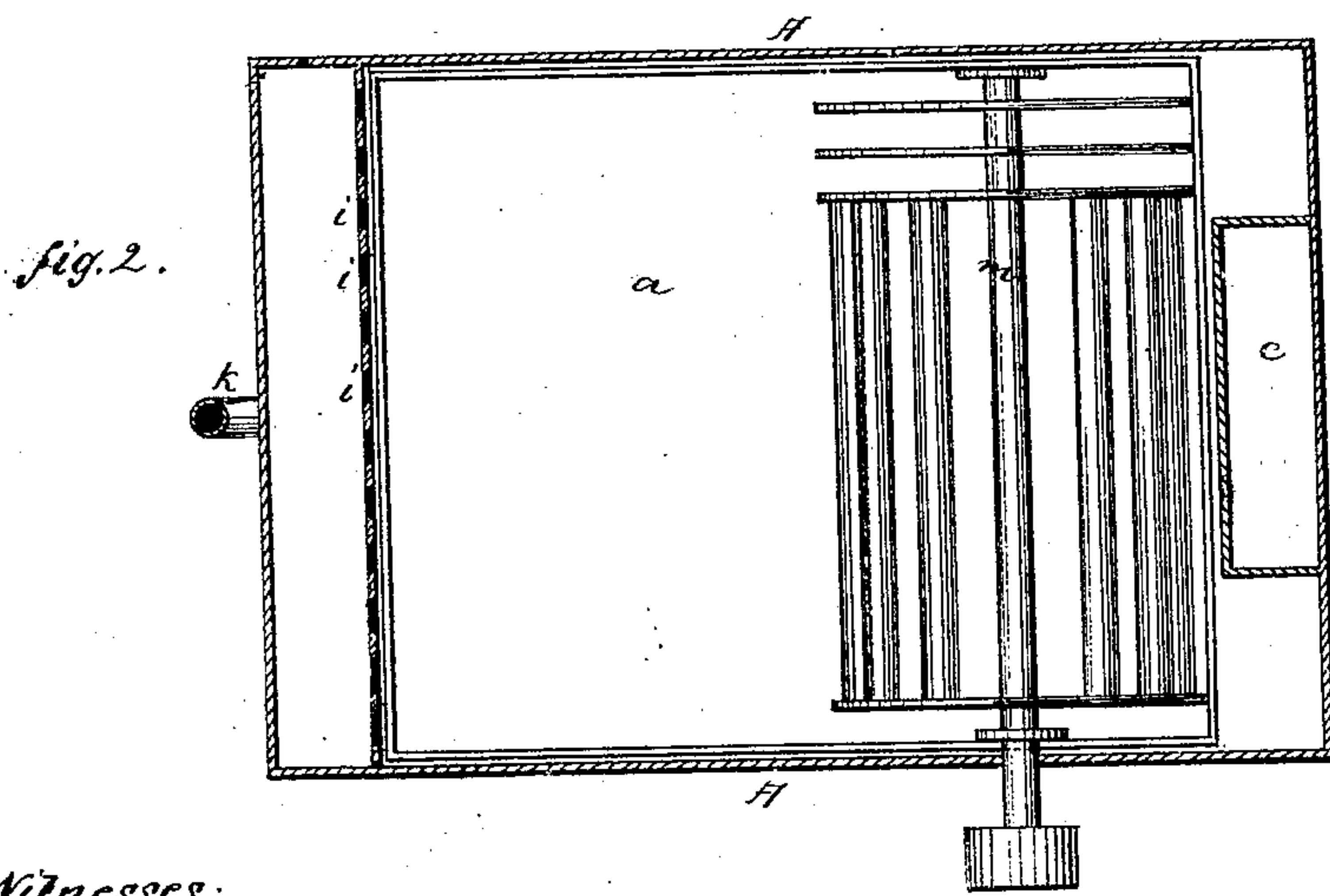
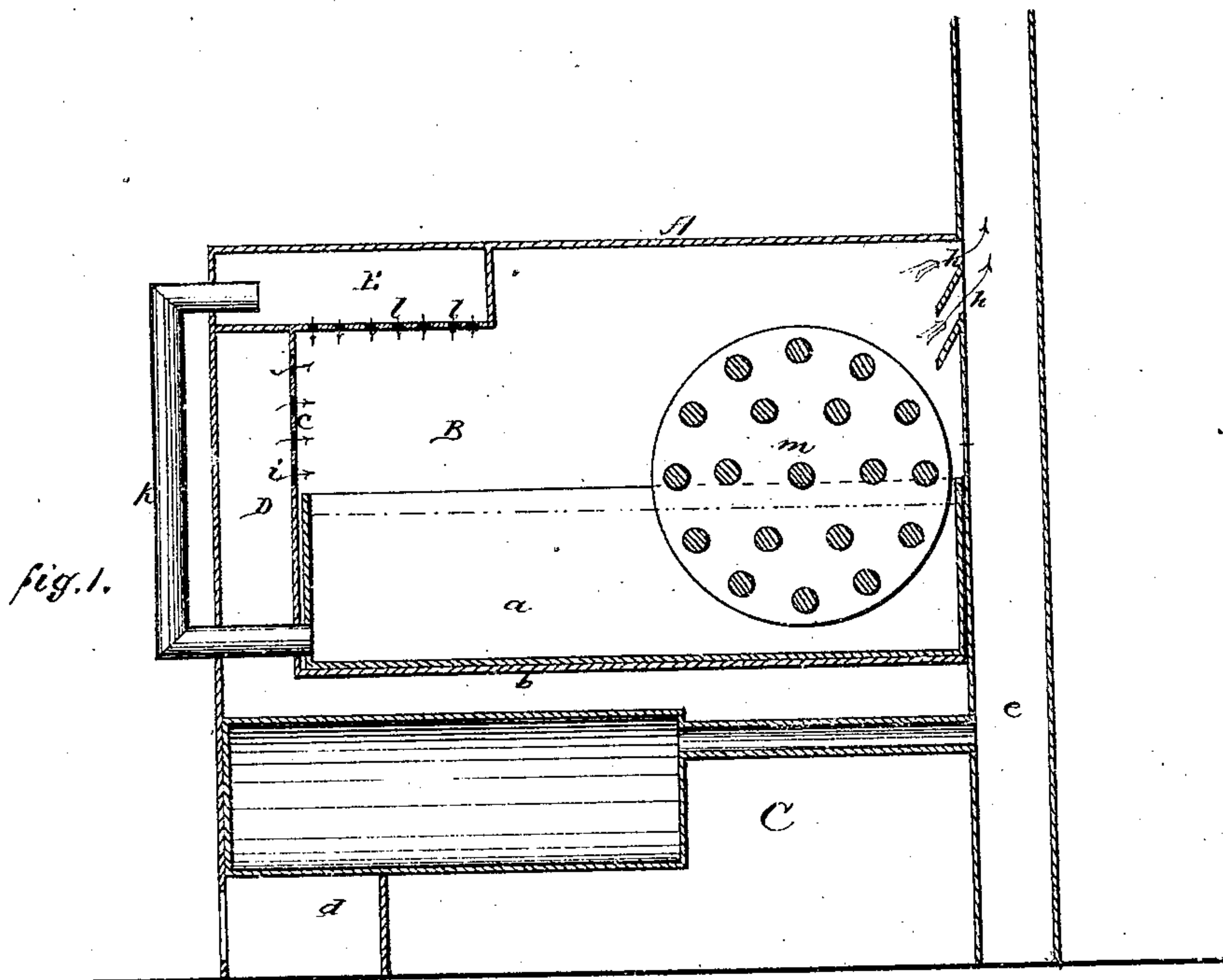


G. F. Gray,

Evaporator.

No. 103602.

Patented May 31. 1870.



Witnesses:
John Hagmann
N. B. Platt

Inventor:
G. F. Gray
per Munn & Co
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United States Patent Office.

GEORGE F. GRAY, OF BROOKLYN, NEW YORK.

Letters Patent No. 103,602, dated May 31, 1870.

IMPROVEMENT IN APPARATUS FOR EVAPORATING LIQUIDS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that I, GEORGE F. GRAY, of Brooklyn, in the county of Kings and State of New York, have invented a new and improved Evaporator; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming a part of this specification, in which—

Figure 1 is a sectional elevation, and

Figure 2 is a horizontal section.

This invention relates especially to a process of preparing an extract of tannin by the evaporation of the liquid infusion of the same, but it is applicable to any process of which evaporation forms an essential part.

The invention consists in ventilating the evaporating-chamber by means of orifices made in the chimney or smoke-stack, through which pass the products of the combustion by which the heat requisite to the process of evaporation is generated.

The invention also consists in an apparatus by which the liquor to be evaporated is drawn by a pump from the pan containing it, poured out over a horizontal plate, and allowed to fall into the pan again through perforations in such plate, while, at the same time, the hot air or steam employed to effect evaporation is made to pass through a vertical perforated plate, and traverse in jets through the shower of falling liquor, to the end that evaporation may more perfectly take place, owing to the intimate commingling of the particles of liquor and air or steam.

In the drawing—

A is the case, inclosing the whole apparatus.

a, the pan that receives the liquor.

b, a horizontal partition across the case A, on which the pan a rests.

c, a vertical partition, forming, with the partition b, the evaporating-chamber B.

C, the heating-chamber.

d, the furnace within the heating-chamber.

e, the chimney, passing up through both the heating and evaporating-chambers.

h h, orifices made in the side of the chimney, and opening into the evaporating-chamber.

The products of combustion from the furnace es-

caping upward through the chimney create a strong draught therein, by which the vapors generated in the evaporating-chamber are effectually removed.

Heretofore, one of the principal difficulties attending the use of evaporators has been to thoroughly carry off the vapor. I claim that I have overcome this difficulty by the means described.

The air heated by the furnace d rises into the space D, between the partition c and the side of the case, and passes in currents through the perforations i o in said partition.

A pump is employed to draw the liquor from the pan a, through the tubes k, and discharges it into the chamber E, in the upper corner of the case A; hence, the liquor falls in streams through the perforations l in the bottom of the chamber E, back into the pan a, passing through the air-currents as it falls.

Superheated steam may be employed, instead of hot air.

A stirring-wheel, m, may be placed in the pan, for the purpose of drawing up out of the same the liquor therein contained, and exposing it to the action of the heated currents of air or steam.

When the wheel is used, the liquor is not pumped up into the chamber E and allowed to fall in streams, as before described, that process being a substitute for the one in which the wheel is employed.

Having thus described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. The orifices h, made in chimney e, within the evaporating-chamber B, for the purpose of ventilating the latter, by means of the draught created in the chimney by the products of combustion from the furnace, substantially as described.

2. The combination of the perforated partition c, chamber E, provided with a perforated bottom, evaporating-chamber B, and tubes k, heating-chamber C, all combined and arranged substantially as and for the purpose set forth.

GEO. F. GRAY:

Witnesses:

VICTOR HAGMANN,
N. C. PLATT.