B. F. HARPER.

HEATERS AND EVAPORATORS FOR MOLASSES.

No. 189,732. Patented April 17, 1877.

Fig. 1.

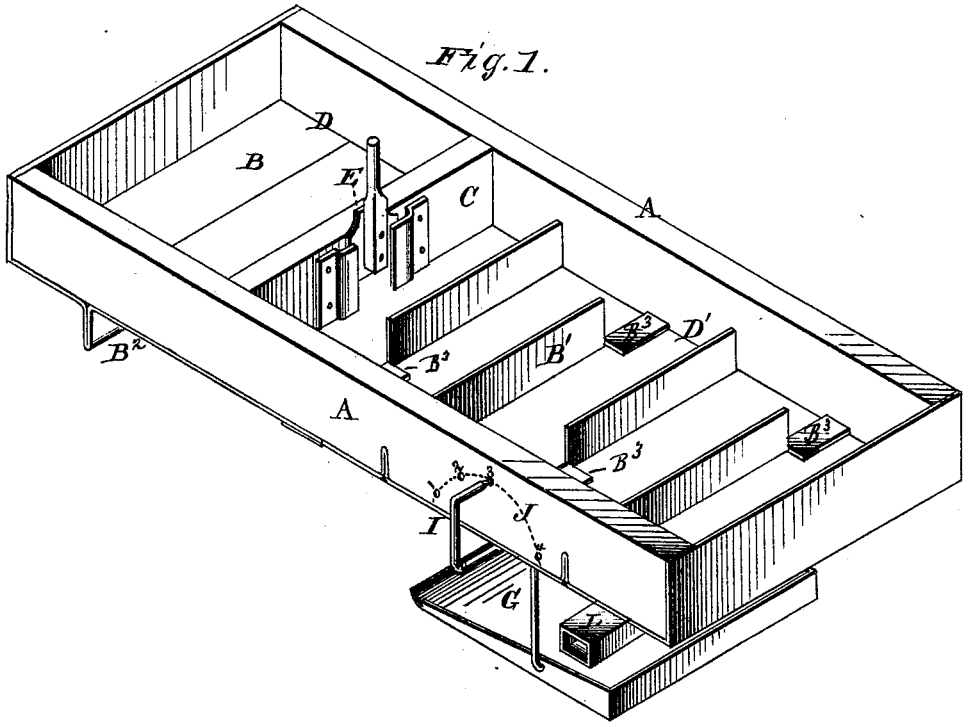


Fig. 2.

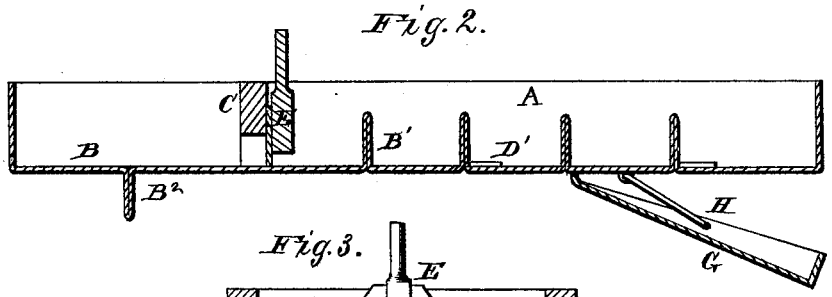
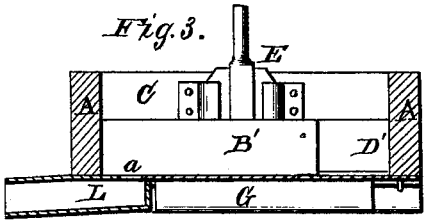


Fig. 3.



WITNESSES

Franck L. Owens

C. L. Ewert.

INVENTOR

B. F. Harper

Alexander & Mason

ATTORNEYS

UNITED STATES PATENT OFFICE.

BENJAMIN F. HARPER, OF MOUNT VERNON, ILLINOIS.

IMPROVEMENT IN HEATERS AND EVAPORATORS FOR MOLASSES.

Specification forming part of Letters Patent No. **189,732**, dated April 17, 1877; application filed November 9, 1876.

To all whom it may concern:

Be it known that I, B. F. HARPER, of Mount Vernon, in the county of Jefferson, and in the State of Illinois, have invented certain new and useful Improvements in Heater and Evaporator for Molasses; and 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.

The nature of my invention consists in the construction and arrangement of a combined heater and evaporator for molasses, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a perspective view of the combined heater and evaporator. Fig. 2 is a longitudinal vertical section, and Fig. 3 a transverse vertical section, of the same.

A A represent two parallel side pieces, connected by means of the metallic bottom B, the ends of which are turned up to form the end pieces of the pan. C is a cross-bar, connecting the side pieces A A, and dividing the pan into the heater D and evaporator D'. In the partition or cross-bar C is a vertically-sliding gate, E, as shown.

By this construction, there is a full supply of juice over the fire-box, and, by means of the gate, the juice can be fed to the evaporator from the heater, either fast or slow, as desired.

The juice will stand about five inches deep in the heater, and one-half inch deep in the evaporator; and if there should be any danger of melting down—like all other evaporators—a full supply of juice may be turned in in a moment, and thus save cost in repairing the evaporator. It also keeps the green juice from the sirup, which makes the molasses more clear and better tasting.

Under the evaporator is a heat-regulator, G, in the shape of a rectangular pan, suspended upon a crank-shaft, H. This shaft has, at one end, an index-arm, I, pointing against a scale, J, on the side of the evaporator. By turning this index to No. 1 on the scale, it will throw the regulator back to the last four vats, where the molasses is finished; and when in this position, instead of opening the doors of the furnace, the operator can fire up as heavy as he likes, as this regulator will keep the heat from the last four vats enough to cook the molasses in good style.

When the fire is started up it will, like all other evaporators, form molasses about the middle of the evaporator. By then placing the index at No. 4, the last bars are heated up, thereby working the molasses back to its right place ready for running out. When it is desired to have the evaporator boil from one end to the other, the index is placed in No. 3, when the regulator will hang down. By placing the index in No. 2, the regulator forms a complete damper.

The bottom B is made to form vertical cross-bars B^1 of two thicknesses of metal, by being doubled, pressed side by side, and let into chamfers cut in the bottom edges of the wooden side pieces A.

After being inserted into the chamfers, the opposite ends of the cross-bars are alternately cut and bent down, as seen at B^3, Fig. 1, so as to form openings at alternate ends of the cross-bars, and, at the same time, form stays between the bars and the wooden side pieces, and also covering the openings at these points in the bottom of the pan.

The bottom also forms one or more downward-projecting cross-bars, B^2, under the heater, to brace the same and keep it from sagging.

At the end of the evaporator is an outlet, *a*, leading to the spout L, for letting out the molasses.

I do not broadly claim an evaporating-pan composed of side pieces and a metallic bottom, having vertical partitions, with openings in the same, at alternate ends, as I am aware that such is not new.

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

1. The combination of the wooden sides A, having chamfers cut in their lower edges, and the bottom B, consisting of a single sheet of

metal forming the ends of the pan and bent into the chamfers in the side pieces, to form the interior projecting cross-bars B^1, having openings at alternate ends, the bent-down ends B^3, and one or more under-projecting and bracing cross-bars, B^2, all substantially as set forth.

2. The regulator G, suspended from the crank-shaft H, in combination with the index I and evaporator, with scale J, as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 11th day of October, 1876.

BENJAMIN F. HARPER. [L. S.]

Witnesses:

JAMES W. HARPER,

M. G. STRUTLEY.