(No Model.)

J. A. M. COX.

EVAPORATING APPARATUS.

No. 304,079. Patented Aug. 26, 1884.

Fig. 1.

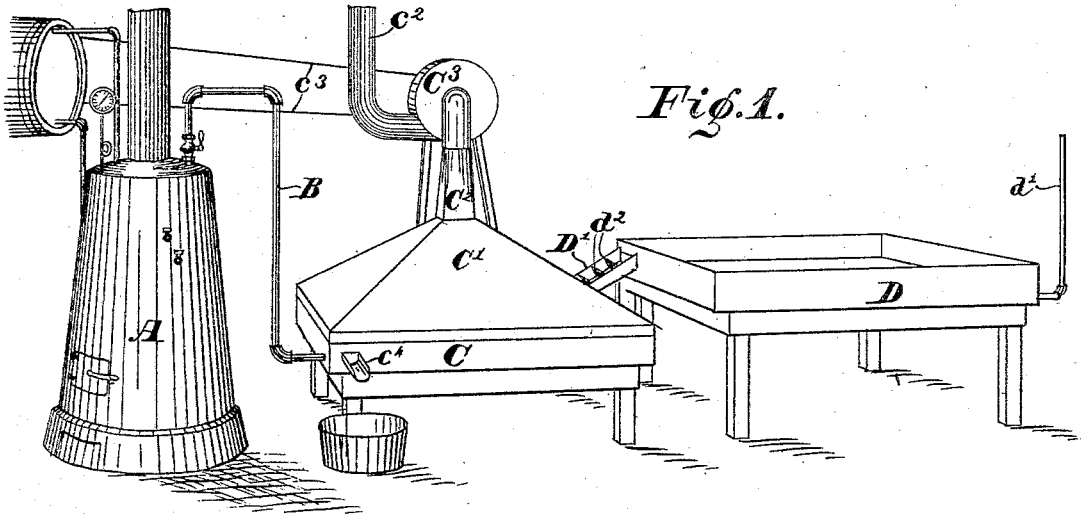


Fig. 2.

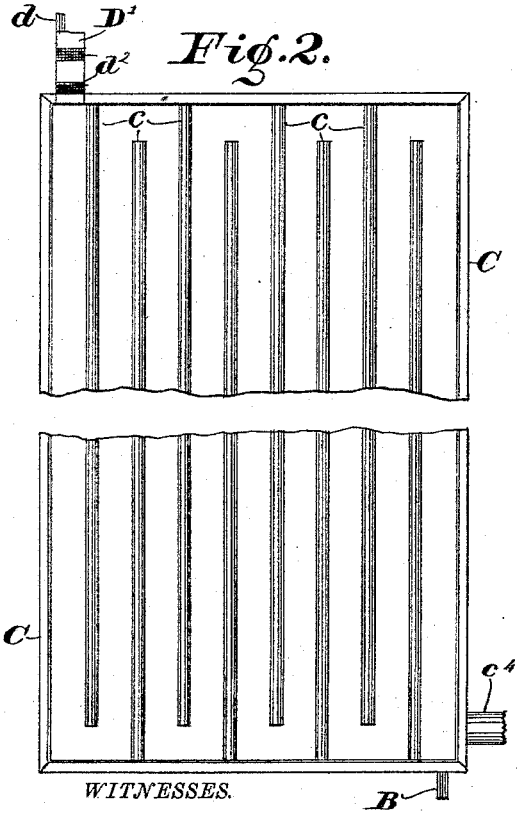


Fig. 3.

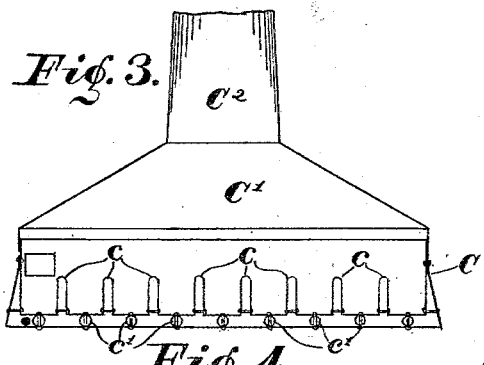


Fig. 4.

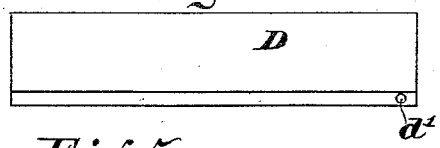
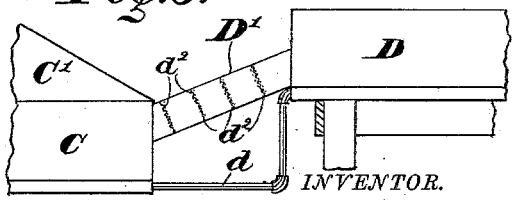


Fig. 5.



WITNESSES.

Chas. N. Leonard.

E. W. Bradford.

INVENTOR.

John A. M. Cox,

PER

C. Bradford.

ATTORNEY.

UNITED STATES PATENT OFFICE.

JOHN A. M. COX, OF INDIANAPOLIS, INDIANA, ASSIGNOR OF ONE-HALF TO EWALD OVER, OF SAME PLACE.

EVAPORATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 304,079, dated August 26, 1884.

Application filed August 7, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. M. COX, of the city of Indianapolis, county of Marion, and State of Indiana, have invented certain new and useful Improvements in Evaporating Apparatus, of which the following is a specification.

My said invention consists in an improved construction and arrangement of several parts of an evaporating apparatus, whereby fruit-juice may be converted into jelly and other similar operations performed in a speedy and efficient manner, as will be hereinafter more particularly described.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a perspective view of my improved apparatus; Fig. 2, a top or plan view of the evaporating or cooking pan with the cover removed; Fig. 3, a cross-section of the same, the cover being in position; Fig. 4, a cross-section of the heating-pan; and Fig. 5, a detail section of a portion of the evaporating and heating pans, showing the spout for conveying the juice from the heating-pan to the evaporating-pan in section, and the pipe for conveying the steam from the evaporating-pan to the heating-pan in elevation.

In said drawings the portions marked A represent the boiler, B the pipe conveying the steam from the boiler to the evaporating-pan, C the evaporating-pan, and D the heating-pan.

The boiler A is any suitable steam-boiler, and may be constructed and operated in any manner desired.

The pipe B is an ordinary steam-pipe, and leads from said boiler to the space between the inner and outer bottoms of the evaporating-pan.

The evaporating-pan C is constructed, preferably, of sheet metal, and is divided longitudinally by hollow partitions *c*, which extend alternately from one end to near the other, as shown, leaving a passage from one compartment to the next at the opposite end from that through which the fluid entered said compartment. The bottom to this pan is double, being composed of an inner and an outer portion, as shown, with a space between them, which space extends up onto the sides of the pan as well. This hollow space is divided into compartments by the partitions *c'*, and one of the hollow partitions *c* communicates with each compartment. These partitions *c'* are also arranged with open spaces at the alternate ends of each partition, to permit the passage of steam from one compartment to the next. The two bottoms are secured from being forced apart by the steam by suitable rivets, which pass through them and through the partitions *c'*, as shown. The hollow sides and partitions are similarly secured by rivets. The pan is also provided with a cover, C', from the top of which a pipe, C^2, connects with an exhaust-fan attachment, C^3, which operates to draw up the products of evaporation from the pan and discharge them through the pipe c^2. The exhaust-fan is preferably driven by the belt c^3, running from any suitable point from which power can be taken.

The heating-pan D is also of sheet metal, and has a hollow bottom. The steam from the evaporating-pan is conducted into this hollow bottom by means of the pipe *d*, and passes out at the other end of the pan through the pipe *d'*. The juice is conveyed from this pan to the evaporating-pan by means of the spout D', which is provided with a series of strainers, d^2, arranged transversely therein. Said strainers may be of an increasing fineness as they approach the evaporating-pan, and thus be better adapted to cleanse the juice from all impurities prior to its entering said evaporating-pan.

The operation of my said invention is as follows: The steam first passes from the boiler through the pipe B to the hollow bottom of the evaporating-pan, and enters that compartment of said bottom which is directly under the exit for the juice. It then passes back and forth through the several compartments, as before described, until it has reached the opposite end of the farthest compartment from that which it entered, where it passes out through the pipe *d* to the hollow bottom of the heating-pan D; and, after passing through this, finally escapes through the pipe *d'*, and is carried away wherever desired. The juice is placed in this pan and is heated sufficiently

to cause most of the impurities to rise on top, when they are skimmed off. The juice then flows out through the spout D′ (where, by means of the series of strainers d^2, the remaining impurities are removed) into the evaporating-pan. It enters said evaporating-pan directly over the exit of the steam, and flows back and forth in the opposite direction from the course of the steam, leaving the pan through the spout c^1, where the steam enters, and where, therefore, the pan is hottest. By means of the hollow partitions *c* the steam keeps the sides of the several compartments of the pan hot, as well as the bottoms, and is thus adapted to more efficiently do its work. During the progress of the juice through this pan all products of evaporation are drawn off and discharged by the operation of the fan C^3.

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

1. In an evaporating apparatus, an evaporating-pan divided longitudinally into several compartments by means of hollow partitions, which extend alternately from one end to near the other, whereby the liquid is allowed to pass from one compartment to the next at the opposite end from that where it entered said compartment, and having a hollow bottom, said hollow bottom being also divided into several compartments by means of partitions, which extend alternately from one end to near the other, said compartments acting as conductors for the steam, and said arrangement of partitions permitting the steam to pass from one compartment to the next after passing the entire length of said compartment, substantially as described, and for the purposes specified.

2. In an evaporating apparatus, a steam-operated evaporating-pan having a hollow bottom, into which the steam enters, said bottom being divided into compartments by partitions, which alternately extend from one end to near the other, and said pan being also divided into channels by partitions, which alternately extend from one end to near the other, whereby the steam and juice are conducted through said pan in opposite directions, substantially as described, and for the purposes specified.

3. In an evaporating apparatus, an evaporating-pan constructed of sheet metal, and having a hollow bottom, said pan being divided into several compartments by hollow partitions, which communicate with said hollow bottom, which is also partitioned into corresponding compartments, the partitions being located between the hollow partitions of the pan, whereby the steam is allowed to pass through these hollow partitions and heat the sides of the several compartments of the pan, substantially as described, and for the purposes specified.

4. The combination, with the evaporating-pan of an evaporating apparatus, of a heating-pan, D, provided with a hollow bottom, and a spout, D′, leading from said heating-pan to said evaporating-pan, and provided with a series of strainers, d^2, arranged at suitable intervals, and increasing in fineness as they approach said evaporating-pan, substantially as described, and for the purposes specified.

5. In an evaporating apparatus, an evaporating-pan divided into channels by hollow partitions, as shown, whereby the heating-surface is increased, and the evaporating capacity of the pan thus augmented.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 4th day of August, A. D. 1883.

JOHN A. M. COX. [L. S.]

In presence of—
C. BRADFORD,
CHAS. L. THURBER.