

J. McCREERY.

AIR COOLING, CLEANSING, AND VENTILATING DEVICE.

No. 586,363.

Patented July 13, 1897.

Fig. 1.

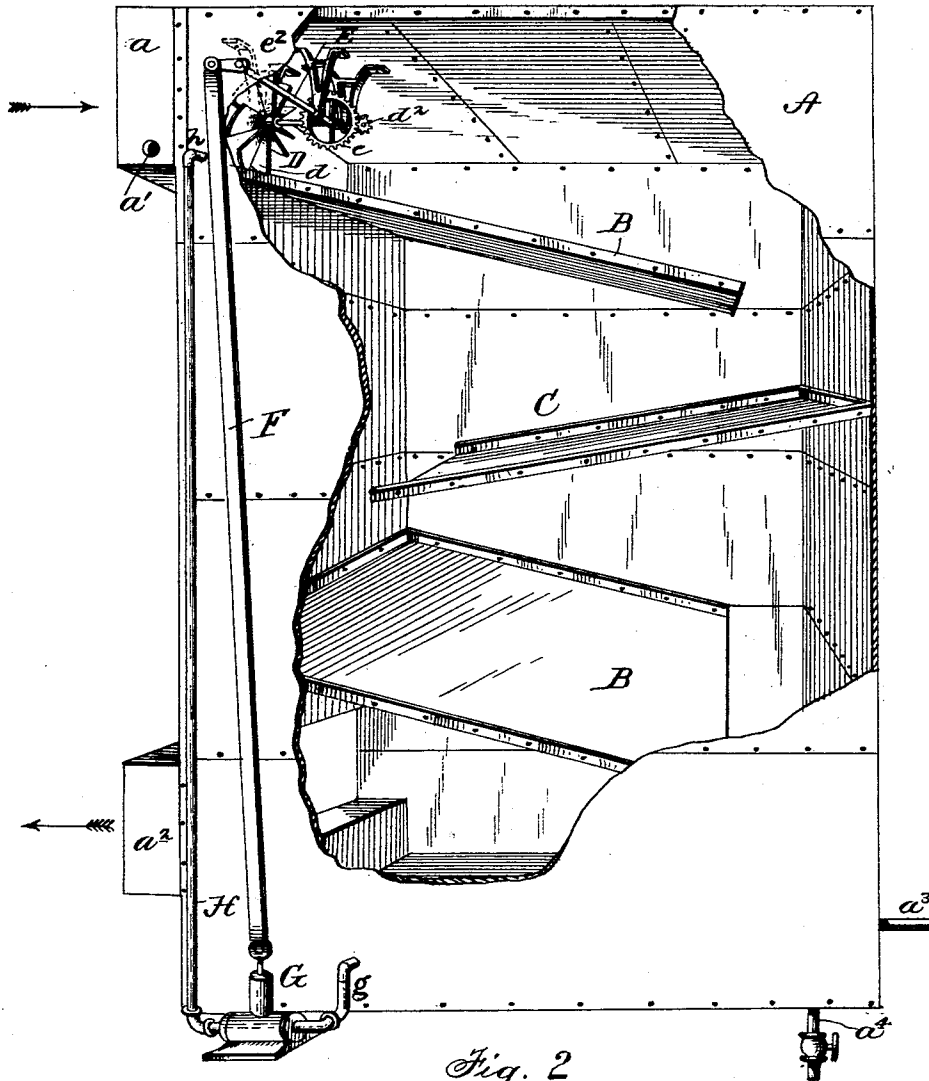
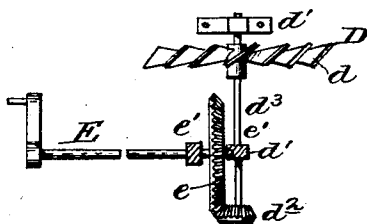


Fig. 2



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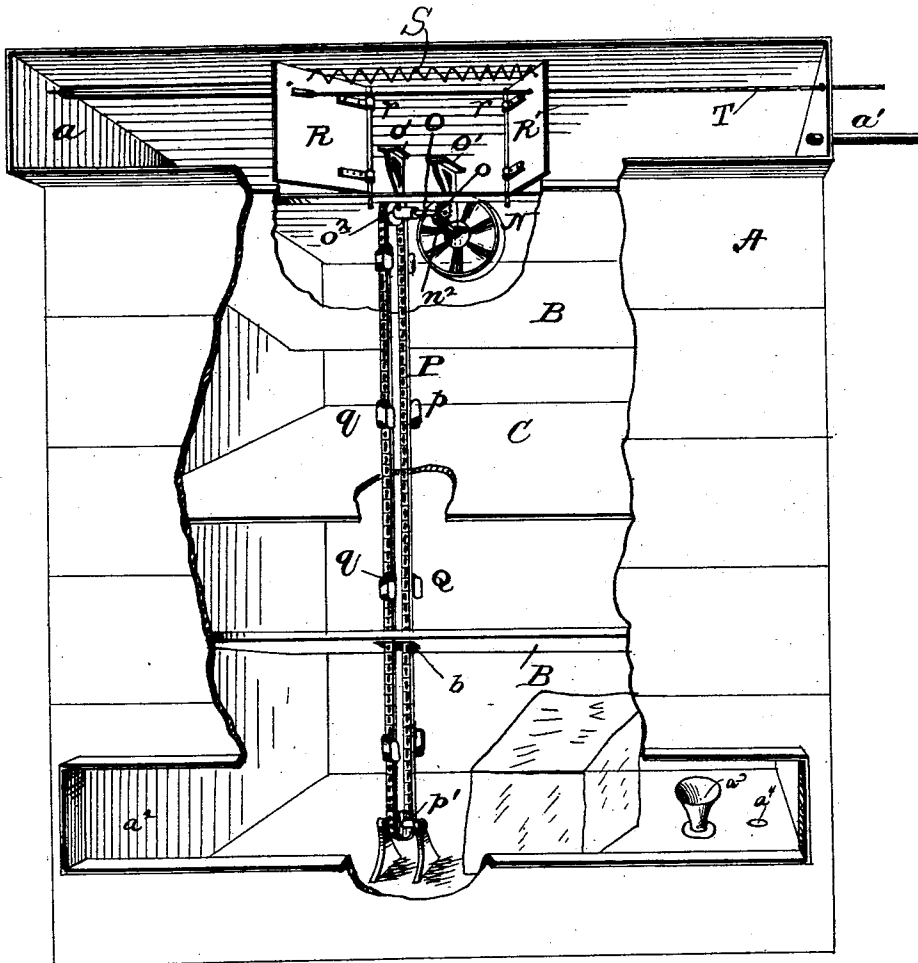


Fig. 3.

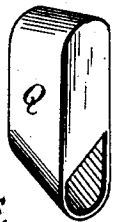


Fig. 6.

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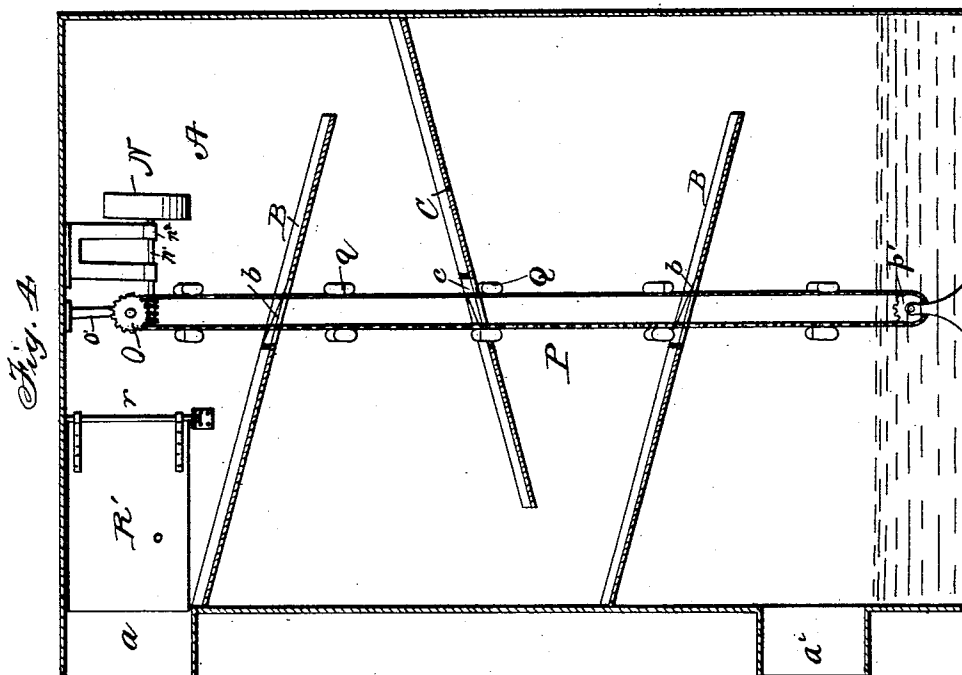
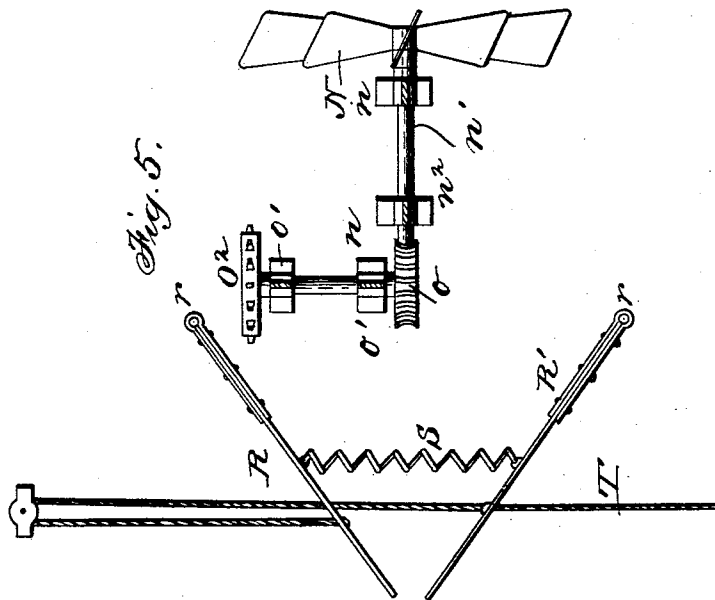
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UNITED STATES PATENT OFFICE.

JOSEPH MCCREERY, OF TOLEDO, OHIO.

AIR COOLING, CLEANSING, AND VENTILATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 586,363, dated July 13, 1897.

Application filed October 28, 1896. Serial No. 610,306. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH MCCREERY, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Air Cleansing and Cooling Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improvement in a device for cleansing and cooling air which is to be used in a system of ventilation.

The object of the invention is to provide a device in which, whether from scarcity of water or when ice is to be used, the same supply of water may be used over and over again for cleansing and cooling the air.

The invention consists, primarily, in providing such a device with an attachment by means of which the water after having been used may be moved from the rear end of the device to the forward end, and thus be used over and over again.

In the drawings, Figure 1 represents a perspective view of an air-cleansing device, the interior being shown, provided with one form of the invention. Fig. 2 represents a detailed plan view of a portion of the attachment. Fig. 3 represents a view similar to Fig. 1 of a modification. Fig. 4 represents a sectional view through the cleansing-case, showing this modification. Fig. 5 shows a detailed plan view of a portion of this modification. Fig. 6 is an enlarged view of a bucket.

In the accompanying drawings the letter A indicates the case, which is provided with the invention. This case has the air-inlet a and also may have a water-inlet, which may be connected at the point a' , these inlets being at the top of the case, as shown. It is also provided with an air-outlet a^2 at the bottom and also with a water-overflow a^3 and a water draw-off at the bottom, (shown at a^4 .)

Within the case is arranged two series of inclined shelves B and C. Only three shelves are shown in the drawings, but any number may be employed. The shelves of each series alternate with those of the other series, as shown. The shelves of one series are secured at their upper ends and sides to the

walls of the case, but do not extend to the opposite side, leaving a space. The shelves of the other series are attached to the opposite side, but have a space between their lower ends and the side to which the other shelves are attached. In use the water and air entering at the top of the case A pass down over the inclined shelves B and C, and the water and air thoroughly commingling the air is thoroughly cleansed of all impurities. The water with these impurities falls to the bottom of the case, from which it may be drawn off at a^4 or overflow at the point a^3 .

A device such as described may be placed in any system of ventilation and the air drawn through the cleansing-case by means of any ordinary blower; but sometimes such a device is to be used where there is a scarcity of water, as upon a train or vessel; also, in warm weather it is desired to cool the air as well as cleanse it. In the first instance the water will be carried in the bottom of the case A, and in the second instance ice will be placed therein. The present invention concerns itself with an attachment by means of which the water in the bottom of the case, whether iced or not, may be carried to the top of the case and used over and over again.

On the first sheet of the drawings is found one form of the invention. At or near the air-entrance of the case A is placed a wheel D, having the inclined vanes d , and journaled in the bearings d' . A beveled wheel d^2 on the shaft d^3 of the wheel D meshes with a larger beveled wheel e upon a counter-shaft E, journaled in the bearings e' and the side e^2 of the case A. The shaft E projects out of the case A and at its outer end is secured by a crank to a connecting-rod F, which operates the piston of the pump G, having connection by a pipe g with the bottom of the case A. From the pump G a pipe H extends upwardly and is connected at its upper end h with the interior of the case A, near the air-entrance a and at or near the top of the top shelf of the series B.

With an attachment thus described as the air enters the air-entrance a it strikes against the vanes d of the wheel D and through the various connections operates the pump G. By reason of this pump the water, iced or otherwise, in the bottom of the case A is

pumped up to the top of the case, entering the same at or near the air-entrance *a*. Thus the water at the bottom of the case is continually being pumped upward as the device is
 5 being used; also, the wheel *D* acts to agitate the air and the water and to thoroughly commingle them at the beginning of their passage through the case *A*. In the other figures is shown another form of this device. At or
 10 near the air-entrance *a* of the case *A* is journaled a wheel *N* in the bearings *n*. The shaft *n'* of this wheel has a worm-gear *n*², which meshes with the wheel *o* of a shaft *O*, carried in bearings *o'*. At the other end of this shaft
 15 *O* is a wheel *o*², around which moves a chain *P*, carrying the buckets *Q*. This chain *P* extends through openings *b* and *c* in the shelves *B* and *C* down to the bottom of the case *A* and around a wheel *p'* in such bottom. The
 20 buckets *Q* are of a peculiar construction. They are not opened at the top, as is usual, but the tops are closed and the openings in such buckets are at the top of one of the sides. These buckets are placed upon the chain *P*
 25 so that the openings in the buckets are alternated, one bucket having an opening in one direction and the next bucket having an opening in the opposite direction, as shown at *q*. If desired, two wings *R* and *R'* may be
 30 pivoted at *r* in front of the wheel *N*, between it and the air-entrance *a*. These wings *R* and *R'* are held together by a spring *S*. A cord *T* is connected with these wings. One end of the cord is connected to one wing *R* and
 35 passing around the pulley *t* passes loosely through the wing *R* and also through the wing *R'*, but on the inside of the wing *R'* it is provided with a knot or projection *t'*. By pulling on this cord *T* the wings *R* and *R'* may
 40 be separated any given distance and may be opened so far as to diverge. By slackening the cord *T* the spring *S* will draw the wings *R* and *R'* together. By means of these wings the amount of air admitted to the wheel *N*
 45 may be varied or even entirely cut off. It is obvious that this arrangement of wings may be applied to the form of device shown in Fig. 1.

In the device shown in Fig. 3 when air is
 50 admitted and strikes the wheel *N* it causes the chain *P* to be operated, lifting the water from the bottom of the case *A* to the top thereof. By having the openings in the buckets *Q* in opposite directions the water is thrown
 55 to opposite sides of the case *A* and thoroughly and effectually spread over the entire case.

With devices such as described it is obvious that only a small amount of water is

needed to cleanse or to cool and cleanse the air which passes through the case. Devices
 60 such as described are well adapted to use wherever the supply of water is limited.

Having described my invention, what I claim is—

1. The combination of the case having an
 65 air-inlet and an air-outlet, and between the two a series of shelves, and a water-receptacle at the bottom of the case, with a wind-wheel located at the air-inlet, and a pump operated by such wind-wheel, the pump being
 70 connected with the water-receptacle at the bottom of the case, as set forth.

2. The combination of the case having an
 75 air-inlet and an air-outlet, and between the two a series of shelves, and a water-receptacle at the bottom of the case, with a wind-wheel located at the air-inlet, shutters between the wheel and air-inlet, and a pump
 80 operated by such wind-wheel, the pump being connected with the water-receptacle at the bottom of the case, as set forth.

3. The combination of the case having an
 85 air-inlet and an air-outlet, and between the two a series of shelves, and a water-receptacle at the bottom of the case, with a wind-wheel located at the air-inlet, and a pump operated by such wind-wheel, such pump consisting of a chain with buckets, the pump being
 90 connected with the water-receptacle at the bottom of the case, as set forth.

4. The combination of the case having an
 95 air-inlet and an air-outlet, and between the two a series of shelves, and a water-receptacle at the bottom of the case, with a wind-wheel located at the air-inlet, and a pump operated by such wind-wheel, such pump consisting of a chain with buckets, the buckets of the pump alternately opening in opposite
 100 directions, the pump being connected with the water-receptacle at the bottom of the case, as set forth.

5. The combination of the case having an
 105 air-inlet and an air-outlet, and between the two a series of shelves, and a water-receptacle at the bottom of the case, and a chain-pump communicating with said water-receptacle, and with the case at the air-inlet, the buckets of the pump alternately opening in
 110 opposite directions, as set forth.

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

JOSEPH MCCREERY.

Witnesses:

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 W. H. SINGLETON.