

J. B. MAY.
Fruit Dryer.

No. 100,914.

Patented March 15, 1870.

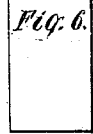
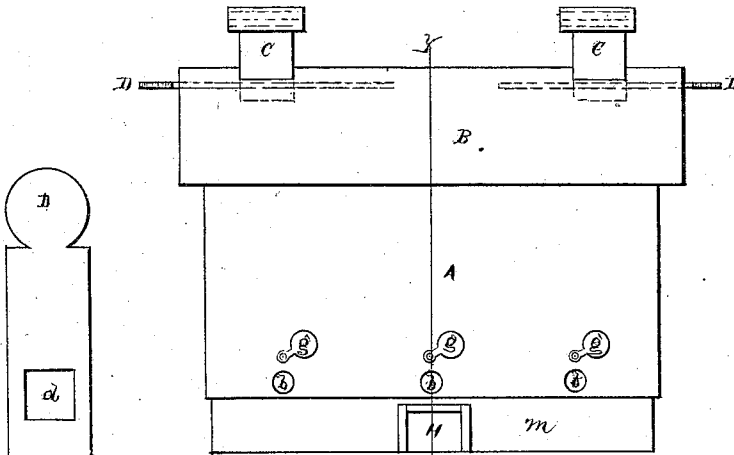


Fig. 1.

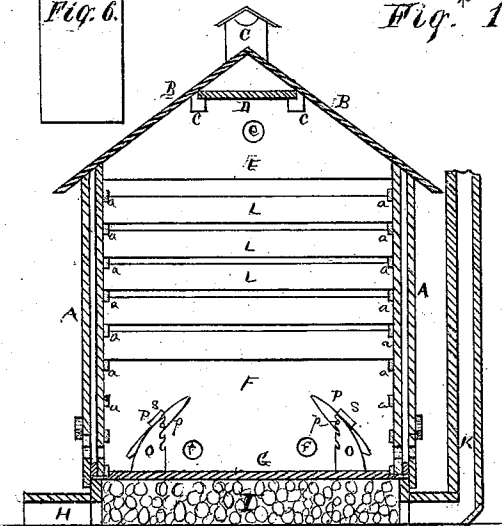


Fig. 2.

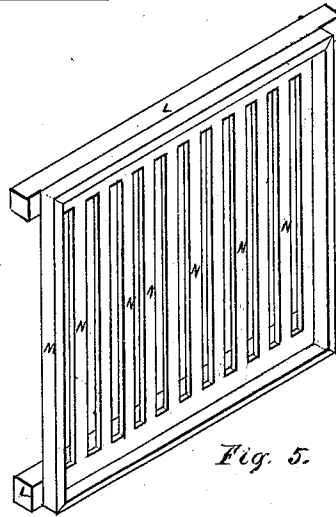


Fig. 5.

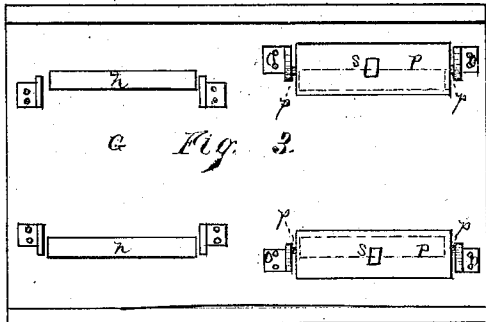
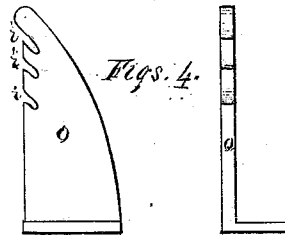


Fig. 3.



Figs. 4.

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United States Patent Office.

JAMES B. MAY, OF MAGNOLIA, OHIO.

Letters Patent No. 100,914, dated March 15, 1870.

FRUIT-DRIER.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, JAMES B. MAY, of Magnolia, in the county of Stark, and State of Ohio, have invented certain Improvements in the Construction of Drying-Houses for Drying Fruit.

The first part of my invention relates to the construction of a heat-reservoir in the lower part of the drying-house, and filling it with loose roundish stones, in connection with the furnace and chimney, in such a manner as to furnish heated air for drying the fruit, free from smoke and sparks, and for a considerable time after the combustion of the fuel ceases, and doing this with cheap or inferior fuel.

The second part of my invention relates to the construction of a metallic cover or heating-plate for such heat-reservoir, with such openings, valves, and standards as will regulate the admission of the heated air to the fruit, and, by the aid of other devices hereinafter mentioned, effectually and conveniently control the direction of such heated air, so as to concentrate it in one end or side, or in the center of the house, at pleasure.

The third part of my invention relates to the construction and use of certain other openings, button-valves, and other devices for the purpose of ventilating the house, regulating the draught of air therein, and, in conjunction with those described above, regulating the supply of heated air to different parts of the house at the same time.

Reference is made to the accompanying drawings to illustrate my improvements.

Figure 1 is an elevation of my drying-house.

Figure 2 is a vertical cross-section made of the same by the plane *x y*.

Figure 3 is a plan of the heating-plate, with its holes, standards, valves, and deflectors.

Figure 4 is a view of the standards for the deflectors.

Figure 5 is a perspective view of the fruit-racks.

Figure 6 is a plan of the ventilator slide-valves.

To enable others to make and use my improvements, I will proceed now to describe more fully their construction, arrangement, and operation.

The walls *A A* are made double, as shown in fig. 2, in order that the temperature within the house may not easily be affected by that without.

On the interior of the side walls are fastened the cleats *a a*, which support the fruit-racks *L L*. These fruit-racks are introduced into the house through doors *F F*, and slide upon said cleats.

On the ridge of the roof *B* are the ventilators *C C*, which are opened and closed by means of the slide-valves *D D*, the form of which are shown in fig. 6, and are moved in and out upon the slides *c c*, shown in fig. 2, their outer ends projecting through proper openings outside of the house, so that they can be operated from without.

The heating-plate *G* furnishes the top or cover for the heat-reservoir *I*, and extends under the inner walls of the house, all around. In this heating-plate are made one, two, or more openings, *h h*, through which the heated air from the reservoir may be admitted when desired, and these openings may be wholly or partially closed by placing over them, or partly over them, the metal plates *P P*, which are or may be much longer and wider than such openings. Upon or into each end of each of these plates, and equidistant from each outer edge, is inserted or fastened a pin, *p*, a few inches in length and of suitable size, by which the plates or valves *P* can be suspended so as to act as deflectors of heat and currents of hot air, after removal from over the openings *h h*.

For the purpose of such suspension, standards *o o*, side and edge views of which are shown in fig. 4, are constructed, and are fastened upon the heating-plate *G* by means of rivets through flanges upon their lower ends. They stand upright upon the plate, and two of them are provided for each deflecting plate, and they are placed at such distances apart that the deflectors may be suspended by the pins *p* between them, and each one has a series of slots, *i i i*, running from the top downward, and of such size that the pins *p* may be passed into them, and barely turn with friction in them, so that the deflectors when set in them, at any angle with the heating-plate *G*, will remain in position without other fastening.

In order that the deflectors may be handled when hot, small eyes, *s*, are cast or otherwise fastened upon them, as shown, into which long handles may be inserted for that purpose.

In fig. 3 the deflectors are shown as lying flat over the holes *h h*, but in fig. 2, a side view of the standards *o o*, and an imperfect end view of the deflectors suspended upon them.

The heating apparatus consists of the furnace *H*, into which the fuel to be burned is introduced. The heating-reservoir *I*, which is of the same length and breadth of the heating-plate *G*, and from one to two feet deep, and is to be filled with loose roundish stones, varying from the size of a hen's egg to that of a goose's—cobble stones to be preferred if to be conveniently had. They should not fit so closely together as to prevent the free circulation of hot air through them, and yet so closely as not to admit the passage of smoke, flame, or sparks; and the chimney *K*, which affords the needed draught as well as an exit for the unconsumed smoke.

The furnace *H*, heat-reservoir *I*, and chimney *K* may be built on the surface of the ground, if desired, the walls being formed of bricks or stones; but where a suitable location can be had on a hill-side they may be very cheaply made by digging a pit in the ground a little smaller than the plate *G*, and of the desired

depth, then digging a short ditch at the lower side, and covering it nearly over with stones, which will form the furnace H; while the chimney K may be built up as shown, or may be formed by digging a trench up the side-hill, and covering it over with flat stones, except at the end, whereby a sufficient draught for the fire may be obtained, and the smoke carried away from the house so as not to injure the fruit.

In the walls A A of the house are apertures *b b b*, which may be closed by means of the button-valves *g g g*, and other apertures *f f* and *e e*, to be closed by button-valves, are made in the doors F F and the end walls E E, as shown.

The fruit-racks, as shown in fig. 5, are composed of the cross-pieces L L, slats N N N, and rim M, and should be made of a sufficient width for them to be supported by and slide back and forth upon the cleats *a a* on the interior walls of the house; but they should be made just half as long as the interior length of the house, so that they may be taken out and replaced, or changed end for end, at convenience, while drying the fruit upon them.

The foregoing description of parts makes the operation of my drying-house so obvious that it is scarcely necessary to explain it further. We will, however, suppose that the racks have been properly filled with fruit, and before starting a fire in the furnace, the plates P P are laid flat over the holes *h h* in the heating-plate G so as to close them, and the ventilators C C and the apertures *b b*, *f f*, and *c c* are also closed. The fire is then started in the furnace H, and the flames and smoke from the burning fuel are drawn through the mass of loose stones in the heat-reservoir I by the draught of the chimney K, and heat the stones until they become quite hot, and also heat the plate G, which communicates its heat to the fruit in the racks above.

As soon as the heat in the interior has become sufficient to produce any considerable amount of draught, the ventilators C C should be opened; and when the fuel in the furnace has arrived at that stage of combustion where it is free from smoke and is a mass of glowing coals, the mouths of both furnace and chimney are closed, so as to confine the heat within the reservoir I. The heat-regulators, plates, or deflectors P P may be removed from over the holes *h h* and suspended upon the standards *o o*. The heated air and heat will then descend through the holes *h h*, and heat and dry the fruit rapidly.

Then will come into use the various devices, before described, for regulating and controlling the application of the heat to any part or parts of the house, just as the operator may desire. For instance, if it be desirable to have the heat to pass up through the center of the racks, the deflectors P P are pitched, as shown in fig. 2, the ventilators C C are opened, and the draught through them will secure that object with the aid of the deflectors. But if the most heat be desired in one side of the house, then the apertures in the walls of that side are opened, the ventilators C C in the top are closed, and the deflectors pitched accordingly, and the thing is accomplished, for the deflectors and draught drive the heated air in the direction desired. But if it be desired to have the heat concentrated in one end of the house, then the apertures in the walls at that end are opened, and all the other apertures closed, and the deflectors standing over the holes *h h* are so pitched as to deflect the currents of heated air to that end of the house.

This is done thus: We will suppose it to be expedient to have all the heat in the back end of the house, then the pins *p p* at the front ends of the deflectors are placed in the lowest slats in the standards *o o*, while the pins in the other ends are placed in the higher or highest slots. Then it will be understood that by my combined devices, the apertures in the side walls and end walls and in the top of the house, and the adjustable deflectors P P, I have perfect control of the heat after it is admitted into the front chamber.

I am aware that deflectors have been used in drying-houses before for a purpose similar to that of mine; but such have been confined by their mode of operation to deflecting the heat to the right and left, but not to the front and rear; while my deflectors throw the heat to the right and left and to the front and rear, and by the aid of my system of apertures with their button-valves in the side and end walls, they do this most effectually.

I am also aware in drying-houses for lumber, grain, and fruit, a mass of loose stones has been used over the heating furnace, such stones (not separated, however, from the chamber containing the articles to be dried by any heating-plate, as it is in my drying-house) being for the purpose of preventing sparks and flame from coming into contact with such articles, as well as for retaining and giving off the heat gradually when the fire has burned down.

In my manner I have succeeded by the combination of my furnace and my heat-reservoir filled with loose stones, heat-plate, and chimney, in so regulating the supply of heat to the fruit-chamber that the process of drying may be continued through the night time without the risk of the fruit being injured by smoke, sparks, or otherwise, and without attention on the part of the operator. For instance, if at the close of the day the furnace be left full of glowing coals, and the mass of stones in the reservoir has been thoroughly heated, and the valves in the walls, the doors of the furnace, and the exit of the chimney all closed, the ventilators C C and the holes *h h* being open, heat would be evolved and the process of drying go on during the whole night without further attention of any kind.

What I claim to be new, and desire to secure by Letters Patent, is—

1. The described heat-reservoir composed of its walls *m*, the mass of loose stones, and the plate G, in combination with the furnace H, flue or chimney K, and the walls A A and roof B of the house, constructed, combined, and arranged substantially as set forth, for the purpose described.

2. The heating-plate G, with its openings *h h*, with its standards *o o*, in combination with the adjustable deflecting plates P P, the walls A A and roof B, and the reservoir I, constructed and arranged substantially as and for the purpose described.

3. The walls A A and roof B, with their various apertures and ventilators, in combination with the adjustable deflectors P P, heating-plate G, with its standards *o o*, holes *h h*, the heat-reservoir I, furnace H, and fruit-racks L M N, when constructed and arranged substantially as and for the purpose set forth.

JAMES B. MAY.

Witnesses:

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I. N. ROSS.