E. HENDERSON.
Drying Apparatus.

No. 219,093. Patented Sept. 2, 1879.

Fig. 1.

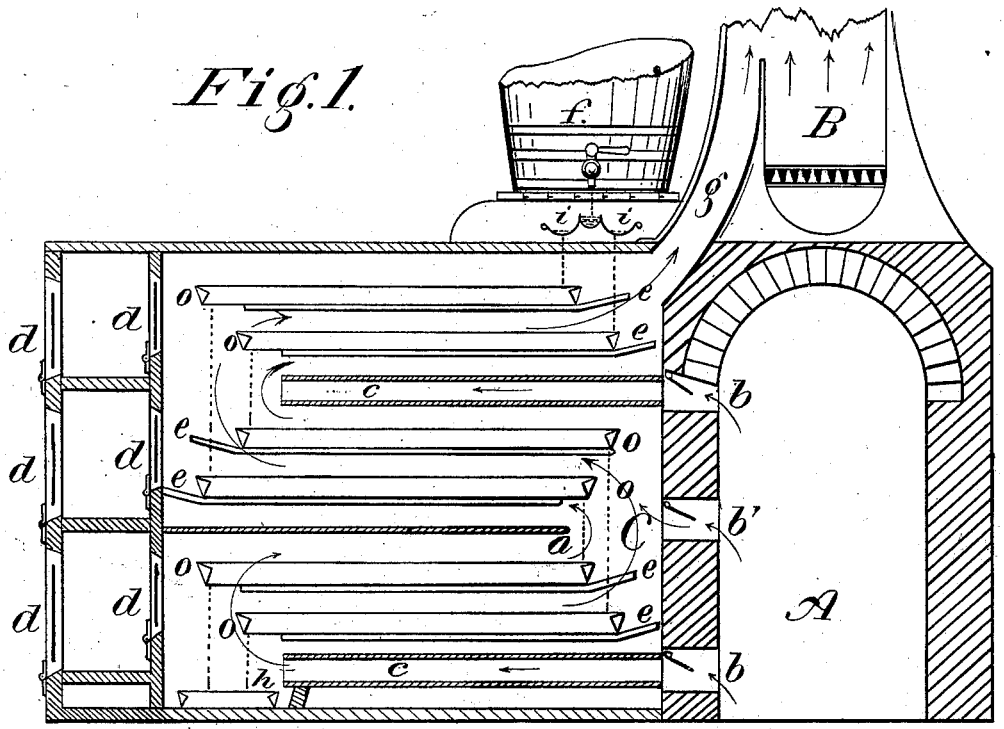
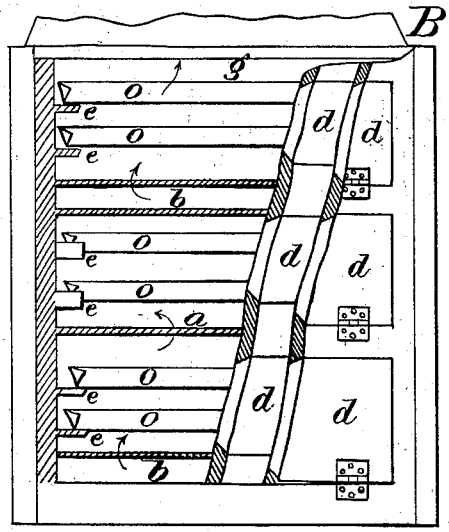


Fig. 2.



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UNITED STATES PATENT OFFICE.

EDWARD HENDERSON, OF PORTLAND, OREGON.

IMPROVEMENT IN DRYING APPARATUS.

Specification forming part of Letters Patent No. **219,093**, dated September 2, 1879; application filed May 3, 1879.

To all whom it may concern:

Be it known that I, EDWARD HENDERSON, of Portland, in the county of Multnomah, in the State of Oregon, have invented an Improved Evaporator or Drying Apparatus, of which the following is a specification.

My invention relates chiefly to the regulation of the drafts and admission of hot air in a drying-chamber or evaporator used in drying fruits, vegetables, fish, meats, or extracting the surplus moisture from sugar, starch, or other articles.

In Figure 1 is shown a longitudinal section through the various shelves and drippers of a small machine. Fig. 2 shows an end view, (through the doors,) partly in section.

In Fig. 1, A is a hot-air chamber, heated in any of the usual ways; B, a furnace in the bottom of the chimney or draft-flue, and *g* the draft-pipe from the drying-chamber to chimney. *b b' b* are doors or dampers to admit or exclude hot air in the chamber A, the upper and lower one of these opening into a hollow shelf or supply-pipe, *c c*, which is as wide as the drying-chamber. The middle one, *b'*, though, does not thus open, but directly into the drying-chamber C. The object of this will be explained hereinafter.

Inside the drying-chamber C are the fruit webs or trays or the dripping-pans O O, O O, O O, resting on peculiar cleats *e e*, &c., affixed to the sides of the chamber C, the ends of which form an incline, on which the pans O O may or may not rest, (as the operator may desire.)

At the rear end of the evaporating-chamber C are a series of double doors, *d d*, *d d*, *d d*, through which the fruit or other article may be placed in the chamber or taken out when finished.

g, as before stated, is the draft-flue, from which the heat and vapor are drawn by means of the artificial draft of furnace B. *h* is a pan or receptacle to receive the fruit-juice, sugar, &c, when it leaves the evaporating-pans O O. *i i* is a dripping apparatus, so arranged as to distribute the fruit-juice, or sirup, &c., as desired, and above it is a receptacle, *f*, containing the fluid article in bulk.

There is needed in a drier two things—first, to keep the drying-chamber tight, and at the same time have ready access to it; and, second, the means of creating a forcible artificial draft through the same.

For the first I use the double doors, which prevent cold air from entering and cooling the drying-chamber C, as the air is always more or less warm between them, does not cause condensation, nor allow any cold air to come from them; and as to the second point, all evaporating or drying chambers, filled as they are with moisture, oppose all the usual means of keeping up a good circulation. Perhaps a blower or fan could be used to a good advantage for this purpose; but I use in preference the furnace B, situated above the drying-chamber C, and from C the flue or pipe *g* passes into the chimney-stack above B, which would allow the vapor to pass up in the usual way; but these are very moist, and cool so easily that they do not readily rise or pass off. At this point they are again heated at a greater heat than that in the drying-chamber, for if the drying-chamber were heated so hot in the case of raisins and other delicate fruits to handle they would become cooked, and so their flavor injured as well as their appearance.

The inlets or doors *b b*, &c., and *b'* are so arranged that they admit more or less hot air from the chamber A. The one *b'* is peculiar, having for its use the application of the same principle of superheating by means of fresh hot air to absorb the cooler and humid vapors coming from the fruits in its upward passage.

I believe this principle, when applied to an evaporator or drier, to be new, as I have not known of any device in which this principle was used.

The fruit, &c., treated by this device has been found to be of the very best quality, both as to taste and appearance, and specially as to taste, which, owing to the low evaporating temperature of the device, is undistinguishable from the real green fruit when used for cooking purposes.

I claim—

The combination, with the body of the drier, of the hot-air chamber A, having the exit-openings *b b* through the horizontal flues and the exit openings *b'* directly into the drying-chamber, and the draft-producing furnace B, substantially as described, and for the purpose set forth.

EDWARD HENDERSON.

Attest:

D. C. SCHELL,

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