J. BILLINGS.

Fruit Drying House.

No. 50,414. Patented Oct. 10, 1865.

Fig. 1.

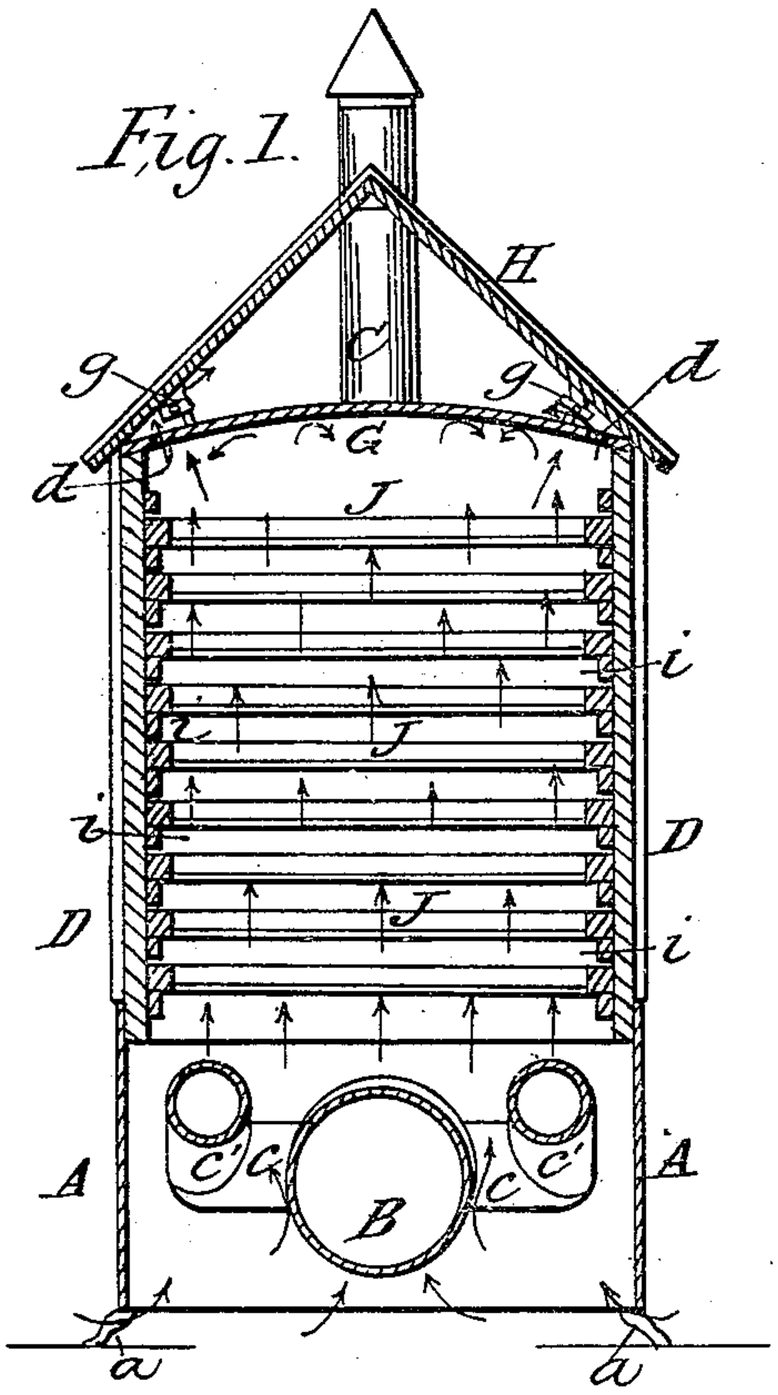


Fig. 2.

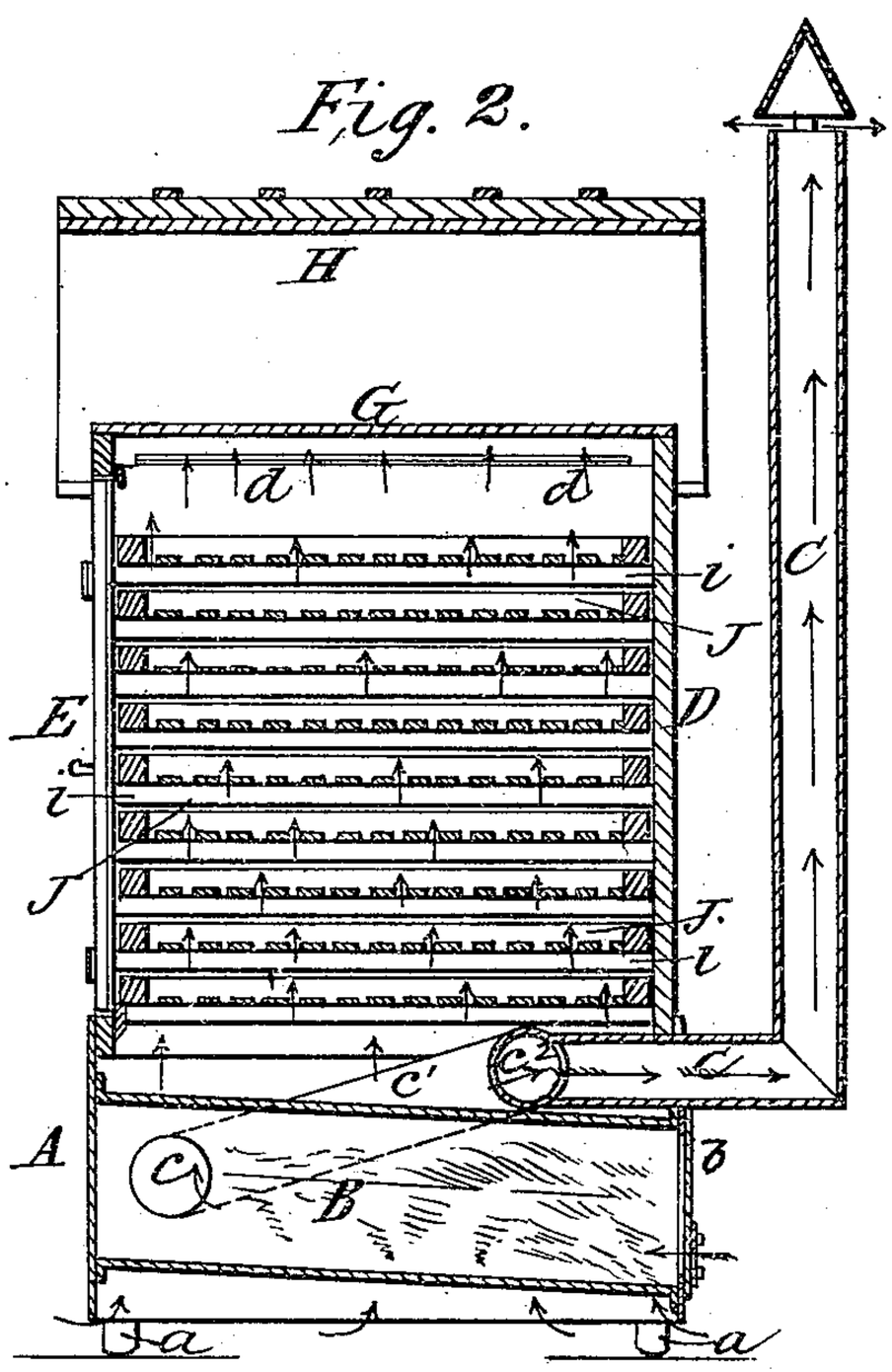


Fig. 3.

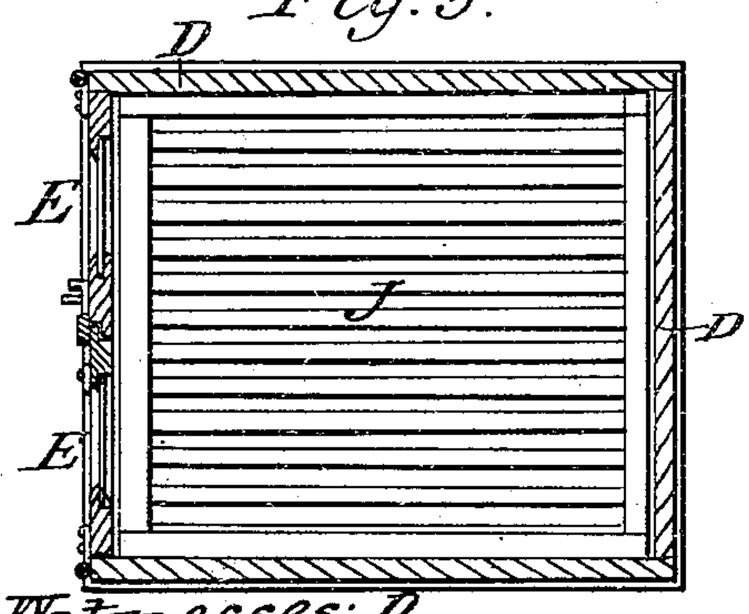
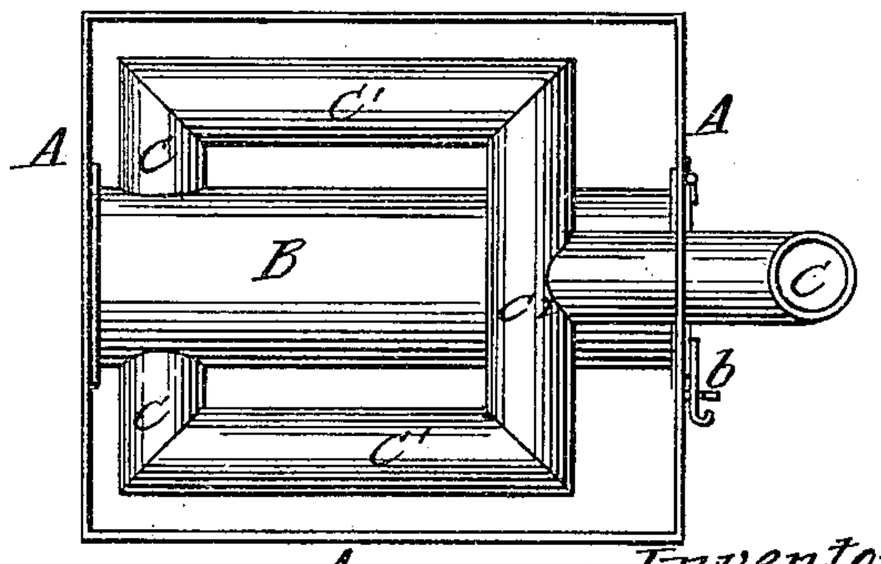


Fig. 4.



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UNITED STATES PATENT OFFICE.

JASPER BILLINGS, OF DAYTON, OHIO, ASSIGNOR TO HIMSELF, THOS. D. MITCHELL, AND A. KUHNS, BOTH OF SAME PLACE.

FRUIT-DRYING HOUSE.

Specification forming part of Letters Patent No. **50,414**, dated October 10, 1865.

To all whom it may concern:

Be it known that I, JASPER BILLINGS, of Dayton, in the county of Montgomery and State of Ohio, have invented a new and Improved Fruit-Drying House; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a vertical transverse section through the drying-house. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a horizontal section, and Fig. 4 is a top view of the furnace-chamber.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to dry fruit by means of currents of heated air circulating through a series of racks or slatted frames which are arranged within a drying-house over a furnace-chamber. Provision is made for conducting air beneath the furnace-chamber and uniformly heating this air as it rises, and then conducting the heated air out through the roof of the house; also, for retaining the heat within the house and allowing it to escape as rapidly or as slowly as may be required; also, for inspecting the interior of the house during the drying process without allowing cold air to enter the same or the heated air to escape, all as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, A represents the lower section or furnace-chamber of the drying-house, which is elevated a short distance above the surface of the ground and supported upon legs *a a*, for the purpose of admitting of the free ingress of air into the base of the fire or furnace chamber to be heated and dried preparatory to entering the fruit-chamber. This furnace-chamber A may be constructed of sheet metal or of masonry, and its bottom should be left open, so that air can enter at all points. Within this chamber is a furnace, B, which inclines from one end toward the opposite end, that end nearest the furnace-door *b* being the lowest. The extremities of the furnace may be constructed with flanges on them, by means of which they can be bolted or riveted to the ends of the walls of the chamber A. This furnace may be made rectangular, cylindrical, or elliptical in its cross-section, and it should be arranged centrally in the chamber A, so that equal quantities of air will pass up on each side of it. Near the highest end of this furnace B pipes *c c* are connected, which branch off horizontally and are connected to longitudinally-inclined pipes *c' c'*, the highest ends of which are connected together by a transverse pipe, c^2, which extends over the lowest end of the furnace B, as shown in Figs. 2 and 4. The smoke-pipe C connects with the cross-pipe c^2 at the middle of its length and proceeds upward outside of the furnace-chamber.

The object of arranging the pipes B and *c'* in inclined planes, as set forth, is to cause an equal distribution of the heat beneath the fruit-frames. If the furnace B and pipe *c'* were arranged in horizontal planes, the greatest heat would be radiated from that end of the furnace which is nearest the door *b*, as the fire is made at this point, and that end of the furnace which is farthest from the fire would radiate comparatively little heat. Consequently there would be an unequal distribution of heated air to the fruit-frames which are arranged above the furnace; but by inclining the furnace the heat will be conducted toward its highest end very rapidly, and it will be uniformly heated throughout its length.

To prevent the heat from being carried off too rapidly into the smoke-pipe C, the pipes which lead to it from the furnace B are made much smaller in diameter than said furnaces and operate upon the same principle as described for this furnace—viz., the heat passes from the lowest to the highest points very rapidly, and is equitably distributed and radiated.

The upper section, D, of the house may be constructed of wood, as represented in the drawings, and the joints of the planking closed by battens nailed on the outside of the house, as shown in Fig. 1. The front of this upper section is closed by means of hinged doors E E, which have glass windows in them, as shown in Fig. 3, for the purpose of inspecting the interior of the house without the necessity of opening said doors. This house is covered with an arched roof, G, which will retain the

heat much better than a flat roof, and concentrate the heat in the center of the building at the highest point thereof. This arched roof has oblong openings *d d* through it for the escape of heated air, and these openings extend from the front to the rear ends of the roof.

Above the arched roof G is a roof, H, which is intended to protect the arched roof and to shed the water during a rain, so as to prevent it from cooling the arched roof.

The heated air is regulated in its escape from the drying-chamber by means of valves or dampers *g g*, which are arranged so that when they are closed they form chambers at the junctions of the two roofs G H, as shown in Fig. 1. By regulating the openings of said chambers the circulation or passage through the drying-house of the heated air can be conveniently controlled.

Within the drying-apartment D a number of slatted frames, J J, are arranged in horizontal planes, one above another, and supported upon strips *i i* in such manner as to allow said frames to be removed from the apartment D or replaced therein at pleasure. There should be spaces between the frames J J to allow of a free circulation of heated air over as well as under and through them, as indicated by the arrows in Figs. 1 and 2.

I have referred to the frames J as being constructed with slatted bottoms, and, while I prefer to make them in this way, I will state that I do not confine my invention to slatted bottoms, as the bottoms may be perforated in any other manner.

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

1. Constructing a fruit-drying house with a furnace-chamber, A, and an upper drying-chamber, D, having an arched roof, G, escape-passages *d d*, and a covering-roof, H, substantially as described.

2. Arranging the furnace B and its flues *c c′ c²* within the furnace-chamber A of a drying-house, substantially as described.

3. The elevated open-bottom furnace-chamber A and inclined furnace B, in combination with the upper drying-chamber, D, having outlets *d d*, with valves or dampers applied to them, substantially as herein described.

4. The manner herein described of constructing the drying-chamber with the arched curved roof G, covering-roof H, and valved passages, all for the purpose set forth.

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Witnesses:

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