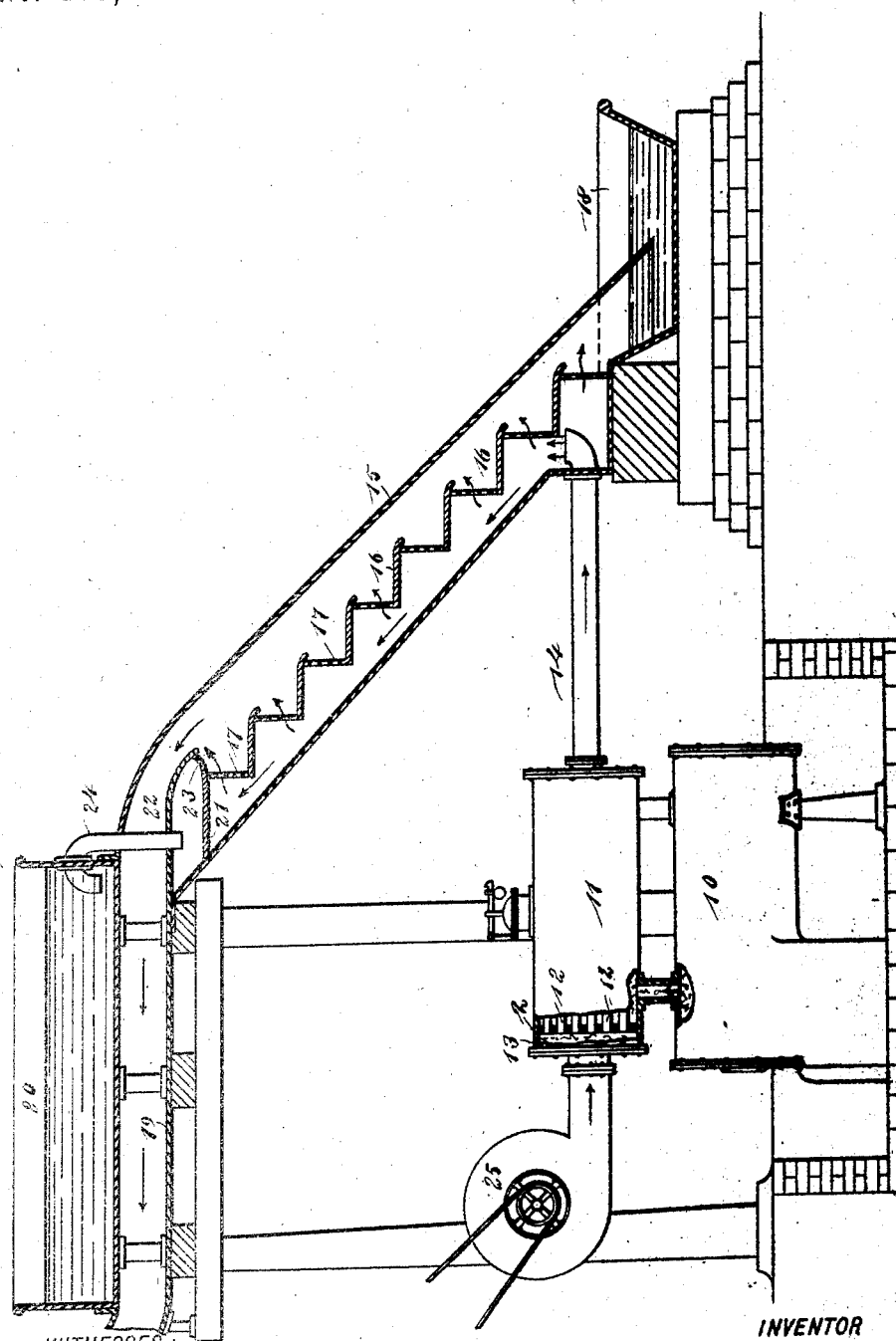


(No. Model.)

W. GOLDING.  
EVAPORATING APPARATUS.

No. 489,147.

Patented Jan. 3, 1893.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

WILLIAM GOLDING, OF NEW ORLEANS, LOUISIANA.

## EVAPORATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 489,147, dated January 3, 1893.

Application filed March 30, 1892. Serial No. 427,103. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM GOLDING, of New Orleans, in the parish of Orleans and State of Louisiana, have invented a new and Improved Apparatus for Recovering Solid Matters from Solutions, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, in which my improved apparatus is shown in side elevation and partly in section.

The invention consists in the novel construction, arrangement and combination of parts, as will be hereinafter described and claimed.

Referring now specifically to the drawing, 10 represents a boiler, and 11 a drum arranged in connection therewith, in which drum there are arranged a number of pipes 12, that are seated in heads 2, and communicate with chambers 13, at each end of the drum, the tubes being so arranged that they place the two end chambers 13 in communication. A tube 14, leads from one end of the drum 11 to an inclined box-like structure 15, in which I arrange a stair-like structure 16, which constitutes the absorber. The treads of the absorber are preferably made of sheet metal while the risers 17, are perforated. The lower end of the inclined box-like structure 15 dips into a receiving vessel or tank 18, and above the upper horizontal section 19 of the structure 15, I place a tank 20.

Above the upper tread 21, of the stair-like structure 16, I arrange a guard or shield 22, which, as represented in the drawing, is a continuation of the lower portion of the horizontal section 19 of the structure 15, the end of this guard being bent downward so as to rest upon the upturned end 23 of the tread 21, this upturned portion 23 being perforated. A siphon 24, leads from the tank 20 downward through the shield 22 to a point just above the tread 21.

In connection with the drum 11, I arrange a fan 25, by means of which a current of air may be forced through the tubes 12 that are arranged, as before stated, within the drum 11, the air so forced through the tubes passing from the drum through the pipe 14 and into the lower portion of the structure 15, the currents taking the direction of the arrows shown in the drawing.

In operation, the solution to be operated upon is placed within the tank 20, passing thence through the siphon 24 to the upper tread 21 of the structure 16, and thence in a series of cataracts over the treads of said structure, the heated air currents passing outward from beneath the treads and through the perforated risers, through the cataracts formed by the downward passage of the solution, which latter is finally discharged from the horizontal section of the structure 15, the air currents being forced to take the course indicated, owing to the seal formed by the liquid in the tank 18.

From the foregoing description it will be seen that the water contained in the solution that is being operated upon, will be absorbed by the heated air that is forced through it, it being well understood that heated air has a high affinity for water; and in practice it will be found that the process of absorbing the water from the solution is very much cheaper than the old process of evaporation. As the heated moisture-laden air passes beneath the tank 20, it will act to heat the material contained within said tank, giving off a portion of its heat, and at the same time a portion of the water carried by the material will be precipitated; and if desired, this water of condensation may be collected and used for such purposes as may be expedient, such water being absolutely pure.

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

1. The combination, with a closed, box-like structure, of a transverse series of steps dividing said structure longitudinally and forming air-passages at front and rear thereof, the treads of said steps being imperforate and the risers being perforated, and an inlet discharging on the top tread of said steps, substantially as shown and described.

2. The combination, with a closed, inclined box-like structure, of a transverse series of steps dividing said structure longitudinally into front and rear air-passages, a hot-air inlet at the lower end of the rear passage and an air outlet at the upper end of the front passage, and a liquid seal at the lower end thereof, the risers of the steps being perforated and the treads imperforate, and a sup-

ply pipe inlet discharging on the top tread of said steps, substantially as shown and described.

3. In an apparatus for recovering solid mat-  
5 ters from solutions, the combination, with a supply tank, of a box-like structure having a section which passes beneath the tank, a series of imperforate treads and perforated ris-  
10 ers arranged within said structure, a supply pipe leading from the supply tank to a point above the upper tread, a receiving tank within which the lower end of the box-like structure

dips, a steam drum, a pipe leading from the drum to the lower portion of the box-like structure, pipes arranged within the drum and #5 communicating with the pipe leading from the drum, and a blast fan arranged in connection with the drum, substantially as shown and described.

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Witnesses:

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