

No. 701,074.

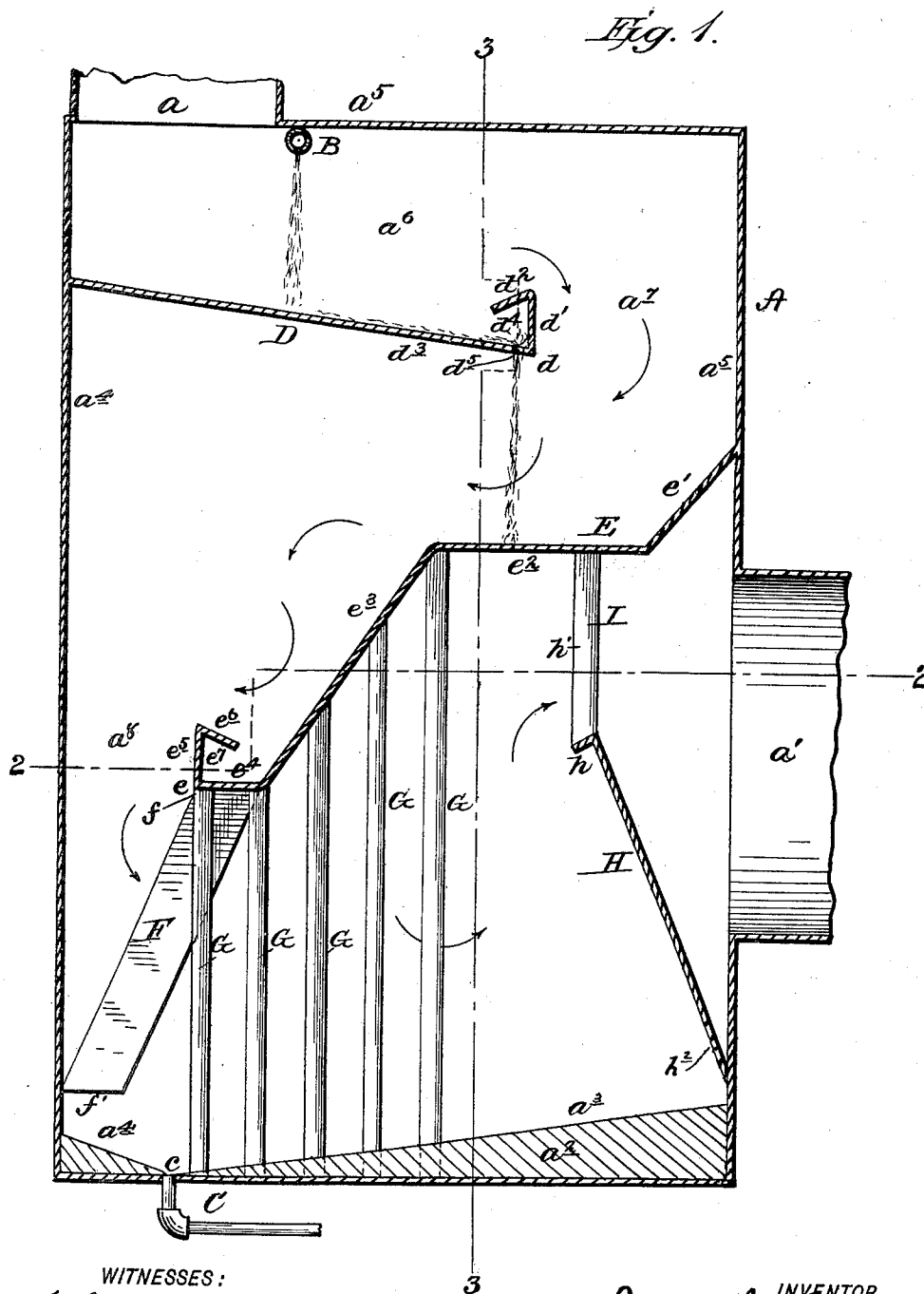
Patented May 27, 1902.

J. McCREERY.
AIR CLEANSING AND COOLING DEVICE.

(Application filed Feb. 5, 1900.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES:

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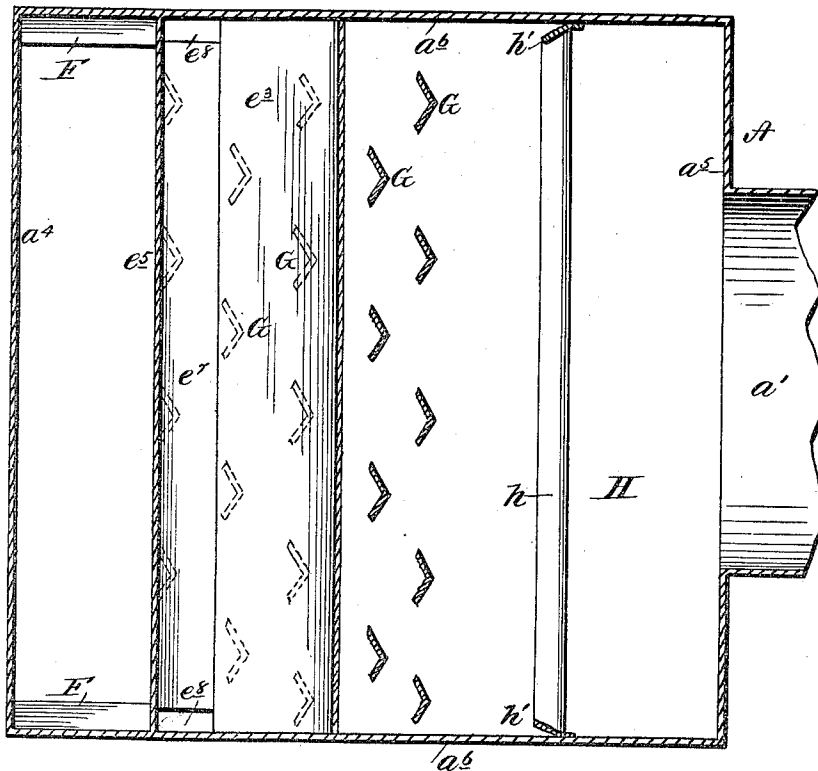


Fig 2

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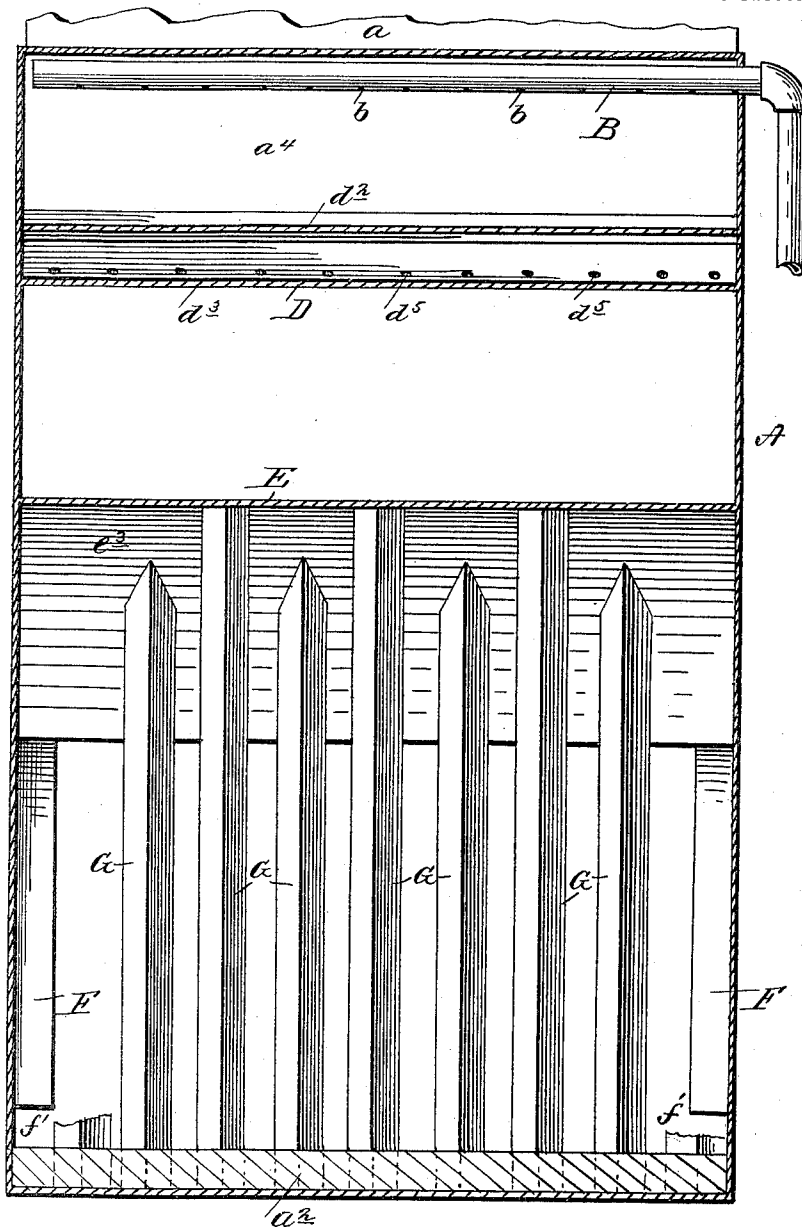


Fig. 3.

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UNITED STATES PATENT OFFICE.

JOSEPH MCCREERY, OF TOLEDO, OHIO.

AIR CLEANSING AND COOLING DEVICE.

SPECIFICATION forming part of Letters Patent No. 701,074, dated May 27, 1902.

Application filed February 5, 1900. Serial No. 4,001. (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 a new and useful improvement in air cleansing and cooling devices; and it consists in the construction hereinafter described.

In the annexed drawings, Figure 1 represents a vertical longitudinal section of the device. Fig. 2 represents a horizontal transverse section of the device on the line 2 2, Fig. 1. Fig. 3 represents a vertical transverse section of the device on the line 3 3, Fig. 1.

In the drawings the letter A represents a suitable case having at one corner of its top the air-inlet *a* and at one side substantially diagonal from the inlet *a* an air-outlet *a'*. Extending across and inside of the case A at its top and near the air-inlet *a* is a pipe B, having at its bottom the perforations *b*. This pipe is for the admission of water or steam. At the bottom of the case A there is a drain-pipe C, communicating with the interior of the case A at its bottom at the point *c*. The interior of the bottom *a²* of the case A is inclined, as shown at *a³ a⁴*, the incline sloping downward to the point *c*. As shown, the outlet or drain pipe C communicates with the interior of the case A near one side (the side opposite to the air-outlet *a'*) and substantially under the air-inlet *a*.

Extending from the side *a⁴* of the case A, near the top *a⁵* of the case and immediately under the air-inlet *a* and the pipe B, is a shelf or baffle-plate D. This baffle-plate is secured by a close joint with the side *a⁴* and the ends *a⁶* of the case A. This baffle-plate D slants downwardly from the side *a⁴*, but does not extend over to the side *a⁵* of the case A, there being a space *a⁷* between the side *a⁵* of the case A and the end *d* of the baffle-plate D. This end *d* of the baffle-plate D is turned upward, so as to have a vertical portion *d'*,

and then backward, so as to have a lip *d²*. This construction forms a recess or channel at the lower end of the baffle-plate D. In the bottom *d³* of the baffle-plate D just within the channel *d⁴* there are made a number of holes *d⁵*, extending across the bottom of the baffle-plate D. Below the baffle D is another baffle-plate E. This baffle-plate is secured to the side *a⁵* and the ends *a⁶* of the case A, extending downwardly from the side *a⁵* and stopping short of the side *a⁴*, there being a space *a⁸* between the side *a⁴* of the case A and the end *e* of the baffle-plate E. This baffle-plate E has substantially the shape shown in the drawings—that is, with the two downwardly-slanting portions *e¹* and horizontal portions *e²* and *e⁴*. The end *e* of the baffle-plate E is turned upward, so as to have a vertical portion *e⁵*, and then backward, so as to have a lip *e⁶*. This construction forms a recess or channel *e⁷* at the lower end of the baffle-plate E. At each end of this channel *e⁷* there is an opening at the ends of the case A. These openings *e⁸* communicate with down-pipes F, the upper ends *f* of which are at the openings *e⁸*, and their lower ends *f'* terminate just above the bottom of the case A. These down-pipes or drains F may be constructed so that the ends *a⁶* of the case A may form one side thereof.

Extending from and connected with the under side of the baffle-plate E down to the bottom of the case A and connected therewith are series of staggered separators G, made substantially V-shaped in cross-section, their substantially concaved faces being toward the side *a⁴* of the case A. Between the last of these separators G and the air-outlet *a'* is placed a diaphragm H, which extends slantingly inward and upward from near the bottom of the case A and secured by close joint to the ends *a⁶* of the case A. This diaphragm H has perforations *h²*, which lead from the pocket K behind the diaphragm out into the interior of the case A. At a suitable distance below the bottom or under side of the baffle-plate E the diaphragm H terminates in a lip *h*, which extends entirely across the case A from side to side and is turned downwardly, so as to form an overhanging lip. Between this lip *h* of the diaphragm H and the baffle-plate E is a space forming a passage-way I.

At each end of this passage-way, secured to the inside of the ends a^6 and extending from the under side of the baffle-plate E to the lip h , are cleats or plates h' , which extend back-

- 5 wardly away from the sides a^6 , being substantially in construction like the lip h , this lip and the two plates h' forming a diverging mouth around the ends and bottom of the passage-way I.
- 10 In use this device is to be connected up so that a suitable blower will be connected to the air-outlet a' and the air-inlet a' shall be connected with a suitable air-supply and the pipe B with a suitable water or steam supply.
- 15 Air being admitted to the inlet a and water through the pipe B and the blower being put into use, the operation of the device is as follows: The air and water meeting above the baffle-plate D the water in the form of
- 20 spray is broken up into fine particles, and the air and water are thoroughly commingled, the air being cooled and at the same time cleansed, particles of dirt, &c., in the air being forced therefrom by the water and with the water
- 25 fall upon the baffle-plate D. The air, with some portions of the sprayed water, passes over the top of the end d of the baffle-plate D and down through the passage a^7 to the baffle-plate E. The water with the dirt passes
- 30 down the baffle-plate D and through the holes d^5 , falling upon the baffle-plate E and running down the same into the channel e^7 , and down through the opening e^8 , and through the down-pipes or drains F to the bottom of the
- 35 case A. As the air with a portion of the sprayed water passes down over the baffle-plate E a portion of the water is precipitated upon the baffle-plate E and also passes down into the channel e^7 and out through the drains
- 40 F. The air thus divested of most of the water passes amid the separators G, whereat any remaining particles of moisture should be separated from the air, and the air then passes through the passage-way I to the air-
- 45 outlet a' . Should any moisture get through the separators G, the diaphragm H and the overhanging lip h with the plates h' would arrest the same, or should any water pass through the passage-way I it will collect in
- 50 the pocket K and run through the perforation h^2 into the interior of the case A.

- While the device thus described may be employed anywhere where it is desired to cleanse and cool air, still it is more specially
- 55 intended to be used upon moving structures, such as cars or vessels, wherein the water would be thrown about within the case. The construction herein set forth tends to prevent the motion of the water from throwing it up,
 - 60 so that after having once been separated from the air it should be again commingled there-

with and passed off to the blower. It will be seen from an inspection of the drawings that the entire construction tends to keep the water at the bottom of the case after it has once reached it; but more especially it is designed by the use of the inclined diaphragm H and the flaring mouth about the passage-way I to keep the water from passing from the bottom of the case A into the air-outlet a' . Should the water be thrown upward from the bottom of the case, striking against the diaphragm H and the flaring mouth of the passage-way I, the water would be effectually prevented from passing through the passage-way I and would fall backward and downward to the bottom of the case A, and all of it would pass off through the drain-pipe C. When it is desired to heat the air instead of cooling it, steam or hot water may be admitted through the pipe B.

In my Patent No. 586,365 is shown a device provided with a top baffle-plate, over the straight lower edge of which the water flows in a sheet, and a bottom baffle-plate provided with a closed end or trough, into which the water collects and flows through a down-pipe. In my Patent No. 631,377 is shown a device having a number of baffle-plates each provided with riffles having perforations in them. In this device these riffles are straight, and no one of them has its top turned backward, so as to form a channel, recess, or trough; also, the perforations are in the riffles and not in the baffle-plate. Hence the water at the last riffle of the top baffle-plate not only flows over the top of such riffle, but also passes through the perforations in a sheet over the edge of the baffle-plate. In the present device the holes or perforations d^5 are in the baffle-plate D in a line across its bottom. Hence the water collects in the recess, channel, or trough at the lower end of the baffle-plate and runs vertically downward through the holes d^5 in a sheet of water which sprays at the bottom.

Having described my invention, what I claim is—

The case A having the air and water inlet and outlet, the baffle-plate D having at its lower end the vertical portion d' , the backward portion d^2 forming the recess, channel or trough and the perforations or holes d^5 extending in a line across the bottom of the baffle-plate, as set forth.

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

JOSEPH MCCREERY.

Witnesses:

E. F. CAVERLY,
SAML. A. DRURY.