B. K. HAWLEY.

Evaporator.

No. 54,340. Patented May 1, 1866.

Fig. 1.

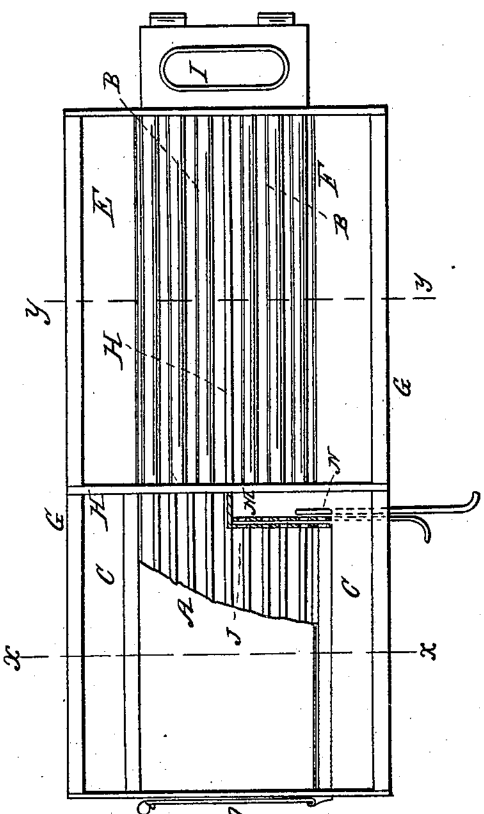


Fig. 3.

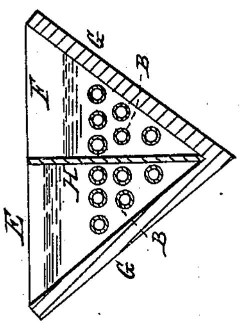
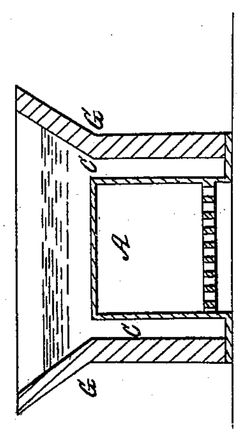


Fig. 2.



Witnesses:

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# UNITED STATES PATENT OFFICE.

B. R. HAWLEY, OF NORMAL, ILLINOIS.

## IMPROVED EVAPORATOR.

Specification forming part of Letters Patent No. **54,340**, dated May 1, 1866.

*To all whom it may concern:*

Be it known that I, B. R. HAWLEY, of Normal, McLean county, and State of Illinois, have invented a new and useful Improvement in Evaporators for Sirups; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan of an evaporating apparatus made according to my invention. Fig. 2 is a cross-section through the furnace. Fig. 3 is a cross-section through the pans.

Similar letters of reference indicate like parts.

The object of this invention is the improvement of apparatus for evaporating and manufacturing sirup, especially that known commonly as "sorghum" sirup.

It consists, in general terms, in surrounding the sides and top of the fire-box or furnace with a receptacle for the crude sorghum juice, and also in forming behind the furnace two other pans, which are separated by a thin vertical partition, and through which pans the flues of the furnace pass, conducting the products of combustion to the chimney-flue in the end of the apparatus. The flues are controlled by dampers, which allow cold air to enter them when the products of combustion are shut off. The dampers used are of two kinds—perforated, to allow diminished currents of hot air and gases from the fire to pass into the flues, and solid dampers, which wholly exclude them. When the dampers are applied to the flues of one pan the others are left open for draft to the furnace. The outsides of the pans and receptacles are of wood.

In the example of my improvement here shown the letter A designates the furnace having a door, D, and a grate. It may be of any suitable shape. It is inclosed on each side by wooden walls G, lined with suitable material, if desired, between which and the sides of the furnace are spaces *c c*, which receive the sorghum juice or other crude sirup to be treated. The wooden walls rise higher than the top of the furnace, so as to allow the juice to cover the top of the furnace. Behind the furnace and the pan C are two pans, E F, also of wood, and which are formed by dividing the triangular wooden pan in two equal parts, E F, by a thin vertical partition, H, which extends its whole length. The pans E F are separated from the front pan and from the furnace by a close partition, K, which may, if desired, be perforated and fitted with plugs or with pipes and faucets, to allow the sirup or juice to pass, at suitable stages in the manufacture, from the front pan into the back pans; and the partition H may be likewise so prepared, or the partitions may be left solid, as here shown, and the sirup or juice may be transferred from pan to pan by dipping or by pumping.

The letters B designate flues, which extend from the end of the furnace through the divisions or pans E F to the chimney-flue I. The flues are, in this example, equal in number in each pan; but the finishing-pan E may be provided with only about half the number of these in the pan F, which may be used as a defecating-pan. The mouths of the flues are controlled by dampers to regulate the heat. I have shown such dampers only applied to the flues that pass through the pan F. The said dampers here shown are two in number, one of them, M, being perforated, so that when it is pushed in before the flues the the draft is only partially checked; and another, N, solid, so as to wholly exclude the products of combustion and hot air from the flues that pass through the pan F. These dampers work in a box, J, which is fitted before the mouths of the flues of said pan E, and into which box cold air is admitted in any suitable way by the act of closing the dampers. When the dampers are closed wholly or partly the currents of smoke and air from the fire will proceed to the flues of the other pan. The flues of the other pan are fitted with like dampers, working in a like box. Of course the draft should not at any time be wholly closed by using both sets of dampers at once. Instead of constructing the dampers so as to slide in and out in the way here shown, they may be hinged so as to rise and fall between the flues B and the end of the furnace.

By inclosing the evaporating-pans in wood I am able to preserve much of the heat which would otherwise be lost by radiation.

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

1. In apparatus for evaporating the juice of

sorghum or other substances, forming an evaporating-pan above and down each side of the furnace, substantially as described.

2. Forming two pans, side by side, behind the furnace and passing the furnace-flues directly through them to the chimney, when the said flues are controlled by separate dampers or sets of dampers for the flues of each of the back pans, substantially as shown and described.

B. R. HAWLEY.

Witnesses:
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