W. CANNING.

Evaporating Pan.

No. 47,795. Patented May 23, 1865.

Fig. 1.

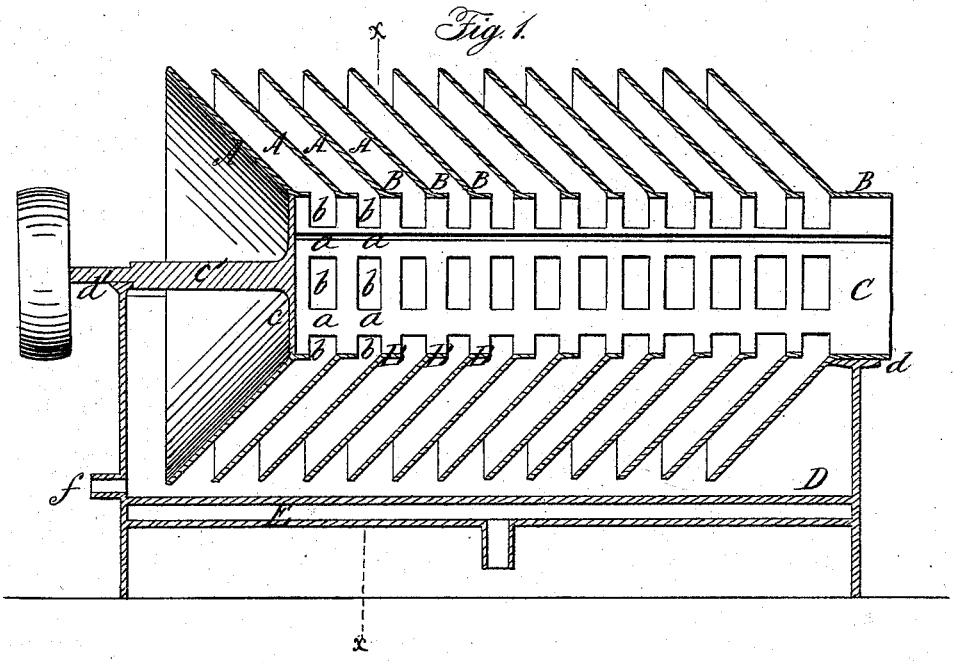
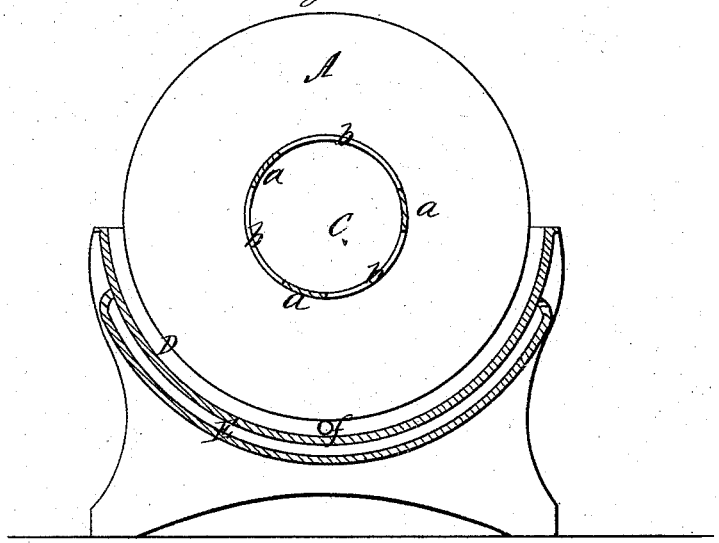


Fig. 2.



Witnesses:

Lauce Holmes Jr.
Geo. W. Reed.

Inventor:

Wm Canning

AM. PHOTO-LITHO. CO. N.Y. (OSBORNE'S PROCESS.)

UNITED STATES PATENT OFFICE.

WM. CANNING, OF NEW YORK, N. Y.

IMPROVED EVAPORATOR.

Specification forming part of Letters Patent No. **47,795**, dated May 23, 1865.

To all whom it may concern:

Be it known that I, WILLIAM CANNING, of No. 166, Franklin street, in the city, county, and State of New York, have invented a new and useful Improvement in Rotary Evaporators for Concentrating Milk, Saccharine Juices, and other Liquids; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a central vertical longitudinal section of an evaporator constructed according to my invention. Fig. 2 is a transverse vertical section of the same through line *x*, Fig. 1.

Similar letters of reference indicate corresponding parts in both figures.

This invention relates to what are termed "rotary disk-evaporators," consisting of a series of disks attached to a central rotating shaft. Its object is to obtain a greater amount of surface with disks of given diameter and to present the surfaces of the disks in a more effective manner to the action of currents of heated air introduced through the said shaft that the evaporation may be rapidly effected at a low temperature; and to this end it consists, first, in making the said disks of conical or dishing form; and, secondly, in arranging a number of such disks upon the same hollow shaft, so as to overlap each other, and that their surfaces may be directly impinged upon by currents of air entering the said shaft at one end and issuing from openings between the disks.

To enable others skilled in the art to construct and apply my invention to use, I will proceed to describe its construction and operation.

A A are cone-shaped disks, which are joined to each other near the center by means of small projections *a a a* on cylindrical concentric flanges B by means of rivets or soldering, the said flanges combining to form a central hollow shaft having a longitudinal passage, C, through it, with openings *b b b* in the said passage between the disks. The passage C is open at one end and closed at the other. The cylindrical flange of the last cone at one end of the series, which is open, forms a journal, which is received in a bearing, *d*, in one end of the trough D. The last cone on the other end is secured to a plate, *c*, which closes the central passage, C, at that end, and has a central shaft, *c'*, fixed upon its exterior, such shaft revolving in a bearing, *d'*, situated upon the opposite end of the trough D to that at which the bearing *d* is situated. The trough D has a steam-jacket, E, surrounding it with the proper inlet and outlet cocks or valves for the ingress and egress of steam or hot water, which is to be circulated in it. This trough is also provided with a pipe, *f*, at its lowest part, for the purpose of draining off the saccharine or other liquid when sufficiently condensed.

The operation of my invention is as follows: A sufficient quantity of liquid to be condensed or concentrated by evaporation is placed in the trough D, and it is heated to a suitable temperature—say about 120° Fahrenheit—by means of the steam in the jacket E. During this time the cones are revolved by power applied to the pulley upon the shaft *c'* of the evaporator, and hot air is driven by a pan or by other means through the central passage, C, which circulates through the passage and outward through the openings *b b b* between the cones A A, thus impinging upon the inner surfaces of the cones and heating both surfaces, and carrying off the moisture from the liquid, which collects upon the cones in their rotation through the trough D.

These cones may be made of any suitable sheet metal formed up to a proper shape.

I do not limit the shape of these dish-formed evaporating-surfaces to that of a cone, but may form them in a curved, spherical, or spheroidal shape.

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

1. The construction of the rotating disk or disks of a rotary evaporator of a conical or dishing form, substantially as and for the purpose herein specified.

2. The arrangement of such disks in such manner that they overlap each other upon a hollow central shaft, in which there are openings between the said disks, substantially as and for the purpose herein set forth.

WM. CANNING.

Witnesses:

GEO. W. REED,

LANCE HOLMS, Jr.