

Evaporating Pan.

Patented May 22, 1860.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN APPARATUS FOR EVAPORATING SACCHARINE JUICES.

Specification forming part of Letters Patent No. 28,349, dated May 22, 1860.

To all whom it may concern:

Be it known that I, A. C. CLEMENS, of Crain Township, in the county of Wyandot and State of Ohio, have invented new and useful Improvements in Sorghum-Evaporators; and I do hereby declare that the following is a full and complete description of the construction and operation of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a top view. Fig. 2 is a side view, and Fig. 3 is a longitudinal vertical section.

Like letters refer to like parts.

My invention consists in an improved construction and arrangement of the fire-box and smoke-pipes, in connection with a peculiar arrangement of the division of the pan.

In Figs. 1 and 3, A represents the bottom of the pan, in Figs. 2 and 3 the different level of the several sections being shown at B. The sides of the pan C rise above the bottom some eight or ten inches. Each particular section of the bottom B is horizontal when the pan stands upon a level surface. These sections upon the upperside are divided into two parts by the partitions D D' D² D³, &c., which run crosswise the pan. The first division, D, is placed about one-third of the distance from the first offset B, leaving two-thirds of the space toward the smoke-pipe at the end of the pan, and one-third of the space toward the offset. This partition has a gate, E, in the middle, which can be opened or closed at pleasure, for the purpose of allowing the sorgo-juice to flow into the second division. The partition D' is placed upon the edge of the first projection, and is provided with two gates, F, placed one at each end, so as to cause the juice to flow in a circuitous course, as indicated by the arrows. These partitions are placed in regular order upon the different levels, as seen at D³ D⁴ D⁵, &c. D³ has a gate at each end, and D⁴ has a gate in the middle, &c., to the end of the series, the last partition, D⁹, having a gate at each end, and is placed upon the edge of the offset B⁴. The section A¹⁰ is provided with a spout, G, for drawing off the concentrated sirup. Immediately beneath each different offset is a distinct fire-box formed by the several partitions H H' H² H³ H⁴, as seen in Figs. 3 and 4. These partitions, forming the several fire-boxes, do

not extend across from side to side of the pan, but are interrupted at alternate ends, as shown in Fig. 4, and indicated by the dotted lines in Fig. 1, the partition H being open at the end next the smoke-pipe—in other words, it does not extend entirely across to the farther wall of the fire-box. In like manner the partition H' joins the farther wall of the fire-chamber, and terminates a little before reaching the front, giving a zigzag course to the draft from one to the other, as indicated by arrows in Fig. 4. The opening, however, in the partition H² is provided with a damper, the handle of which is seen at I in Figs. 1 and 4, by means of which the draft from H⁴ H³ H² can be sent up the smoke-pipe J; but by opening this damper and placing a cap, K, upon the top of the smoke-pipe J all the draft can be sent up the smoke-pipe L. Upon the front side of the fire-chamber (which includes all the fire-boxes) are four doors for the introduction of fuel. These doors are seen at M N O P in Fig. 2. M opens into the fire-box, next to the smoke-pipe L; the door N into the second and third fire-boxes. The door O opens into the fourth and fifth fire-boxes, and P opens into the last fire-box in the series. When the damper I is closed, the draft from the fire-box at O will pass around the back end of the partition H⁴, around the front end of the partition H³, and into the smoke-pipe J; but if the smoke-pipe J is closed by the cap K, and the damper I opened, the draft will pass around the back end of the partition H², in front of the partition H', and at the back end of H into the smoke-pipe L. By means of these doors upon the side of the fire-chamber a fire can be kindled in any of the divisions, and thus heat applied at any point along the whole series of divisions in the pan.

By placing the sorgo-juice, when in its crude state, in section A and closing the gate E, heat can be applied under that part of the division occupied by the juice, and the scum can here be removed. Now, by slightly drawing the gate E, the juice, partly purified, will flow into the division A', where a further purification and concentration will take place. The gates in the partitions D' D² may now be opened, a fire having been kindled under this offset, where still further concentration will take place, and so on through the series; or the process can be discontinued in the first

three sections and conducted in the last three by closing the damper I and removing the cap K from the smoke-pipe J.

In having the bottom of the pan composed of variable sections in regard to elevation, the juice, by being placed in the highest, will flow onward to the lowest, without the necessity of tipping the pan, thus obviating a very inconvenient practice where the whole of the bottom of the pan is upon the same level. In my arrangement of the gates a flow of juice can be supplied to just meet the demands of evaporation. The scum that rises in each separate division will float upon the surface, and not pass through the gate.

I do not broadly claim either making the bottom of the pan in sections placed at different elevations, or the giving a circuitous flow

to the cane-juice through the several divisions of the pan, or the giving a circuitous course to the draft; but I believe that my above-described sugar-evaporator is new and an improvement upon those heretofore known.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

The construction and arrangement of the several fire-chambers and the two smoke-pipes with the damper I, in combination with the peculiar arrangement of the pan in different divisions at variable heights, substantially as set forth, for the purposes described.

A. C. CLEMENS.

Witnesses:

W. H. BURRIDGE,
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