

E. H. C. OEHLMANN.

VENTILATING APPARATUS.

No. 267,102.

Patented Nov. 7, 1882.

Fig. 1.

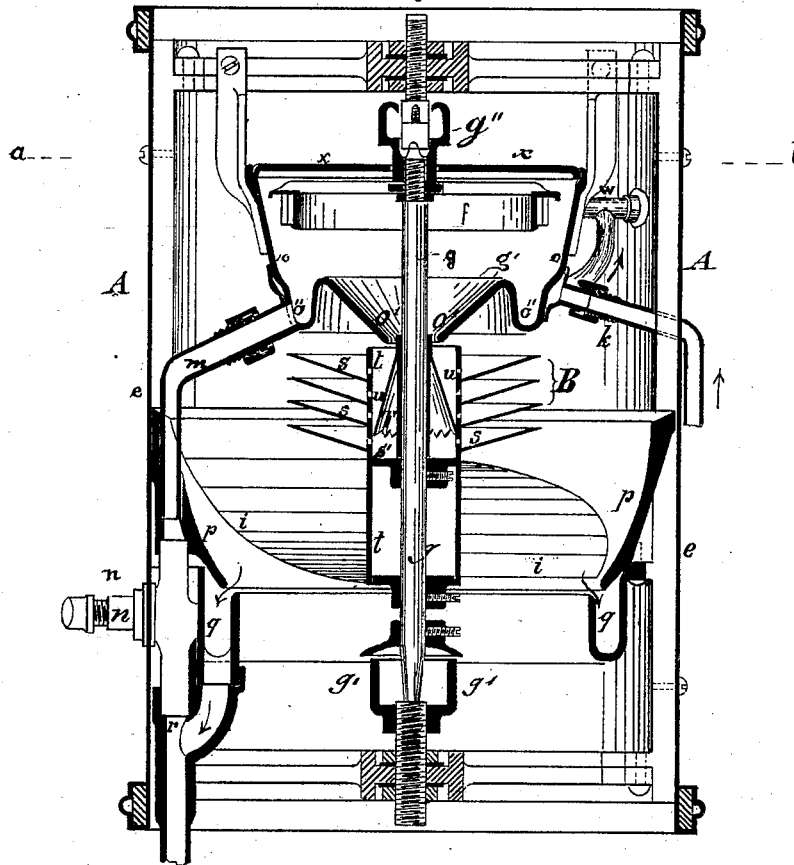
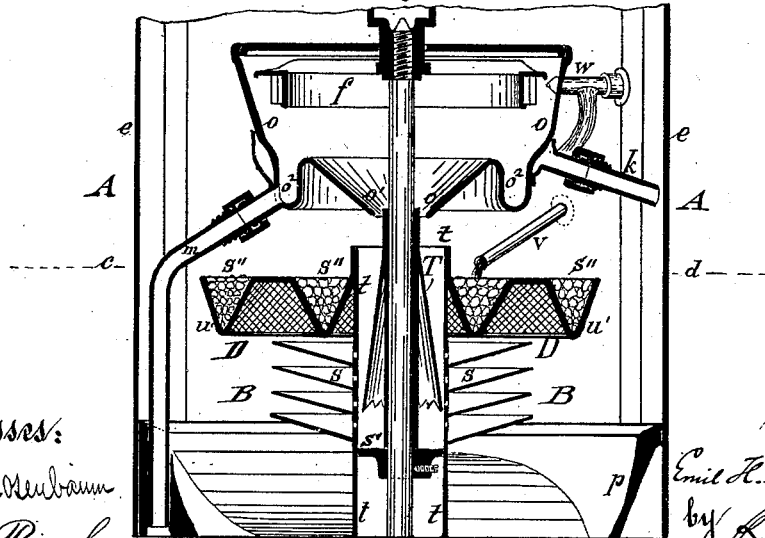


Fig. 2.



Witnesses:
Joh. H. Rosenbaum
Otto Busch.

Inventor:
Emil H. C. Oehlmann
by Paul Seifert
Attorney

(No Model.)

2 Sheets—Sheet 2.

E. H. C. OEHLMANN.
VENTILATING APPARATUS.

No. 267,102.

Patented Nov. 7, 1882.

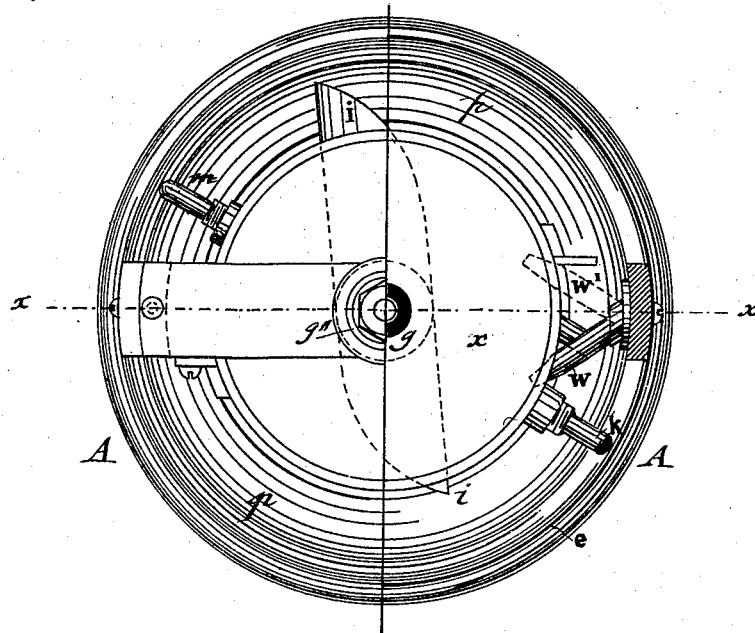


Fig. 3.

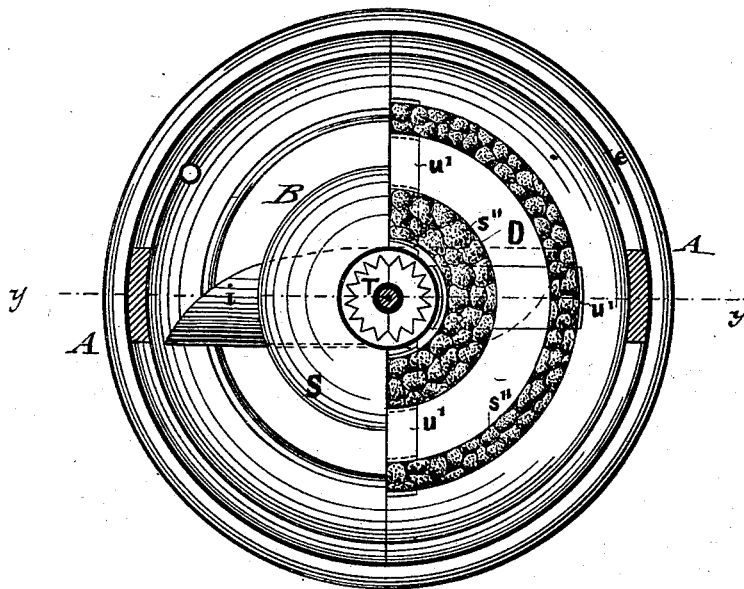


Fig. 4.

Witnesses:

Joh. H. Rosenbaum
Otto Pisch.

Inventor:
Emil H. C. Ohlmann
by *Paul Goppel*
Attorney.

UNITED STATES PATENT OFFICE.

EMIL H. C. OEHLMANN, OF BERLIN, GERMANY.

VENTILATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 267,102, dated November 7, 1882.

Application filed March 27, 1882. (No model.) Patented in Germany March 26, 1880, No. 12,520.

To all whom it may concern:

Be it known that I, EMIL HEINRICH CONRAD OEHLMANN, of the city of Berlin, Prussia, Empire of Germany, have invented certain new and useful Improvements in Ventilating Apparatus, of which the following is a specification.

This invention relates to an improved ventilating apparatus by which the air in its passage through the apparatus is not only moistened, but also at the same time charged with disinfecting substances, so as to purify the air in sick-rooms, hospitals, and the like. The apparatus may also be worked as a suction apparatus for removing the bad air whenever required.

The invention consists of a ventilating apparatus constructed of an exterior casing and of an interior actuating water-wheel or turbine inclosed by a casing having a bottom with a hopper-shaped center portion and an annular gutter, said casing being provided with water supply and discharge pipes. Below the bottom of the water-wheel casing is arranged a water-spray apparatus of peculiar construction, and below the water-spray apparatus a ventilating-fan, which are both applied to the water-wheel shaft and receive rotary motion from the same. Between the bottom of the water-wheel casing and the water-spray apparatus is arranged an apparatus for charging the air drawn in by the ventilating-fan with disinfectants. From the water-spray apparatus the water is conducted along a funnel-shaped conductor of parabolic shape to an annular collecting-gutter below the fan, and then to the discharge-pipe.

In the accompanying drawings, Figure 1 represents a vertical central section of my improved ventilating apparatus, taken on line *x x*, Fig. 3. Fig. 2 is also a vertical central section of the same on line *y y*, Fig. 4, showing it in connection with a disinfecting apparatus. Fig. 3 represents partly a plan view of the ventilating apparatus and partly a horizontal section on line *a b*, Fig. 1; and Fig. 4 is a horizontal section of the ventilating apparatus on line *c d*, Fig. 2, one half of the figure showing a top view of the water-spray apparatus, while the other half shows a top view of the disinfecting apparatus.

Similar letters of reference indicate corresponding parts.

The ventilating apparatus shown in Fig. 1 consists of an exterior casing, *A*, within which is arranged in step and top bearings *g' g'* a vertical center shaft, *g*, that carries at its upper end a water-wheel or turbine, *f*, and near its lower end a ventilating-fan, *i*. The water-wheel *f* is inclosed by a casing, *o*, the bottom of which has a central funnel-shaped portion, *o'*, and an annular gutter, *o''*, by which the water is collected so as to be either conducted off through the pipe *m* to the discharge-pipe *n*, or, by closing the stop-cock *u* of pipe *m*, made to pass over the center funnel, *o'*, to a water-spray apparatus, *B*.

The water-spray apparatus *B* consists of a hollow sheet-metal cylinder, *t*, the lower part of which forms the center portion of the fan *i*, and of a number of conically-dishing trays, *s s*, which are secured to the upper part of the cylinder *t*, above the ventilating-fan *i*. The cylinder *t* is closed below the trays by a solid bottom, *s'*, and provided with perforations *u* for the passage of the water to the trays near the point of connection of each tray with the cylinder *t*.

At the inside of the upper part of the cylinder *t* is arranged a conical deflector, *T*, of sheet metal, the upper end of which is extended into the funnel-shaped center portion, *o'*, of the water-wheel casing *o*, while the lower edge is serrated, the points of the serrations forming contact with the interior surface of the cylinder *t*. By means of this sheet-metal deflector *T* the water passes in a perfectly noiseless manner into the cylinder *t*, and is then distributed through the perforations in the upper part of the cylinder *t* to the trays *s*, which throw the water by the centrifugal force in finely-divided sprays in upwardly-inclined direction.

The bottom *s'* is arranged near the lowest tray *s* for the purpose of preventing too great an accumulation of water inside of the cylinder *t*, which would otherwise exert too great a weight upon the shaft *g*. The water which imparts motion to the water-wheel *f* is conducted by a pipe, *k*, and nozzle *w* into the casing *o*, the pressure of the water imparting motion to the water-wheel and to all the parts

connected to its shaft, which water is conducted off through the pipe *m*, if the air is not to be moistened and cooled by the water-spray apparatus. By closing the stop-cock *n* the water is compelled to pass over the rim of the funnel-shaped center portion, *o'*, of the casing *o*, in which case it serves, after it has passed through the spray apparatus B, for the purifying, moistening, and cooling of the air. In this case the water is conducted by a funnel, *p*, having a parabolic surface, into an annular gutter, *q*, arranged below the ventilating-fan, and thence to the discharge-pipe *r*.

The water-wheel *f* is entirely inclosed by its casing *o*, so that no water can escape therefrom, the central opening in the cover *x* being made only large enough that the oil-cap which lubricates the top bearing of the shaft *g* can freely rotate therewith.

The funnel-shaped center portion, *o'*, is so formed that only a small annular space is arranged around the shaft *g*, so that all the water which is used for driving the water-wheel is collected and conducted over the conical deflector T to the spray apparatus B, and thence through the funnel *p*, gutter *q*, and discharge-pipe *r* to the outside.

The disinfecting apparatus D is clearly shown in Figs. 2 and 4, and is preferably arranged directly above the spray apparatus B. It is, like the spray apparatus, secured to the extended upper part of the cylinder *t*, and consequently rotated with the shaft *g*. The disinfecting apparatus D consists of a tray of wire-gauze, which is arranged with a suitable number of concentric V-shaped pockets, *s''*, that are supported at their lower ends by radial iron straps *u'*.

In Figs. 2 and 4 of the drawings the pockets *s''* are shown as filled with sponge or other moisture-absorbing material. To the sponge filling of the innermost pocket, *s''*, is supplied the disinfecting-liquid in small quantities by a drip-pipe, *v*. As soon as the absorptive material in the inner pocket, *s''*, is entirely charged the liquid is thrown by centrifugal power through the openings in the wire-gauze in a horizontal direction to and taken up by the absorptive material in the outer concentric pockets, and thence distributed in a minutely-divided spray or vapor in the space at the inside of the ventilating apparatus. The air which is forced through the apparatus by the fan is thereby charged with the finely-divided disinfectant and carried along to the rooms where such air is required.

The ventilating apparatus acts as an air-forcing apparatus when the water-wheel and fan are rotated from the left to the right, whereby the air is drawn in from below, forced through the water-spray and disinfecting-vapor, and thence to the rooms to be supplied. The ventilating apparatus may, however, be changed from an air-forcing apparatus to a suction apparatus by arranging a second water-supply nozzle, *w'*, as shown in Fig. 3, which supplies the water to the other side of the water-wheel,

so as to turn the same in the opposite direction to the former. The water is admitted to either nozzle *w* or *w'* by a two-way cock, and thereby the water-wheel turned in one or the opposite direction. By the reverse motion of the fan the air is drawn out of the rooms by suction, whereby the utility of the apparatus is increased, as it is possible to work it as an air-forcing or suction apparatus. In one case the air is purified, moistened, and cooled, and also charged with disinfecting materials, if required, while in the other case the bad air can be quickly removed from the rooms to be ventilated.

The relative positions of the water-spray and disinfecting apparatus can be changed, if desired.

The parabolic shape is given to the discharge-funnel *p* for the reason that the air is deflected thereby at the lower part of the funnel, so as to pass off freely and without being impeded by the gutter *q* in case the apparatus is worked for suction.

The ventilating apparatus may be built with the disinfecting apparatus and without the water-spray apparatus, or with a water-spray apparatus, dispensing with the disinfecting apparatus, or with both combined, as deemed most expedient for the special application of the apparatus.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A ventilating apparatus consisting of an exterior casing, of a water-wheel and water-wheel-casing, of a water-spray apparatus below the water-wheel casing, and of a ventilating-fan below the water-spray apparatus, both the water-spray apparatus and fan being revolved by the water-wheel, substantially as set forth.

2. In a ventilating apparatus, a water-spray apparatus consisting of a number of dishing trays secured to a fixed perforated cylinder, which is closed at the bottom, and provided with an interior deflector having a lower serrated edge, substantially as set forth.

3. The combination of an exterior casing, a water-wheel, a water-wheel casing having a funnel-shaped bottom, a water-spray apparatus, a ventilating-fan, a conducting-funnel of parabolic shape around the fan, and a water-collecting gutter below the funnel, substantially as set forth.

4. In a ventilating apparatus, the combination of a main casing, a water-wheel inclosed by an interior casing, a disinfecting apparatus below the water-wheel, and a ventilating-fan, the ventilating-fan and disinfecting apparatus being secured to the water-wheel shaft and revolved therewith, substantially as set forth.

5. In a ventilating apparatus, the combination, with the water-wheel shaft, of a disinfecting apparatus composed of radial supporting-arms and of a wire-gauze tray having concentric pockets for the absorptive material, substantially as described.

6. In a ventilating apparatus, a water-wheel

and its inclosing casing, the latter arranged
with a bottom having a funnel-shaped center
portion and an annular encircling gutter, in
combination with a water-spray apparatus be-
5 low the casing, a water-supply pipe, a water-
discharge pipe connected to the bottom of the
gutter, and a water-discharge pipe for the
water-spray apparatus, so that the water can
be conducted off directly or supplied to the
10 spray apparatus, substantially as described.

In testimony that I claim the foregoing as
my invention I have signed my name in the
presence of two subscribing witnesses.

EMIL HEINRICH CONRAD OEHLMANN.

Witnesses:

HUGO WILOP,
OSCAR SLATER.