J. M. KEELER.

FRUIT-DRIER.

No. 189,472. Patented April 10, 1877.

Fig. 1.

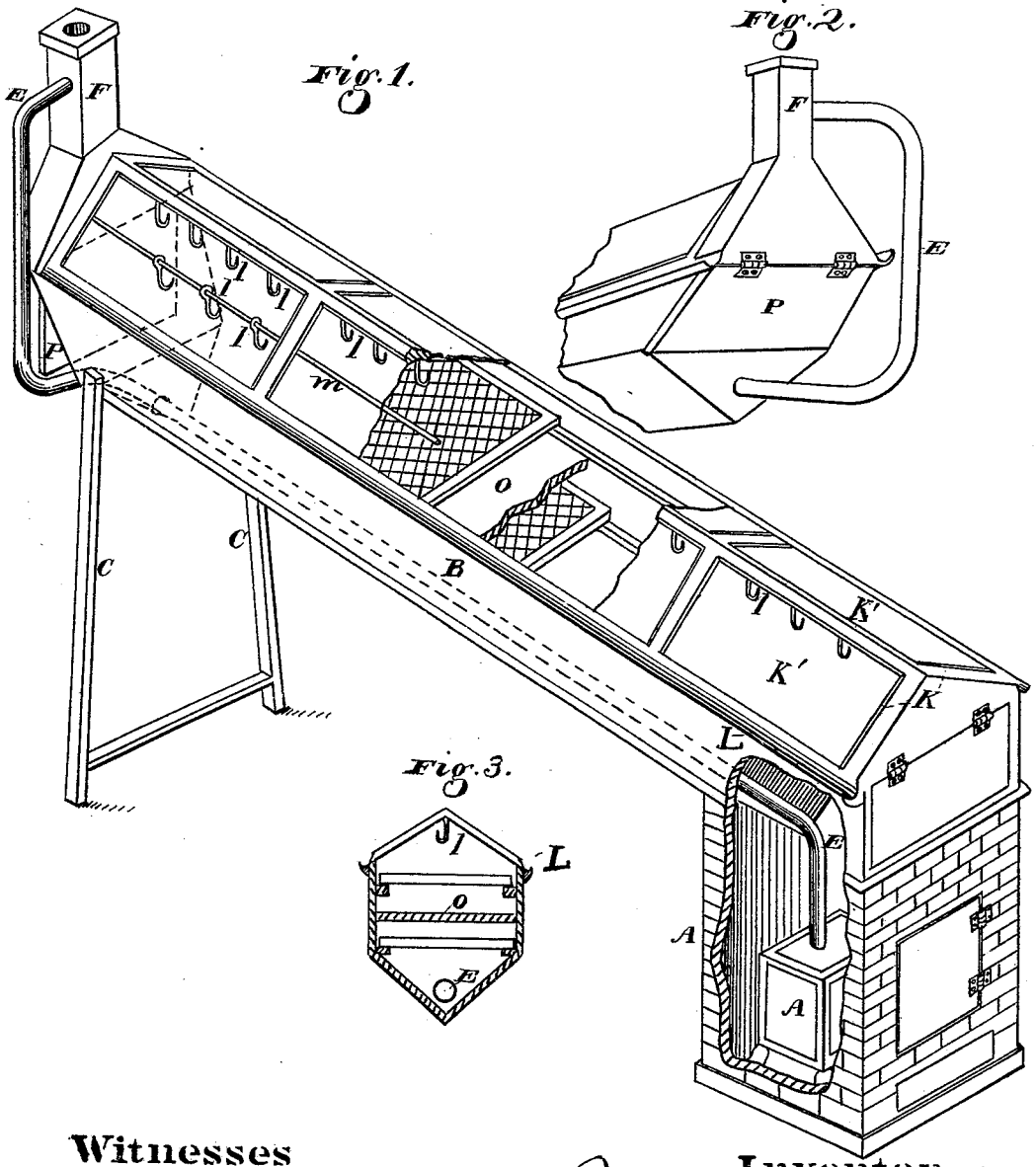

Fig. 2.

Fig. 3.

Witnesses

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JULIUS M. KEELER, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN FRUIT-DRIERS.

Specification forming part of Letters Patent No. **189,472**, dated April 10, 1877; application filed June 13, 1876.

To all whom it may concern:

Be it known that I, JULIUS M. KEELER, of San Francisco city and county, State of California, have invented an Improvement in Driers; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention without further invention or experiment.

My invention relates to certain improvements in inclined driers, such as are used for drying fruits, vegetables, meats, and other substances from which it is desired to extract the moisture, or a portion of it, so as to leave the substance in a cured or desiccated condition.

Referring to the accompanying drawings, Figure 1 is a perspective view of my drier. Figs. 2 and 3 are detail views of parts of it.

Let A represent a furnace or box, inside of which an ordinary stove is placed. This furnace or box also serves as a support for one end of the drying-chamber B, while its opposite end is supported at a higher point upon legs or other supports C C, so that the chamber will stand at the desired inclination.

The bottom of the drying-chamber B I construct in the form of a V, as represented, and the heating-pipe E, which conveys the products of combustion and heat from the furnace or stove A, passes upward along the bottom of the chamber and lies in the angle of the V-bottom, while its opposite end passes out at the rear end of the chamber, and thence upward into the smoke-stack F.

The smoke-stack F extends upward from the rear or upper end of the chamber, and the heating-pipe E, after it passes out of the chamber, is bent upward, and its extremity passes through a hole in the stack, so that the products of combustion, after they pass through the pipe, are delivered into the stack.

The lower end of the stack communicates with the drying-chamber, so that the draft created in the stack by the pipe E will serve to draw the vapor or steam which is created in the drying-chamber into the stack, and carry it away into the outside air.

The drying-chamber I provide with a gable or inverted V-shaped roof, K, which is made of sash and glazed with glass or other transparent medium K′, so that light and the rays of the sun will be admitted to the substance which is undergoing treatment.

The eaves or lower edges of the roof-frame are formed with a gutter, L, and the glass panes are set in the sash-frames so that their lower edges will not touch the lower rail of the frame, thus providing a space between the glass and lower rail of the frame, through which the water of condensation that forms on the under side of the panes can pass into the gutter.

The V-shaped bottom could, however, be applied to a drying-chamber which has a flat or other shaped roof; but the transparent gable roof will give superior results in my drier by admitting the rays of the sun directly into the drying-chamber, and this will be especially valuable in converting grapes into raisins, as I am convinced that the peculiar bloom or tinge of a properly-cured raisin can best be obtained by exposing the grapes during the curing process to the rays of the sun.

I am aware that drying-houses have heretofore been constructed with transparent roofs, but they have either been flat or have been sloped only in one direction. My drying-chamber being inclined in one direction, and the two parts of the roof being sloped in two other directions, I am able to secure the full benefit of the rays of the sun directly into the drying-chamber during a greater part of the day, thus deriving a greater benefit from the solar heat and a better light.

To the under side of the ridge-pole of the roof I secure hooks *l l l*, upon which bunches of grapes may be suspended, so that they will receive the benefit of the sunlight and heat; and at intervals between the ridge and base line of the roof, inside of the chamber, I secure wires *m* to the frame-work of the roof lengthwise with the chamber, and from these wires I suspend other hooks, *l′ l′*, so that the entire space directly underneath the roof can be filled with suspended bunches of grapes undergoing the curing process, thus subjecting them to the combined action of the high temperature in the drier and the heat from the rays of the sun.

For convenience in hanging the bunches of

grapes and removing them from the hooks I hinge one or more of the panels in which the glass is secured to the ridge-pole, so that they can be raised in order to permit easy access to the hooks.

The drying-chamber I divide into two compartments by means of an imperforated partition, O. I then arrange tracks for supporting one line of trays below the partition and one above, as represented, so that the vapor or steam from the lower series of trays will not come in contact with the substance on the trays of the upper series, but will pass directly through its own compartment to the smoke-stack.

The door P at the rear end of the chamber, through which the trays are removed, stands at an angle when closed, and is hinged at its top, so that when it is unfastened it will hang slightly open, and as it is located directly underneath the stack, any water of condensation which may form on the inside of the stack will drip through the door and fall to the ground. This door can either be kept closed or open, as it is found necessary to admit air to the bottom part of the stack for assisting the draft, or entirely preventing any access of air at this point. The especial benefit and use of this door will soon be learned by the experience of the operator.

I thus provide useful and valuable improvements in driers, which will produce superior results in drying fruits and other perishable articles.

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

The combination of the inclined chest or chamber B, having a V-shaped bottom, and opening at one end into a furnace, A, the heat-radiating pipe E, imperforate partition O, and the transparent inverted V-shaped roof K, substantially as and for the purpose set forth.

JULIUS M. KEELER.

Witnesses:
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