

No. 649,319.

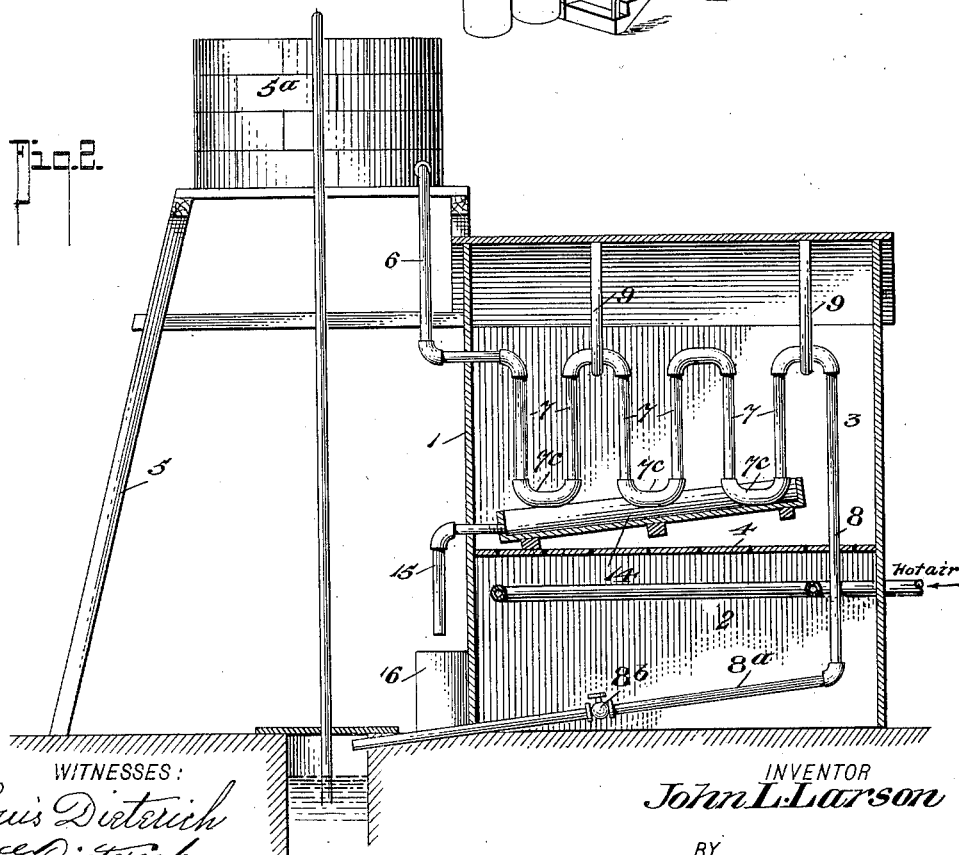
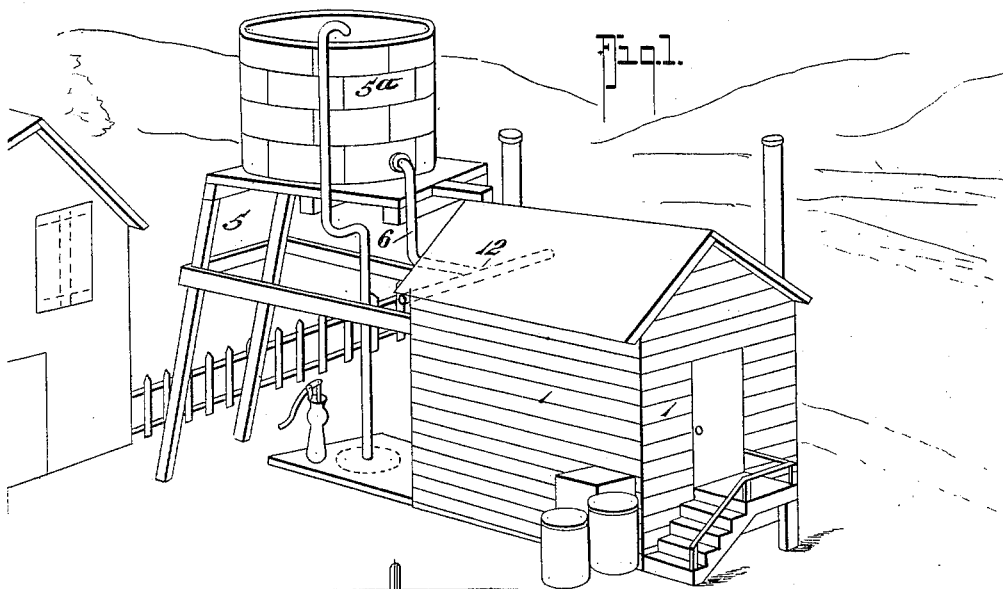
Patented May 8, 1900.

J. L. LARSON.
FRUIT DRYING APPARATUS.

(Application filed Oct. 23, 1899.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

Louis Dieterich
H. S. Dieterich

INVENTOR

John L. Larson

BY

Fred J. Dieterich & Co.
ATTORNEYS

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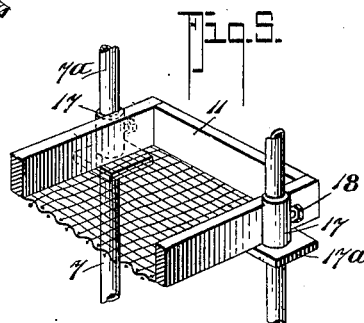
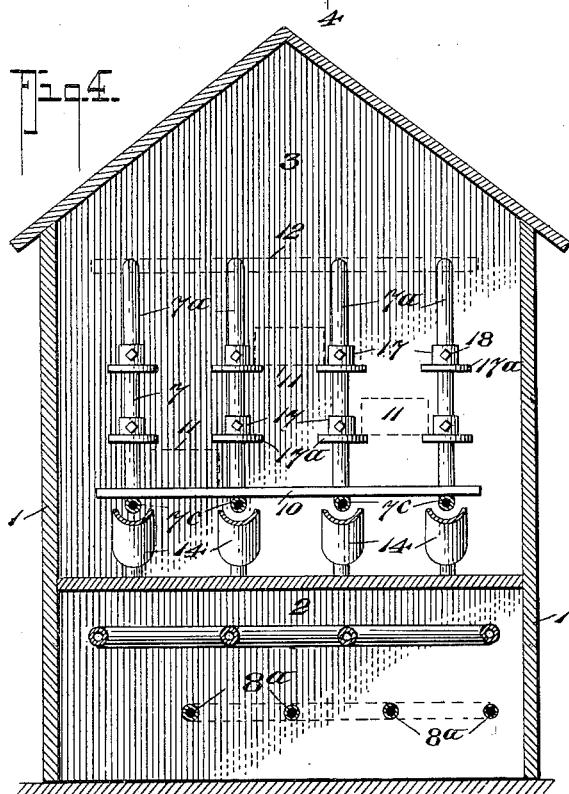
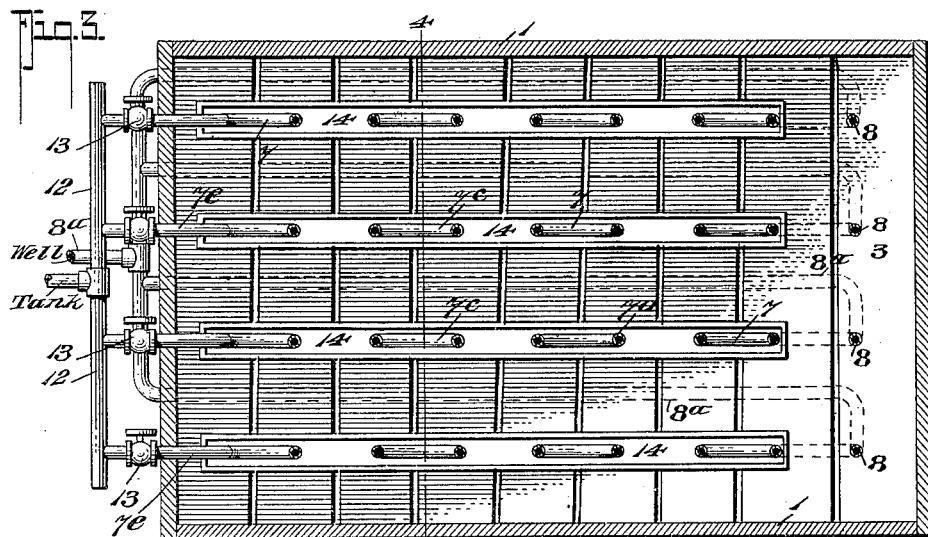
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WITNESSES:

Louis Dieterich
Chas. G. Dieterich

INVENTOR
John L. Larson

BY
Fred G. Dieterich & Co.
ATTORNEYS

UNITED STATES PATENT OFFICE.

JOHN LEMUEL LARSON, OF SHAW, OREGON.

FRUIT-DRYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 649,319, dated May 8, 1900.

Application filed October 23, 1899. Serial No. 734,474. (No model.)

To all whom it may concern:

Be it known that I, JOHN LEMUEL LARSON, residing at Shaw, in the county of Marion and State of Oregon, have invented a new and
5 Improved Fruit-Drying Apparatus, of which the following is a specification.

This invention relates to improved means for drying fruits, vegetables, hops, &c., and particularly to that process or class of driers
10 in which the article to be dried is held within a drying-room under dead heat and dried by condensing the vapor thrown off therefrom and carrying the products of condensation to a point outside of the drying-chamber.

15 My invention relates generally to an improved apparatus including a novel arrangement of condensing-pipes and means for supplying the same and taking off the products of condensation; and in its more specific nature
20 the invention consists in certain details and combination of parts, as will be first described in detail and then pointed out in the appended claims, reference being had to the accompanying drawings, in which—

25 Figure 1 illustrates the general arrangement of my drying apparatus. Fig. 2 is a combined section and side elevation of the parts constituting the same, illustrating one way of
30 arranging the condensing-pipes. Fig. 3 illustrates a modified arrangement of the drying-house and the condensing-pipes. Fig. 4 is a cross-section thereof, taken practically on the line 4 4 of Fig. 3. Fig. 5 is a view illustrating how the fluid-carrying pipes may be utilized
35 as a means for supporting the fruit-holders.

Referring to the accompanying drawings, in which like numerals indicate like parts in all the figures, 1 indicates the drying-house,
40 which has a lower heating-chamber 2 and an upper drying-chamber 3, which may be separated by a slotted floor 4. The chamber 2 may be heated by means of pipes carrying hot air circulating therein, or it may be heated
45 in any other well-known or desired manner.

5 indicates a tower located outside of the drying-chamber, on which is mounted a tank 5^a, to which water may be pumped from a well, as shown, or the same may be supplied in any
50 convenient manner. The tank 5^a, it will be observed, is disposed above the drying-house

and has an outlet-pipe 6, which feeds to a series of coils of circulating-pipes 7, held within the drying-chamber and which form the condenser, the terminating portion of which
55 extends down into the heating-room, as indicated at 8, and has a discharging member 8^a, provided with a valve 8^b, said discharging member extending to the outside of the drying-house and emptying into the well, as
60 clearly shown in Fig. 2, the purpose of the cut-off valve 8^b being to regulate the flow of the water through the condenser at will.

In its simplest form the drying-chamber may have but a single set of condenser-coils
65 7, suitably supported from the roof by hangers 9, as shown in Fig. 2; but when it is desired to construct a drying-chamber of large capacity I prefer to provide a plurality of condenser-coils, as indicated at 7^a in Fig. 4,
70 and arrange the said coils in such manner that the lower U-shaped portions thereof, 7^a, form supports for rest members 10, on which the lower tier of fruit-holders 11 may be supported.
75

When using a plurality of condenser-coils, each set of coils has its feed-pipe 7^a extended outside of the drying-house and communicating with a main supply-pipe 12, which is connected to the tank by the pipe 6, and in this
80 latter form each of the pipe-sections 7^a is preferably provided with a cut-off valve 13, whereby the different tiers or coils 7^a may be cut off or regulated at will.

Under each set of condenser-coils is disposed a collecting-trough 14, which is inclined to be discharged toward the rear end of the drying-house, and the said end has an off-take-pipe 15, which discharges into a barrel or other receptacle 16, it being understood
85 90 that the said trough 14 and the pipe 15 carry off the condensations of the coils 7 and discharge the same to the outside of the drying-house.

When the form of drier shown in Figs. 3
95 and 4 is used, I also utilize the vertical members of the condensers for supporting the fruit-holders 11, and to such end adjustable cuff members 17 are held for vertical adjustment on the said vertical members of the condensers by set-screws 18, and said cuff members have their base portions extended later-
100

ally and transversely, as at 17^a, to form supporting-ledges upon which the fruit-holders may rest, as clearly shown in Figs. 4 and 5.

In operation the water or any cooling agent is caused to constantly flow or pass through the condensing-pipes, which contracts the vapor thrown off by the fruits, which, condensing on the pipe-surfaces, drops into the collecting-troughs, from whence it is conveyed outside the drier-house, it being understood that when the condensation liquid ceases to flow the fruits will have been sufficiently dried and be ready to be taken out.

By my improved construction of drying apparatus the full effect of the dead heat is obtained with a minimum consumption of fuel. Furthermore, in my form of apparatus the fruit after being placed in the drying-chamber need not be changed about from corners to center, as is necessary in the common form of driers. Furthermore, the quality of the fruit is improved, as the same is dried evenly, and by reason thereof dripping is reduced to a minimum, and in consequence the sugar-sap of the fruit, which mostly goes to waste in dripping, is retained and the merchantable value of the product thereby much enhanced. Furthermore, by arranging the drying-chamber and heating-cellar compartment as shown the same can be economically constructed to withstand the ordinary internal pressure produced by fruit evaporation or expansion. As this pressure in my apparatus is uniform at all points of the heating-chamber, it prevents the fruit from bursting and then drip-

ping, as is the case in the ordinary forms of driers now in use.

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

1. The combination with the drying-house; condenser-coils vertically disposed therein, said coils having their terminating portions ending in valve-discharge pipes; a tank disposed at a point above the condensers for feeding water thereto; troughs for collecting the products of condensation, said troughs having discharges projected outside of the drying-house and devices adjustably secured to the vertical members of the condenser for supporting the fruit-holders, all being arranged substantially as shown and described.

2. The combination with the drying-chamber and the tank; of a series of vertically-disposed and parallelly-arranged condenser-coils having their inlet portions projected outside of the building, said portions having valves; a pipe connecting the said valve portions and communicating with the tank; a trough for each set of condenser-coils, said trough having a pipe to discharge outside of the drying-chamber; rest-bars adapted to be supported in the bottom ends of the condenser-coils and the vertically-adjustable cuff members having horizontal ledges, all being arranged substantially as shown and described.

JOHN LEMUEL LARSON.

Witnesses:

GILBERT O. MCGILVRAY,
GEO. MCGILVRAY.