(Model.)

E. R. WHITNEY & J. SIMPSON.

Evaporator.

No. 237,649. **Patented Feb. 8, 1881.**

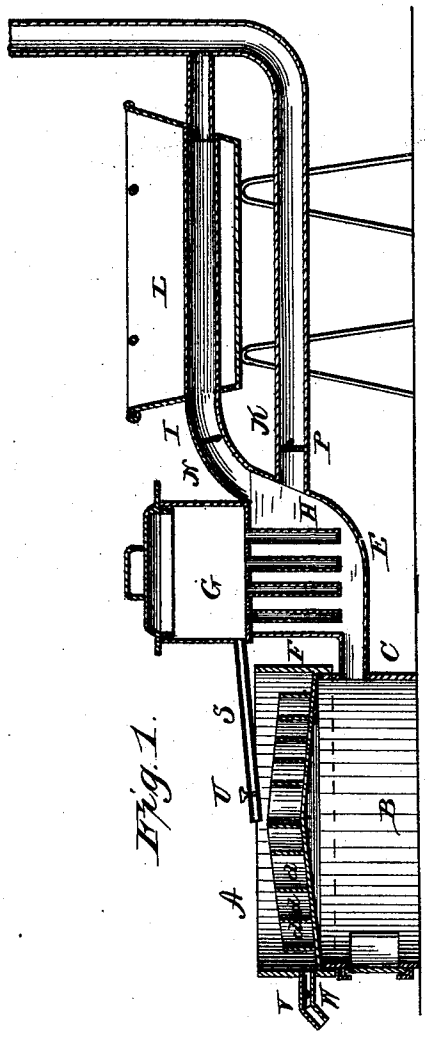


Fig. 1.

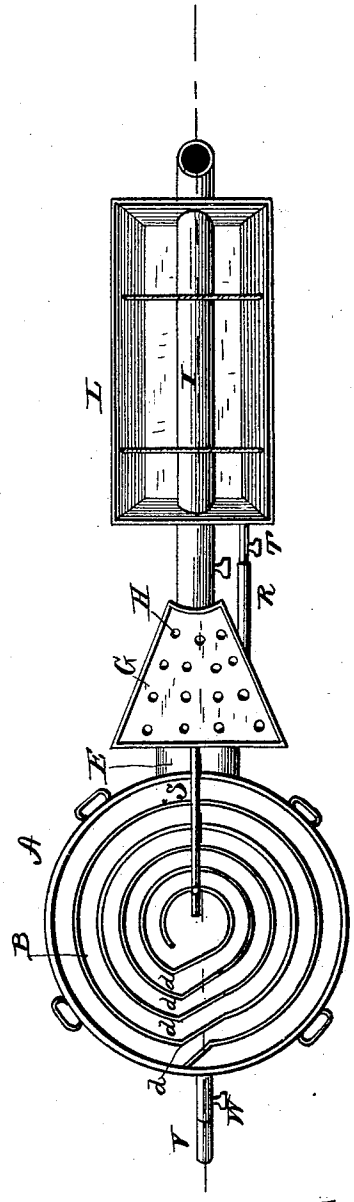


Fig. 2.

Witnesses
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UNITED STATES PATENT OFFICE.

EDWIN R. WHITNEY AND JOSEPH SIMPSON, OF MONTREAL, QUEBEC, CANADA.

EVAPORATOR.

SPECIFICATION forming part of Letters Patent No. 237,649, dated February 8, 1881.

Application filed November 30, 1880. (Model.)

To all whom it may concern:

Be it known that we, EDWIN RUTHVEN WHITNEY and JOSEPH SIMPSON, both of Montreal, in the Province of Quebec, and in the Dominion of Canada, have invented certain new and useful Improvements in Evaporators; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

This invention relates to certain improvements in that class of evaporators in which a circular pan is employed having a convolute passage located on a conical bottom, in order to form an extensive evaporating-surface for the liquid to be evaporated; and it has for its objects to provide a means whereby the liquid may be retained in the pan to prevent injury to the bottom from the heat of the furnace, and also to provide for the utilization of the waste heat of the furnace, as more fully hereinafter specified. These objects I attain by the apparatus illustrated in the accompanying drawings, in which—

Figure 1 represents a longitudinal sectional view of my improved apparatus, and Fig. 2 a top view of the same.

The letter A indicates the main evaporating-pan, which is circular in shape and provided with a conical bottom, B. The said pan is mounted directly upon the top of a circular furnace, C, constructed of any suitable material. The bottom of the pan A is provided on its upper face with a convolute partition, D, extending from the center to the outer front edge. The said partition at the points *d* is formed with angular bends, which serve to hold the liquid in the spaces between the walls of the partition, so as to keep the pan constantly covered and prevent the burning of the bottom of the pan.

The letter E indicates a flue leading from the furnace to a heating-chamber, F, which is adapted to receive a heater, G, provided with a series of depending pockets, H, for the purpose of effectually economizing the heat and transmitting it to the liquid which the said heater G may contain.

From the chamber F extend two flues, (lettered I and K, respectively,) the upper flue, I, extending through a heating-pan, L, and the lower flue extending longitudinally under said pan, the two terminating in a common escape-flue, M. The two flues I and K are provided with dampers N and P, respectively, by means of which the products of combustion can be directed through either flue, as desired.

The pans are provided with pipes R and S, by means of which the liquid can be transferred from one to the other, as desired, the said pipes being provided with cocks T and U, by which the flow can be stopped when required.

The letter V indicates a pipe provided with a valve, W, by means of which the liquid may be drawn off from the main pan.

In operation the liquid is placed in the upper pan, the heat being directed through the upper flue, passing through the same, and during the evaporation is allowed to pass through all of the pans, being finally withdrawn at V. When the best portion of the charge is being run off from the pan L the damper in the upper flue is closed and that in the lower flue opened, so as to direct the heat through the lower flue and prevent injury to the pan.

Having thus described my invention, what I claim is—

1. In combination with the evaporating-pan having a conical bottom, the convolute partition B, having the angular bends *d*, substantially as and for the purposes specified.

2. In combination with the heating-chamber and its heating-pan G, the heating-pan L, and the flues extending through and below the same, and the dampers for regulating the passage of the heat through said flues, substantially as specified.

In testimony that we claim the foregoing we have hereunto set our hands and seals this 6th day of November, 1880.

E. R. WHITNEY. [L. S.]
JOSEPH SIMPSON. [L. S.]

Witnesses:
ANDREW J. SIMPSON,
J. J. MCCARTHY.