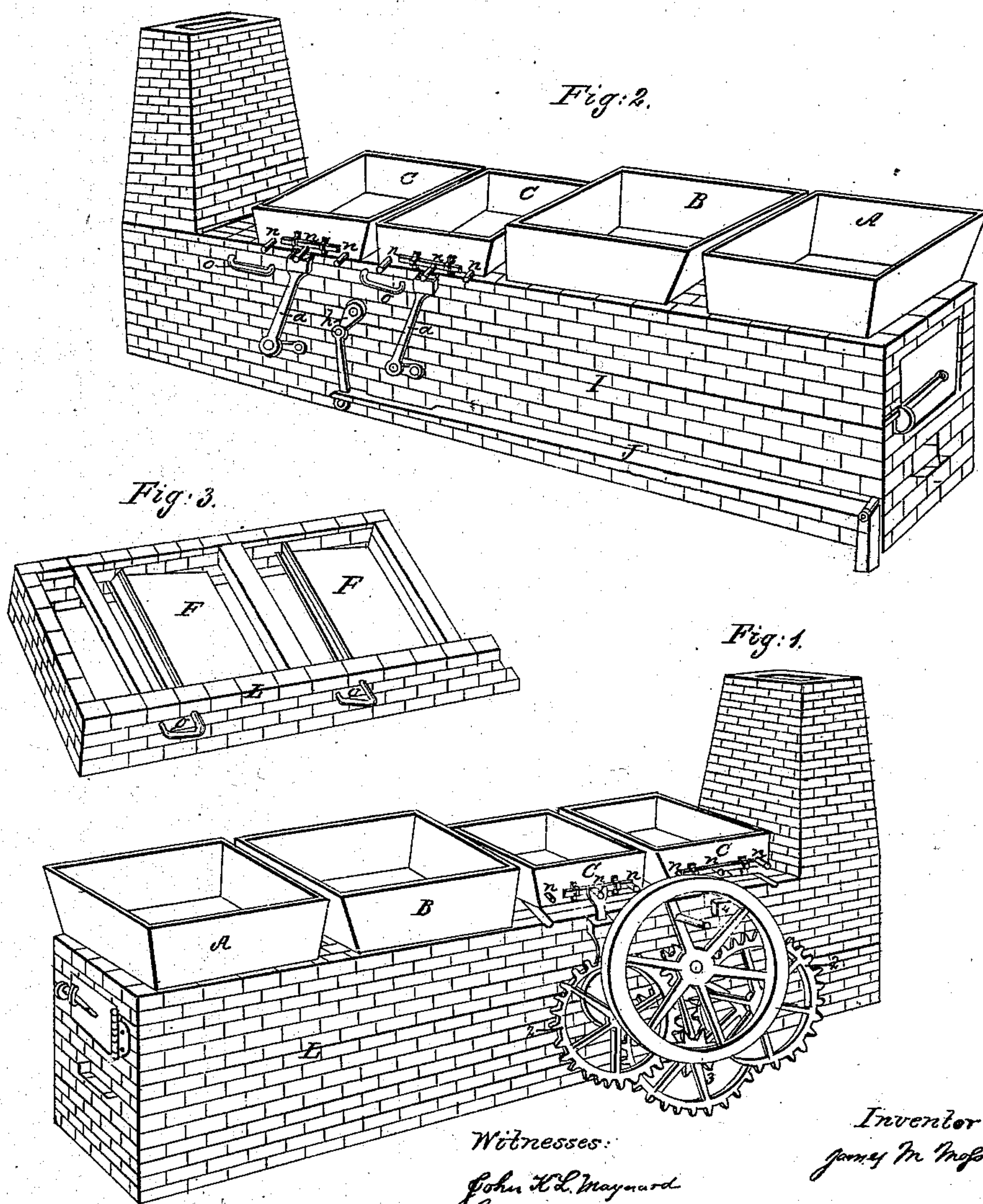


J. M. MOSS.
Evaporating Pan.

No. 35,350.

Patented May 20, 1862.



Witnesses:
John H. L. Maynard
George W. Rudwick.

Inventor:
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UNITED STATES PATENT OFFICE.

JAMES M. MOSS, OF WAVERLY, ASSIGNOR TO HIMSELF, AND E. H. WILLIAMS,
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IMPROVEMENT IN PANS FOR EVAPORATING SACCHARINE JUICES.

Specification forming part of Letters Patent No. 35,350, dated May 20, 1862.

To all whom it may concern:

Be it known that I, JAMES M. MOSS, of Waverly, Bremer county, Iowa, have invented a new and Improved Machine for Evaporating Saccharine Juices, Fluids, &c.; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of the right-hand side of the same. Fig. 2 is a perspective view of the left-hand side of the same, and Fig. 3 is a perspective view of a portion of the top of the same.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists, first, in the construction of the flue and the pans in which the evaporation is completed, so that the opposite sides of the pans may be alternately raised and lowered.

The invention consists, second, in the employment of certain geared wheels attached to shafts, to which are attached cranks or eccentrics which operate slides, for the purpose of raising and lowering the sides or ends of the pans in which the evaporation is completed.

The invention consists, third, in so constructing the pans in which the evaporation is finished and the machinery by which they are operated that either of the pans in which the evaporation is finished may be left at rest, or one end or side alone may be operated.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

L represents the furnace or flue of the machine. This part L may be of rectangular form, and may be constructed of stone, brick, or iron, and should have a fire-grate door for putting in the fuel, and an opening for admitting a draft of air to the fire. In the top of the part L there should be openings for the access and application of heat to the pans A B and C C, and the pans should cover and close the openings.

The pans A B and C C may be constructed of iron, tinned or galvanized, or of copper, or any other metal that is not easily corroded; and the pans A B should be at least of double

the size of C C, and should be of rectangular form, and so arranged as to utilize the heat generated by the fuel. The pans A B should be placed nearer the fire.

By the side of the part L (see Fig. 1) is placed a treadle, J, which may be used to operate the balance-wheel 1, or the balance-wheel may be turned by hand or operated by any other power applicable for such purpose.

To the shaft of the balance-wheel (see Fig. 1) is attached a pinion which is geared to the wheel marked 3; and to the shaft of the wheel marked 3 is attached a pinion which is geared to the wheels marked 2 2.

To the shafts of the wheels 2 2, which shafts pass through L below the flue, and attached cranks or eccentrics, which operate the slides G G G G, and these slides, when the wheels move, raise and lower the sides or ends of the pans C C. The pans C C are so set upon L as to permit each end or side to be lifted from the part L, and to the ends or sides of the pans C C are attached pins *p p p*, the outer ones of which pins serve as rests or bearings, so that they serve as the axis of motion when the opposite side or end of the pan is lifted, and the middle pin rests on the slide, G when the end of the pan is lifted. (See Fig. 1.) The middle pin is attached to a slide, or some other device which will answer the same purpose, so that the pin may be placed off the slide and the slide ascend without raising the side of the pan, and thus only one side of the pan may be raised, or the pan be left at rest while the wheels 1 2 3 are in motion, and one of the pans C C may be moved while the other is at rest, at the will of the operator.

Under the pans C C are the dampers F F, so constructed in reference to the part L that they shut off or admit the heat to the pans C C. The chimney or pipe of the part L should be constructed high enough and in such a manner as to secure a strong draft. The dampers should be so constructed as to permit their being operated by the handles O O. The spaces between the pans should be so covered, that, with the pans, the top of the part L should be tightly covered, except when the pans C C are lifted in the manner described. The pans and lifting apparatus should be so built as to in-

sure the bearing base a portion of the bottom of the pans C C at each alternation of the motion.

Having thus described the construction of my improved machine, I will proceed to describe its mode of operation.

The juice is first filtered, and is then admitted to the pan A, when it is boiled and defecated. The defecated juice is then transferred to the pan B, and in this pan at least one-half the water contained in the juice should be evaporated. From the pan B the juice or sirup is transferred to the pans C C, in which the evaporation is completed or finished. When the pans C C are filled, they are permitted to rest until the ebullition is active, the one side of the pan is raised and lowered, and as the process of evaporation approaches completion both ends or sides are alternately raised or lowered more or less rapidly, according to the heat of the fire, until the process is finished. By the raising and lowering of the pans C C the sirup is thoroughly stirred, and the vesicles of steam are brought to the surface and permitted to escape. The heavier portion of the sirup is constantly removed from the bottom and the surface portion brought in contact with the bottom in its place, and the atoms are alternately exposed to the heat of the bottom of the pan and the air, and thereby rapid evaporation is secured and all danger of burning is avoided.

I state briefly the results produced by my improved machine: Rapid evaporation is ef-

fectured. During the process of evaporation the sirup is constantly exposed in thin films to the air. All danger of scorching is obviated. These indispensable requisites for the production of sugars and sirups of the best quality are thoroughly secured; and, in addition, these results are effected by an apparatus simple, cheap, and capable of being operated by any person of ordinary skill, and adapted to the manufacture of sugar and sirups in large or small quantities.

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

1. The construction of an evaporator so that the opposite sides or ends of the pan or pans may be raised and lowered alternately at the will of the operator, thereby thoroughly stirring the contents of the pan or pans and cooling the bottom or bottoms thereof.

2. The construction of an evaporator with pans, or a pan one side or end of which may be raised and lowered more or less rapidly at the will of the operation.

3. The construction of an evaporator with a series of pans, in which the finishing pans, or the pans in which the evaporation is completed, are raised and lowered in the manner herein set forth and described.

JAMES M. MOSS.

Witnesses:

JOHN E. BURKE,
CHAS. B. PARSONS.