

R. BULLARD.
Evaporating Pan.

No. 49,974.

Patented Sept. 19, 1865.

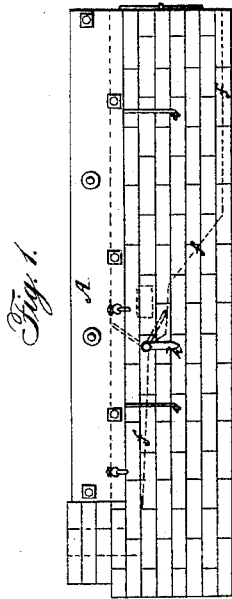


Fig. 3.

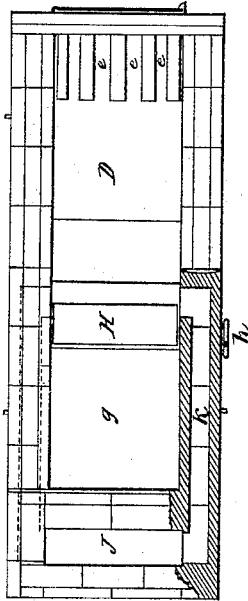


Fig. 2.

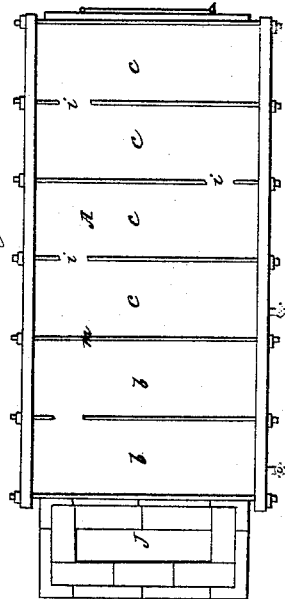


Fig. 4.



Witnesses:

R. H. Osgood.
Jay Bygott.

Inventor:

Ransom Bullard
by his attorney, J. M. Perkins -

UNITED STATES PATENT OFFICE.

RANSOM BULLARD, OF LITCHFIELD, MICHIGAN.

IMPROVED SORGHUM-EVAPORATOR.

Specification forming part of Letters Patent No. 49,974, dated September 19, 1865.

To all whom it may concern:

Be it known that I, RANSOM BULLARD, of Litchfield, in the county of Hillsdale and State of Michigan, have invented a new and Improved Evaporator for Sorghum and other Saccharine Juices; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation of my apparatus. Fig. 2 is a horizontal or plan view thereof. Fig. 3 is a plan view of the brick furnace with the pan removed, and a portion of one side represented in section to show the arrangement of the side flues. Fig. 4 is a sectional fragment, showing the manner of joining the metal forming the sections of the pan.

Like letters of reference indicate corresponding parts in all of the figures.

My invention consists of an arrangement of a separate chamber of the evaporating-pan with the side flues and damper of the furnace, by means of which the heat may be subdued and the said chamber employed for the slow evaporation of the thickened sirup while the juice is undergoing rapid evaporation in the chambers adjoining, and also in the manner of joining and uniting the sheets of metal of which the sections of the pan are formed.

As represented in the drawings, A is the evaporating-pan with its chambers or sections *b b* and *c c*.

D is the fire-chamber, the grate *e e* forming a part of the bottom surface thereof, which rises by an inclination, (shown by the dotted lines *f f* in Fig. 1,) so as to form a shallow passage or flue, *g*, under that portion of the pan which forms the slow-evaporating chamber *b b*. A damper, H, is provided between this flue and the fire-chamber, by closing which the fire is shut off from the passage *g* and forced to pass through the side flues, *k k*, to reach the chimney J. These side flues extend through the brick-work under the evaporator, so that the heat thereof does not come in contact with the bottom of the evaporating-pan, but is gradually conducted thereto through the bricks.

The damper is readily operated by the lever-handle *h* outside of the brick-work.

That portion of the pan A which comes directly over the fire-chamber D is made in sections; but there are alternate passages *i i* between them, through which the fluid circulates. That part situated over the passage *g* composed

of the sections *b b* is separated from the other sections by the tight partition *m*. While rapid boiling takes place in *c c* the evaporation from *b b* is slow, and as the juice in the former becomes denser it is dipped into the latter, where, from the gentle heat, there is no exposure to burning; and for the last stages, when the sirup has become quite thick, the damper H is raised and the heat carried through the side flues, *k k*, leaving little or none under *b b*, and only very slowly conducted through the bricks to the evaporating-pan, while the boiling of the juices proceeds. This produces a great convenience in the process, saving much time, and obviating injury to the quality of the sirup and sugar.

In constructing the evaporating-pan each section is formed of a single sheet of metal, the side edges of which are turned up at right angles, and two of the troughs thus formed being placed side by side, the upturned edge of one (it being made higher than the other for this purpose) is turned down, overlapping and covering the other, as at *n*. A few rivets are then passed through the seam thus formed, and unite the edges firmly, as at *o*. By this arrangement the edges of the metal and the rivets used are so high as to be out of the way of the contents of the pan, and consequently not liable to corrosion. By this construction the edges are exposed at the passages *i i* only, which can easily be protected by soldering. The sections are then attached to the wooden sides in the usual manner and held by screw-rods.

I do not claim separately the employment of side flues and dampers; but

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

1. The combination and arrangement of the slow-evaporating section or compartment *b b*, the evaporating-pan, the direct-flue chamber *g*, and the side flues, *k k*, extending through the brick-work, so as to communicate the heat to the evaporating-pan through the medium of a slow conductor, substantially as and for the purpose herein specified.

2. The described method of constructing and uniting the sections of the evaporating-pan A, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

Witnesses: RANSOM BULLARD.

E. THORNTON,
B. H. CARTER.