

No. 626,390.

Patented June 6, 1899.

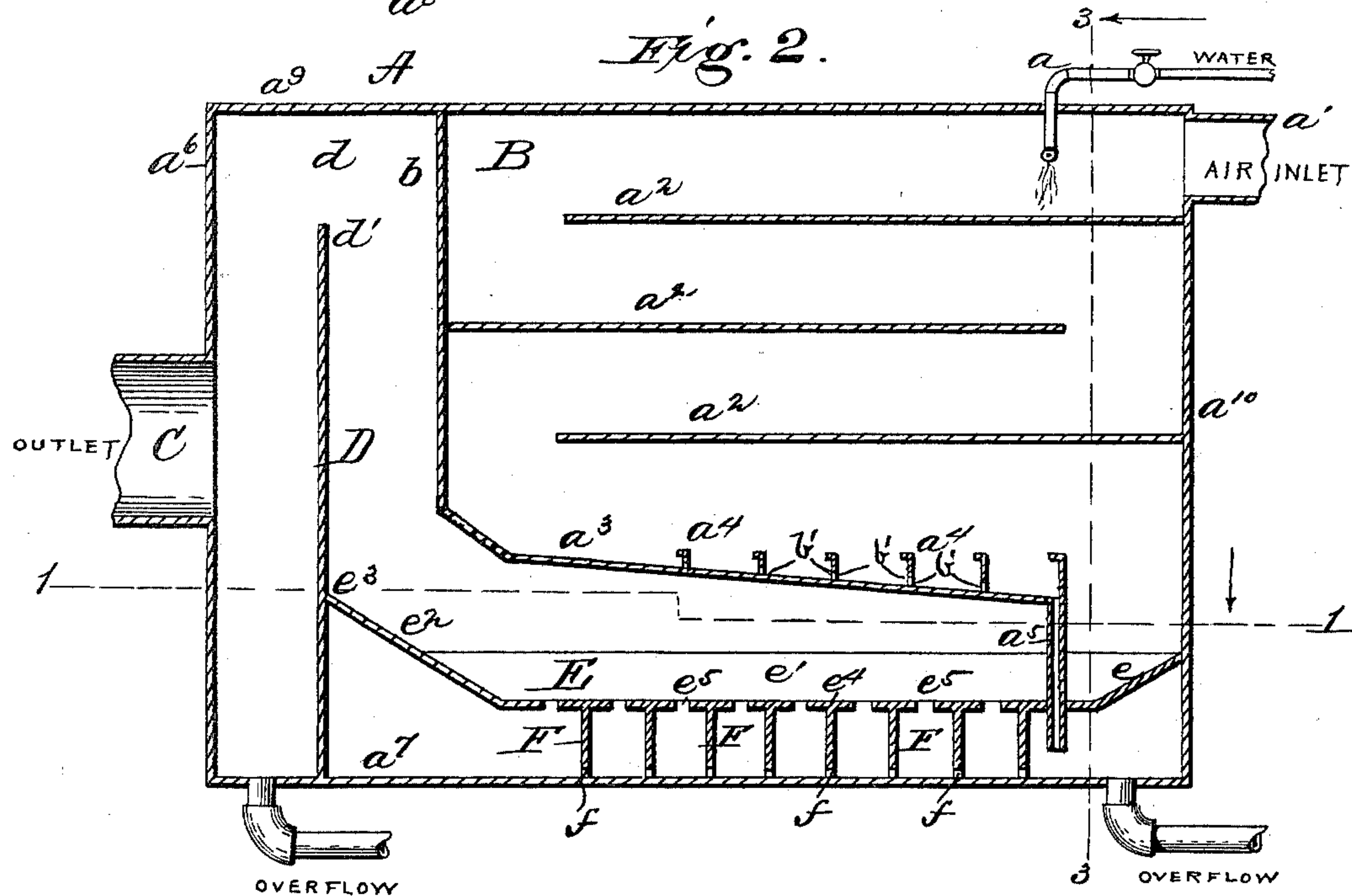
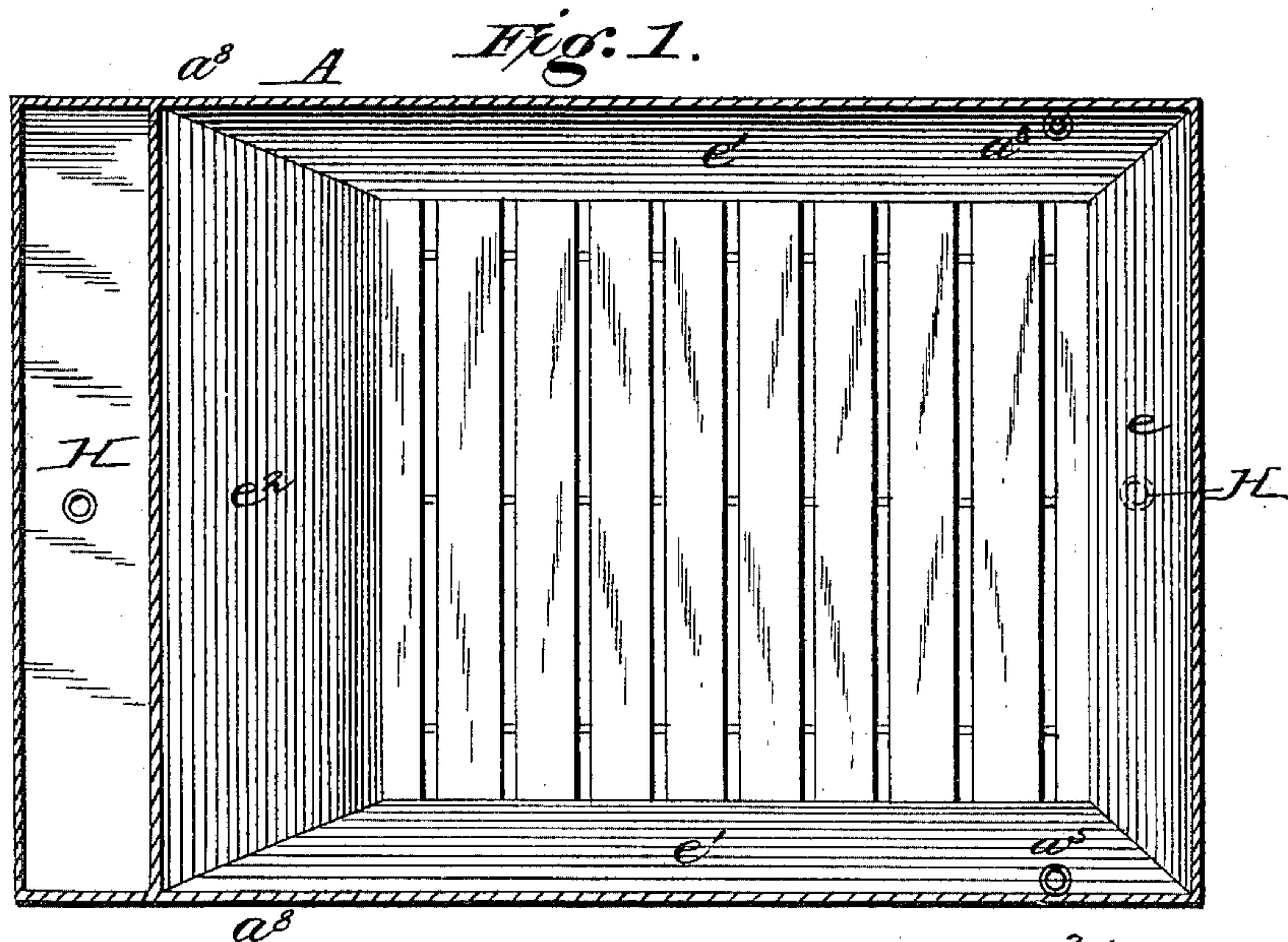
J. McCREERY.

AIR COOLING AND CLEANSING DEVICE.

(Application filed Oct. 7, 1898.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses
Frank L. Curand.
Escher V. Byng.

Inventor
Joseph McCreary,
per W. H. Singleton.
Attorney

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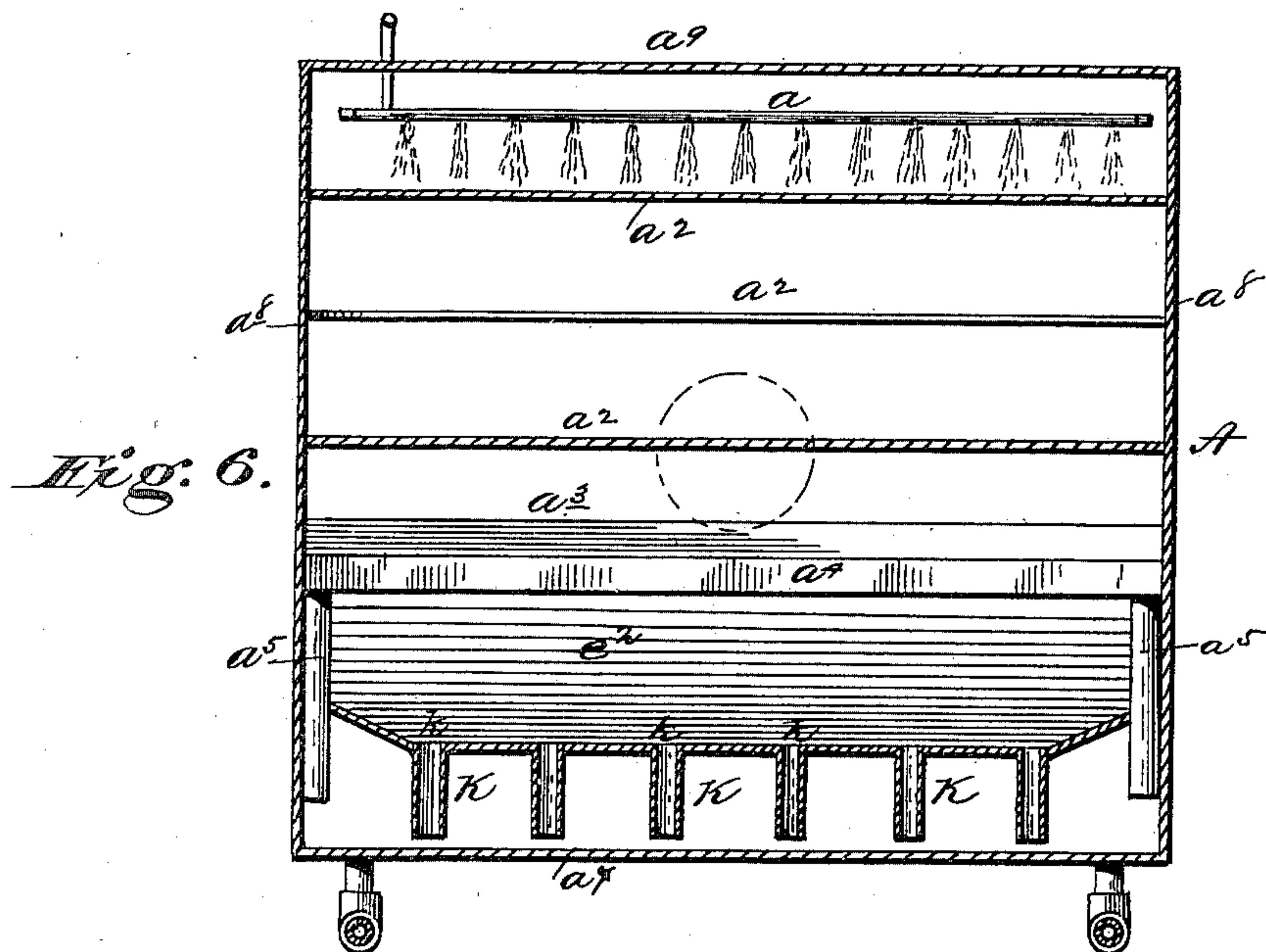
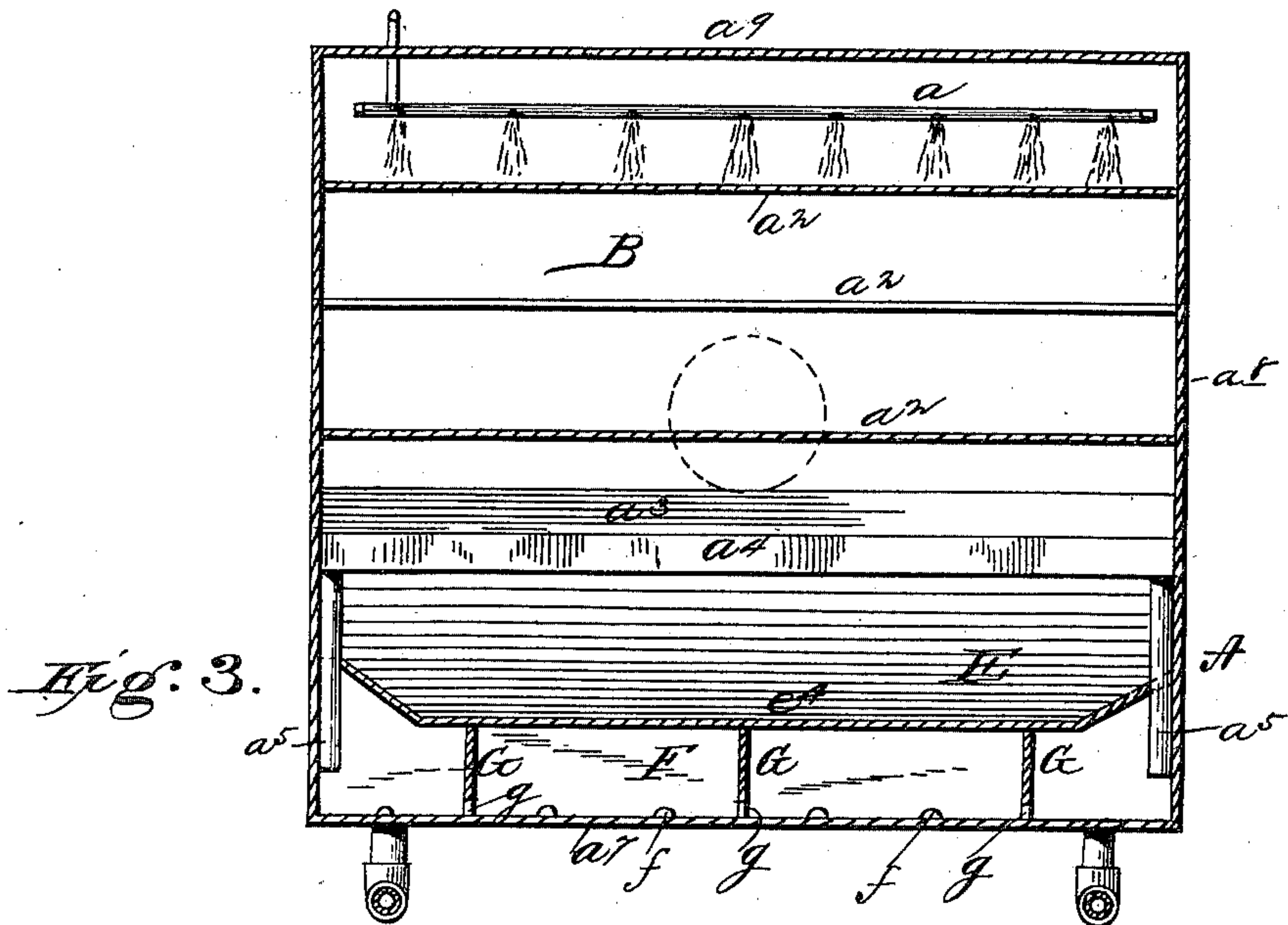
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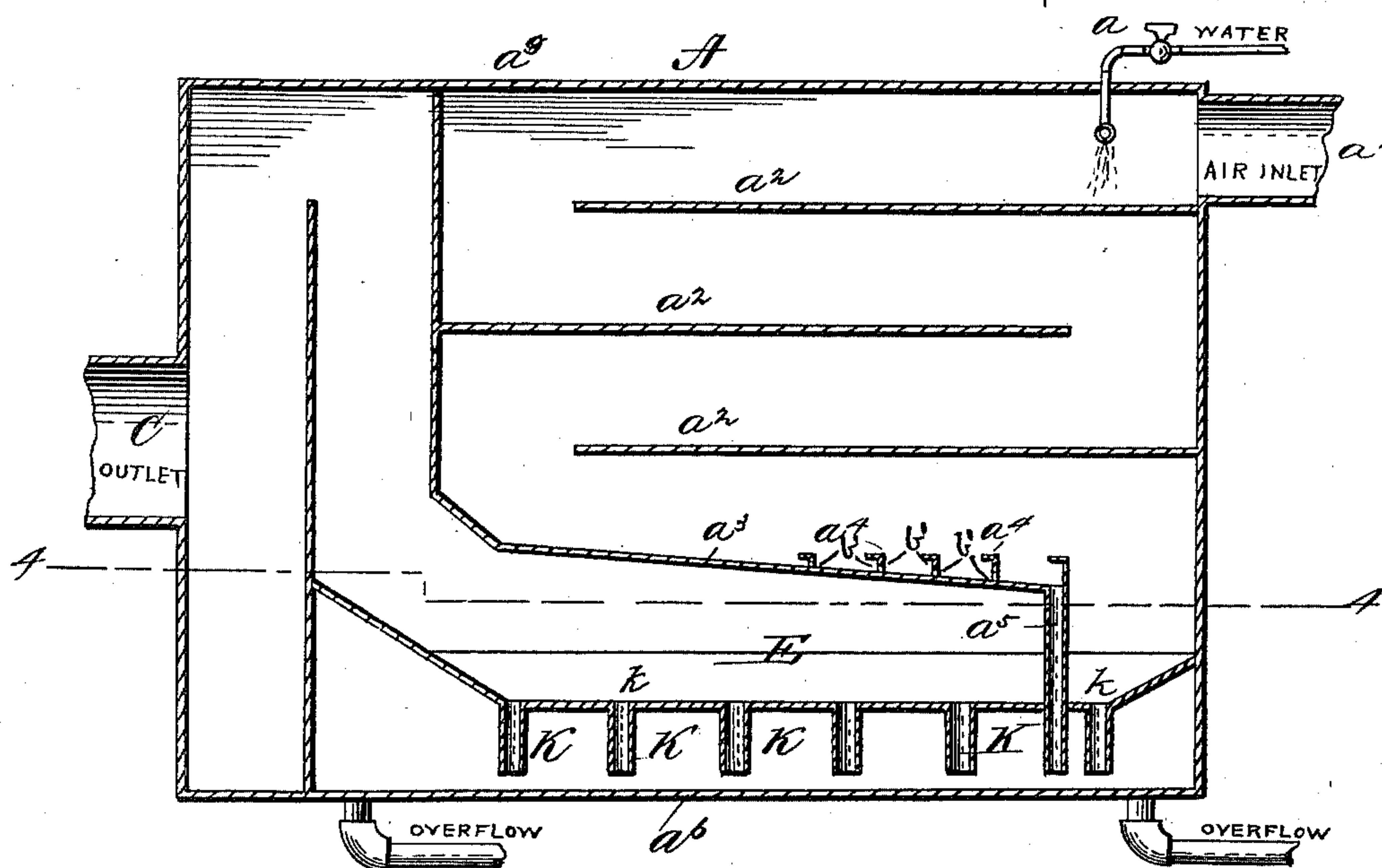
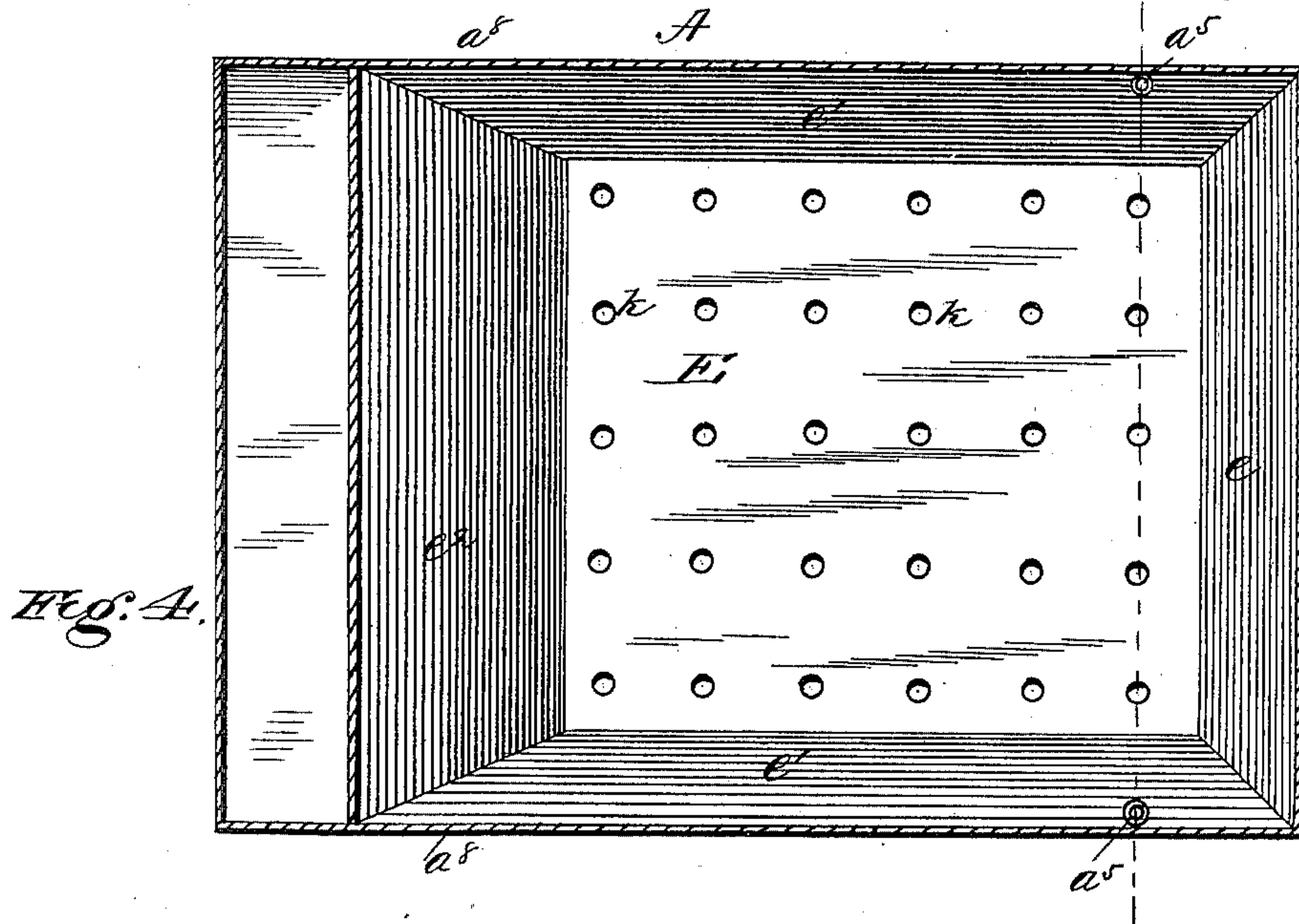
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WITNESSES:

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INVENTOR
Joseph McCreery.
per
W. H. Singleton.
ATTORNEY.

UNITED STATES PATENT OFFICE.

JOSEPH MCCREERY, OF TOLEDO, OHIO.

AIR COOLING AND CLEANSING DEVICE.

SPECIFICATION forming part of Letters Patent No. 626,390, dated June 6, 1899.

Application filed October 7, 1898. Serial No. 692,917. (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
5 invented certain new and useful Improvements in Air Cooling and Cleansing 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
10 art to which it appertains to make and use the same.

This invention relates to a new and useful improvement in air cooling and cleansing devices.

15 The object of the invention is to so construct such devices that the surplus water in falling to the bottom and agitated when the device is used on a ship or other movable structure shall not be thrown into the air-outlet pipe.

20 In the drawings, Figure 1 is a horizontal sectional view taken on the line 1 1, Fig. 2, the supplemental or false bottom being shown in plan view. Fig. 2 is a longitudinal vertical section of the device. Fig. 3 is a transverse vertical section on the line 3 3, Fig. 2,
25 looking in the direction of the arrow. Figs. 4, 5, and 6 are similar views of another form of the device.

In the drawings, the letter A represents an
30 air cooling and cleansing device having the water-inlet a , the air-inlet a' , the alternating baffle-plates a^2 , the incline a^3 , the riffles a^4 , having openings b' in their bottom, and the down-pipes a^5 at the lower end of the incline
35 a^3 , all being of the usual construction except that the riffles a^4 differ progressively in height, so that their tops are in the same horizontal plane. The baffle-plates and riffles are placed in a compartment B of the device, the inner
40 partition b of which is spaced apart from the wall a^6 of the device, the air-outlet C being in such wall a^6 .

Rising from the bottom a^7 of the device is a plate or diaphragm D, which enters into the
45 space d between the inner partition b and the wall a^6 . This plate or diaphragm D is secured to the bottom a^7 and to the sides a^8 , its upper end d' being spaced apart from the top a^9 of the case, thus dividing the space d into two
50 compartments.

Within the case A and above the bottom a^7

is secured a supplemental or false bottom E, which is secured to the side of the plate or diaphragm D away from the outlet C and is also secured to the sides a^8 and the end a^{10} of
55 the case A. This bottom E is thus secured by upwardly flaring or diverging sides and ends e , e' , and e^2 . These are all of substantially the same dimensions except the end e^2 , which is wider than the other three and has
60 its upper edge e^3 higher than the upper edges of the sides and the other end. This supplemental or false bottom is so placed that the down-pipes a^5 pass through them. The bottom plate e^4 of the supplemental bottom E is
65 provided with transverse slits or openings e^5 . From the under side of the bottom E and connected to the bottom plate e^4 thereof are a number of transverse plates F, extending
70 down to the bottom a^7 of the case and provided with small openings or passages f . As indicated in Figs. 1 and 3, there may be also longitudinal plates G extending between the bottom plate e^4 of the bottom E and the bottom plate a^7 of the case A, and these plates
75 G may have passages g in them.

The device may be provided with several overflow-pipes H or only one may be used.

With a device constructed as shown air or water is drawn through in the usual way and
80 commingle in the compartment B. The water, being heavier, naturally falls down on the incline a^3 and strikes against the riffles a^4 , passing through them. As the water and air pass down the case to the inclined baffle-plate a^3
85 the air passes along over the top of the baffle-plate and the riffle, while the separated water falls down upon the baffle-plate a^3 and flows down an incline. This water passes through the perforations b' in the riffle. The gradu-
90 ally-increasing height of the riffles a^4 causes the mass of water to accumulate and prevents it from flowing over the top of the riffles and passing off with the air to the bottom of the case. As the water is thus retarded and
95 checked by the riffles, the air passes downward over the tops of the riffles, and a partial separation of the air and water takes place. The increasing height of the riffles a^4 is so adjusted that the space between the tops of these
100 riffles and the baffle-plate just above them is the same as the spaces among the other baffle-

plates. By such a construction while the water is caught by the riffles the air has the same passage between the lowermost two baffle-plates as it has between the others. The water which accumulates at the last riffle passes through the down-pipes a^5 below the supplemental bottom E. The water which passes over the last riffle falls on top of the supplemental plate E, passes down through the slits e^5 , amid the plates F and G, and out through the overflow pipes or pipe. The cleansed, cooled, and separated air passes up and over the plate or diaphragm D and out through the outlet C.

When a device constructed as described is used on shipboard or other movable structure where the device is violently moved with the vessel, the water at the bottom is necessarily thrown about and violently agitated. When the water is thrown in the direction of the air-outlet, necessarily some of it would be thrown into such outlet, and some of it being broken into spray would tend to moisten the air too much. The device such as shown, on the contrary, tends to keep the water within the case and prevent it from being thrown into the air-outlet pipe. The flaring shape of the supplemental bottom E dissipates and moderates the agitation of the water, as gravity tends to hold the water down as the latter is being thrown up the inclined sides and ends of the supplemental bottom E, and this upward tendency of the water through agitation is especially minimized at the end e^2 . Should any water be thrown beyond the upper edge of this end e^2 , it will most effectually be prevented from entering the outlet C by reason of the presence of the plate or diaphragm D, as gravity will be thoroughly effectual to prevent the agitation of the water from throwing the latter up and over the top of the plate D. However, the most efficient preventive of the water being thrown upward in the case is the supplemental bottom itself. This supplemental bottom, as has already been stated, is secured at its edges, and the only openings therein are those through which the water flows. As the air and water come to the supplemental bottom the separated water pours through the slits e^5 into the space between the two bottoms and is carried off through the overflow-pipe. This supplemental bottom therefore effectually prevents the accumulated water below

it from being tossed upward and commingled with the air.

In Figs. 4, 5, and 6 are shown modifications. The general characteristics are the same and the detailed description of most of the parts is about the same. However, the present modification differs from the former construction as follows: Instead of having the slits e^5 and the plates F and G the device is provided with a number of pipes or tubes vertically arranged and extending from holes k' in the supplemental plate E nearly to the bottom a^6 of the case A. It will be seen that these tubes or pipes K, like the plates F and G, tend to prevent the water from being thrown about underneath the supplemental bottom E.

Having described my invention, what I claim is—

1. An air-cleansing and cooling device, consisting of a case having an air-inlet and a water-inlet at the top, and an air-outlet and a water-outlet at the bottom, and a series of baffle-plates interposed between the inlets and outlets, the lowermost baffle-plate being inclined downwardly and having across its upper surface a series of riffles increasing in height from the top to the bottom, such riffles having perforations at their bottom, and their tops being spaced apart from the baffle-plates above them the same distance as the other baffle-plates are spaced apart, whereby the air-passage through the baffle-plates is substantially the same size throughout as and for the purpose set forth.

2. An air-cleansing and cooling device, consisting of a case having at its top an air-inlet and a water-inlet, and at its bottom an air-outlet and a water-outlet, and between the two a series of baffle-plates and a supplemental bottom, the latter being secured all around at its edges, and being provided with a number of openings, whereby the water which has been separated from the air will pass to the bottom of the case below the supplemental bottom and is prevented from being thrown up and being commingled with the air, as set forth.

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

JOSEPH MCCREERY.

Witnesses:

EMMA M. GILLETT,
W. H. SINGLETON.