

W. J. SHARP.
Evaporator.

No. 214,959.

Patented April 29, 1879.

Fig: 1.

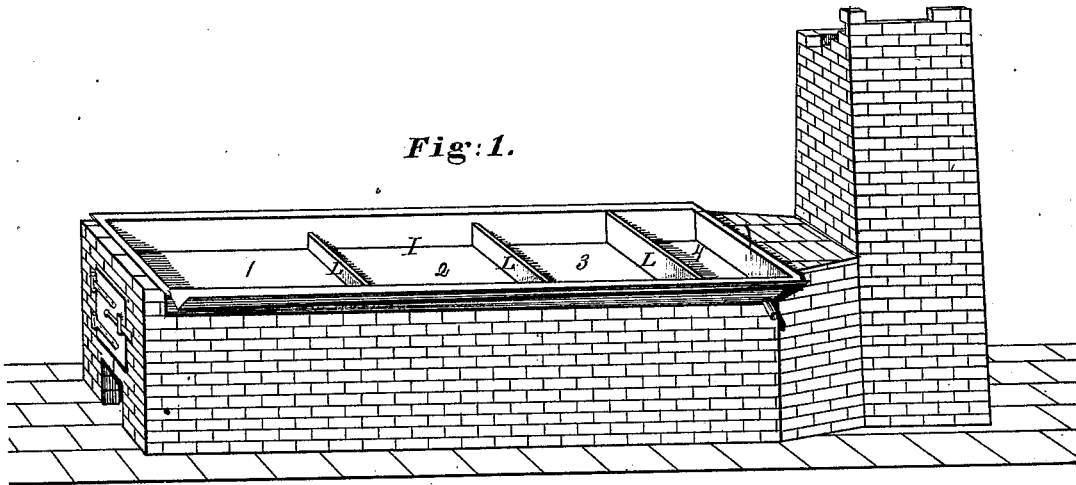


Fig: 3

Fig: 4

Fig: 5.

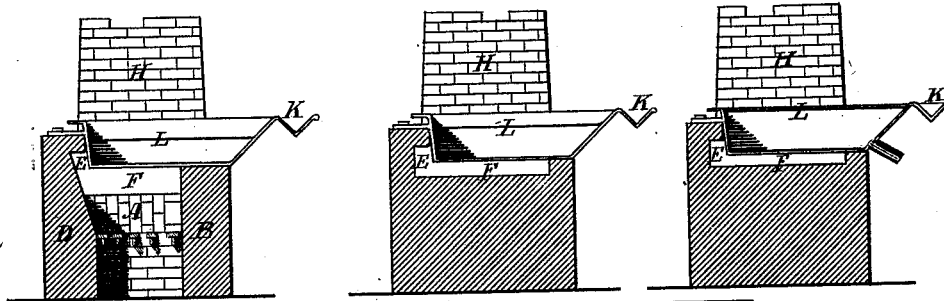


Fig: 6.

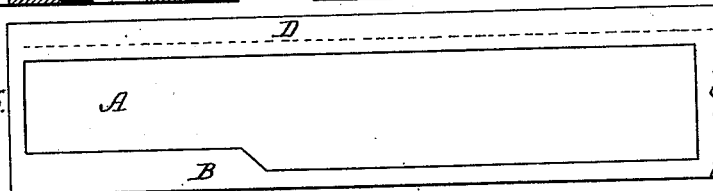
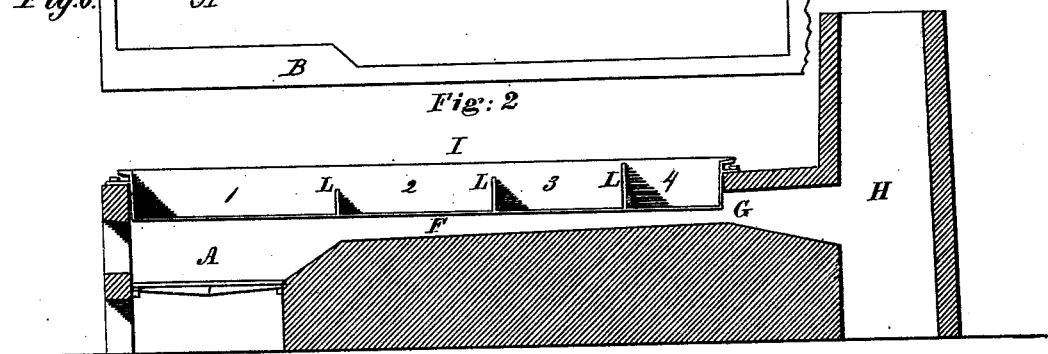


Fig: 2



Witnesses.

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UNITED STATES PATENT OFFICE

WILLIAM J. SHARP, OF BATON ROUGE, LOUISIANA.

IMPROVEMENT IN EVAPORATORS.

Specification forming part of Letters Patent No. **214,959**, dated April 29, 1879; application filed February 26, 1879.

To all whom it may concern:

Be it known that I, WILLIAM JOSEPH SHARP, of Baton Rouge, in the parish of East Baton Rouge and State of Louisiana, have invented a new and useful Improvement in Evaporators; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention is an improvement in the class of open cane-juice evaporators, and is more particularly intended as a substitute for the evaporator now commonly used in Louisiana, which consists of a set of kettles, four or five in number, placed in line. The four kettles are technically known as the "*grande, flambeau, sirop, and the batterie*." The *grande* or large kettle receives the cane-juice from the mill, and is farthest removed from the mouth of the furnace, where the grate is located, and the kettles are subjected to equal heat on the front and rear side. The scum as it rises is swept toward the rear of the furnace from kettle to kettle; and as the kettles empty by evaporation, the juice is dipped from one into the other, proceeding toward the *batterie* or finishing-kettle, from which it is transferred, clarified and thickened, to the coolers.

In my invention the receptacles *grande, flambeau, &c.*, for the juice are connected and form parts of an oblong rectangular pan, the receptacles being compartments thereof, which are formed by vertical partitions that divide the pan transversely, and are graduated in height from the front to rear of the pan.

In place of the fire being under the *batterie* or last juice-receptacle, as usual heretofore, it is under the *grande*, or first compartment of the pan, and the latter is set on the furnace in such a manner that the *grande* has a smaller area of surface exposed to the fire than the other compartments, while the fire has free access to the rear side of the pan, but none to the front side, by reason of the latter projecting over or beyond the furnace-wall. Thus the juice is not only hottest in the *grande*, less hot in the *flambeau*, and least hot in the *batterie*, but overboils from compartment to compartment toward the *grande*; and, what is of chief importance, the front side of the pan being comparatively cool, the scum is caused to

gather thereat, so that it may be easily removed into a trough or gutter that extends forward to the fire-front.

In accompanying drawings, forming part of this specification, I have illustrated my invention by an exterior perspective view, Figure 1, of the pan and furnace; a longitudinal vertical section of the same, Fig. 2; and three vertical cross-sections, Figs. 3, 4, 5, through different portions of the pan and furnace. Fig. 6 is a plan view of the furnace proper.

A indicates the fire-box or fuel-chamber, and B and D the respective front and rear walls of the furnace, on which the pan I is set. F is the horizontal flue of the furnace; G, the throat, and H the chimney.

The front wall, B, is vertical on its inner side; but the rear wall, D, is inclined outward, and has an overhanging top portion or ledge, besides being higher than the front wall. The rear side of the pan abuts said ledge of the rear wall, D, and its front side overhangs or projects beyond the front wall, B, upon which its bottom rests. It will be seen that a narrow space or chamber, F, is thus formed between the rear wall, D, and the rear side of the pan, which permits the fire free access to the latter, while the front portion of the pan is removed from the direct influence or action of the fire. Thus the rear side of the pan is kept much hotter than the front; and, by consequence of the juice being more highly heated along the rear side, a circulation is set up which carries the scum toward, and causes it to accumulate along, the inclined front, where it is conveniently removed into the gutter K, that extends along the same to the front end or mouth of the furnace. The labor of skimming the juice is thereby greatly facilitated and expedited, besides being more perfectly accomplished than is practicable with kettles arranged in the usual way.

The space between the walls B D of the furnace is of a uniform width under the *flambeau, sirop, and batterie*—that is to say, under the second, third, and fourth compartments of the series; but the front wall, B, projects farther inward under the *grande* or first compartment, so that less of the surface of the pan is ex-

posed to the fire at that point than at any other. The flue F is likewise of gradually-decreasing depth up to the throat G.

By this construction of the walls and flue of the furnace I graduate the effect of the fire on the pan so that the *grande* or first compartment, into which the juice is admitted cold, is subjected to the highest heat, yet not exposed to the full action of the fire, and the succeeding compartments, 2, 3, 4, are subjected to gradually-decreasing heat, by reason of their different distances from the fire-box proper, but have a uniform area of exposed surface. The *batterie* or finishing compartment is hence the coolest of the four, and the thickened juice is not liable to injury by overheating. The transverse partitions L are of graduated height, increasing from the front end to the rear of the pan I. Thus the *batterie* or compartment 4 overboils into the *sirop* or compartment 3, the *sirop* into the *flambeau*, 2, and the *flambeau* into the *grande* 1. Of course, the dipping required to supply the decrease in quantity by evaporation proceeds in the opposite direction from *grande* to *flambeau*, and so on, as usual heretofore.

I do not claim an evaporating-pan having compartments and transverse partitions which

are graduated in height from front to rear, the lowest being placed next the first compartment or *grande*, and the highest next the last compartment or *batterie*.

What I claim is—

1. The combination of the following elements: first, a furnace having one of its walls extended higher than the other, and provided with a recess extending along its inner side; second, a pan for evaporating saccharine juices, which is placed on said furnace with its rear side opposite the recessed portion of the rear furnace-wall, and its front portion resting on the front furnace-wall, all as shown and described, for the purpose specified.

2. The combination of the evaporating-pan having the several compartments 1, 2, 3, 4, with the furnace, the space between the side walls of which are narrower under the *grande*, which first receives the juice from the press, and of greater but uniform width under the other three compartments, as and for the purpose specified.

WILLIAM JOSEPH SHARP.

Witnesses:

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EMILE DROZ.