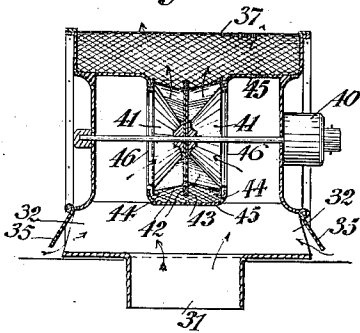


Fig. 7.

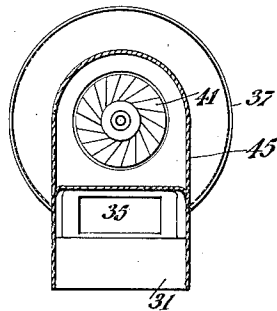
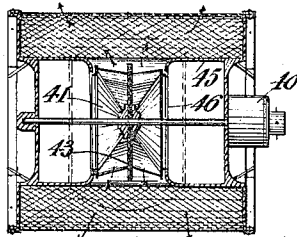


Fig. 8.



Witnesses:

John H. Waring

Alfred R. Anderson

Inventor

James Keith

By his Attorney

Wm. O. O'Connell

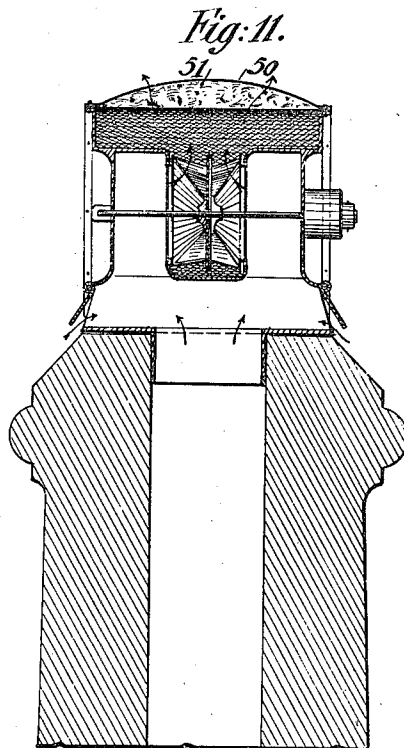
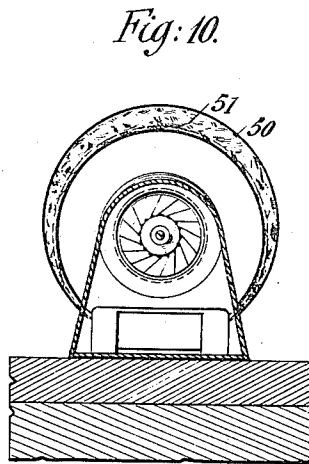
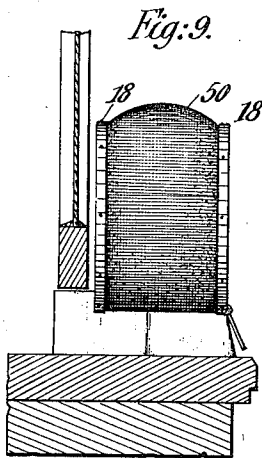
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John H. Storing
Alfred R. Anderson

Inventor
James Keith
By his Attorneys *Wau Oldenwald*

UNITED STATES PATENT OFFICE.

JAMES KEITH, OF LONDON, ENGLAND.

VENTILATOR.

1,028,221.

Specification of Letters Patent.

Patented June 4, 1912.

Application filed April 25, 1911. Serial No. 623,274.

To all whom it may concern:

Be it known that I, JAMES KEITH, a subject of the King of Great Britain, residing at London, England, have invented a new and useful Improvement in Ventilators; and I do hereby declare the following to be a full, clear, and exact description of the same.

This invention relates to ventilators for ventilating rooms, apartments or any other place where similar ventilation is desired.

The object of the invention is to supply to such room or apartment a plentiful admission of fresh air under slight pressure, but so diffused, and, when desired, diluted by the air of the room, that there will be no feeling of draft. To accomplish this object I have provided a ventilator adapted for suitable connection with the outside air and having a casing inclosing a suitable fan, practically the whole of the circumference of the casing being formed of wire gauze through which the air is forced into the room and so diffused and delivered through the comparatively large area of gauze, that no perceptible draft is felt, although the feeling of freshness will be present all the time and any stuffiness in the room or apartment will be prevented and good ventilation assured. I also provide means whereby the cold outside air may be diluted with air taken from the room, the mixture thus obtained being passed through the fan and gauze as just described. The inlet connection for the admission of the outside air may be through a suitable conduit adapted to be placed through a window frame or through a screen placed in the lower part of the window. Or this connection may be through a conduit placed in the top of a hollow column placed in the room and communicating with the outside air. I also provide means for filtering, purifying, disinfecting or perfuming the air passing through the ventilator. This means may consist of an outside envelop of muslin or other open fabric or other flexible cover which may be secured around the apparatus and kept inflated by the air pressure from within.

When desired the space between the gauze and the covering may be filled with cotton wool or other substance.

The covering would be used with or with-

out the filling; and the covering when used alone, or both the covering and the filling could be used dry or could be moistened with disinfectants, perfume, medicinal or other liquid.

Ventilators, showing by way of example possible embodiments of this invention, are illustrated in the accompanying drawings, in which,

Figure 1 is an end elevation showing a ventilator applied on the inside of a window. Fig. 2 is a longitudinal vertical sectional view of the same. Fig. 3 is a vertical sectional view taken on the line 3—3 of Fig. 2. Fig. 4 shows a horizontal section taken on the line 4—4 of Fig. 2. Fig. 5 is an elevation of another form of ventilator and placed on the top of a column. Fig. 6 is a vertical sectional view of the same. Fig. 7 is a transverse sectional view. Fig. 8 is a horizontal sectional view of the same. Fig. 9 is a longitudinal sectional view showing the filtering or disinfecting means applied to the first form of the invention. Fig. 10 is a transverse vertical sectional view of the same, and Fig. 11 is a side elevation showing the filtering and disinfecting means applied to the second form of the invention.

Referring more particularly to Figs. 1 to 4, the ventilator is shown provided with a casing 10 the main body of which may be constructed of stamped sheet steel, light cast iron or any other suitable material. The lower part of the casing is provided with an outer inlet-conduit 11 and an inner inlet conduit 12, the outer conduit being adapted for placing through the window frame or through a screen 13 in the window under the sash 14 is shown in Fig. 1. The inner conduit 11 is provided with a flap door 15 which may be adjusted for any width of opening.

The ends of the casing are approximately circular in shape and are provided with flanges 16 to which are attached the edges of the wire gauze 17, said edge being held in place by rings or bands 18 secured to said flanges by counter sunk screws or in any other manner.

The inner end wall 19 may be concaved, and has mounted centrally thereon, an electric motor 20, the armature shaft of which passes through said wall and has mounted thereon the fan 21. It is understood, how-

ever, that other motive power may be used. This fan may be of a form similar to that of my applications Serial Numbers 588314 and 602885 for Letters Patent in the United States, or it may be any other suitable open fan. As illustrated, the blades 22 of the fan are somewhat curved and inclined from the radial direction, and are secured to the disk 23 by which they are supported on the shaft, and have their outer ends braced by a ring 22.

A partition 25 divides the lower part of the casing from the part adjacent to the gauze, the intermediate part of this partition being provided with a circular opening 26, the edge of which is adjacent to and approximately in register with the ring 24.

The operation of the device is very simple. During weather which is not very cold, the door 15 is closed and the fan draws its entire supply of air in through the conduit 11 and forces it out through the gauze 17. The air is distributed by the fan, and being also under pressure passes out over the entire area of the gauze, and is thus evenly diffused and distributed in all directions. If the weather is so cold that the volume of air passing through the ventilator directly from the outside would unduly lower the temperature of the room in the neighborhood of the fan, the door 15 is opened to a suitable extent so that the air passing through the ventilator is diluted to the desired amount with the warm air of the room, the amount of fresh air taken directly from the outside, however, being sufficient to properly ventilate the room.

The principle of the ventilator illustrated in Figs. 5 to 8 is the same as that of ventilator in Figs. 1 to 4; but in the second form, the casing 30 has both ends substantially alike and is provided with a central downwardly projecting inlet conduit 31 for the cold air and a pair of warm air inlet openings 32. The conduit 31 is received in a duct 33 of the column 33, on top of which column the casing 30 rests. This column is placed within the room at a suitable height; and the duct 33 communicates with the outside air. The openings 32 are provided with suitable doors 35. In this form the armature shaft of the motor 40 passes from end to end of the casing and is provided centrally with double inlet fan composed of a pair of fans 41 similar to the fan hereinbefore described, and having the disks 43 thereof placed together so that the blades 42 extend oppositely from said disks, the rings 44 being the most remote parts of said fans. The blades 42 of both fans are so inclined relative to the shafts, that both fans throw the air outwardly with equal force against the gauze.

The partition divides the casing into upper and lower parts, the upper part con-

taining the fans and limited by the gauze 37 while the lower part communicates with the conduit 31 and the openings 32. The partition is provided with two openings 46 one for each fan.

In operation air is drawn in through the duct 33, the conduit 31 and passes out through the gauze 37. The doors 35 may be opened to dilute the cold air with warm air from the room.

The first form of the invention is particularly adapted for window ventilation and would naturally be of small form; while the second form is particularly adapted for larger work and can be made of any suitable or desired size. In either case the taking in of a certain amount of the air from the room or apartment dilutes the fresh air coming in and also keeps the air in circulation and also takes off the chill of the fresh air in cold weather. However, the apparatus could be made without the openings 12 and 32 if desired.

In both forms the air being supplied under pressure to the fine gauze, forces through the gauze any dust particles or the like which would otherwise tend to clog the gauze.

These ventilators effect a plentiful supply of air at all times and seasons by the expenditure of a minimum amount of electricity and without any perceptible draft, the air being supplied under slight pressure and so diffused, modified and minutely delivered under pressure through the gauze over a comparatively large area that its presence flowing into the apartment or room in volume will not be felt within a couple of feet from the gauze, although the feeling of freshness will be present all the time and stuffiness avoided and good ventilation assured.

Various changes in the construction and details of these ventilators may be made without departing from the spirit and scope of the invention as claimed.

I may provide a filtering and disinfecting means as shown in Figs. 9 to 11. This means consists of an envelop or covering which may be fastened around the gauze of the casing and secured under the rings 18 or in any other convenient manner. This envelop will be kept inflated by the air pressure from within and will assume the form illustrated. I may, however, provide a filling of cotton-wool or other substance, but this filling may be omitted if desired.

The envelop, when used alone, or the envelop and the filling may be left dry or they may be moistened with some disinfecting, medicinal or cooling liquid or perfume. If left dry the filling or envelop could be made to serve for drying the air during foggy or moist weather. This arrangement would be suitable for hospitals, sanitariums or other

places either for drying the air, for disinfecting, perfuming or for impregnating it with medicinal substitutes.

I claim as my invention:

5 1. In a ventilator, the combination of a hollow base formed as an open ended conduit, an arch-shaped chamber erected on said base and in communication with the interior of said base, said arch-shaped chamber having a vertical wall formed with a
10 circular opening, a perforated covering formed as an incomplete cylinder having an axis parallel with said base, said covering surrounding and spaced from said arch-shaped chamber and extending down to said
15 base, and a fan runner disposed on an axis parallel with that of the cylinder with its inlet center opposite said circular opening, said fan runner adapted to draw air through
20 the hollow base and through the circular opening and to discharge it tangentially into the space between the chamber and the perforated covering.

2. In a ventilator, the combination of a
25 hollow casing including a hollow base formed as an open-ended conduit and an incomplete cylindrical part erected on said base, the cylindrical part having a perforated circumferential wall and imperforate

end walls, an arch-shaped chamber disposed 30 within the cylindrical part and communicating with the interior of the hollow base, one end wall of said chamber being constituted by part of one end wall of the cylindrical part, the roof and second end wall of said 35 chamber affording a partition between the interior of the cylindrical part and the base, the second end wall of the chamber having a circular opening and being spaced from the second end wall of the cylindrical part, 40 and a centrifugal open fan runner disposed between the second end wall of the chamber and the second end wall of the cylindrical part, the inlet center of said fan runner being disposed opposite said opening, said 45 fan runner serving to draw air through the open end of the base and through the said circular opening, and to discharge such air through the perforations in the said circumferential wall. 50

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES KEITH.

Witnesses:

WM. H. BERRIGAN,
AMBROSE L. O'SHEA.