(No Model.)

G. W. THURSTON.

FRUIT DRIER.

No. 426,478. Patented Apr. 29, 1890.

Fig. 1.

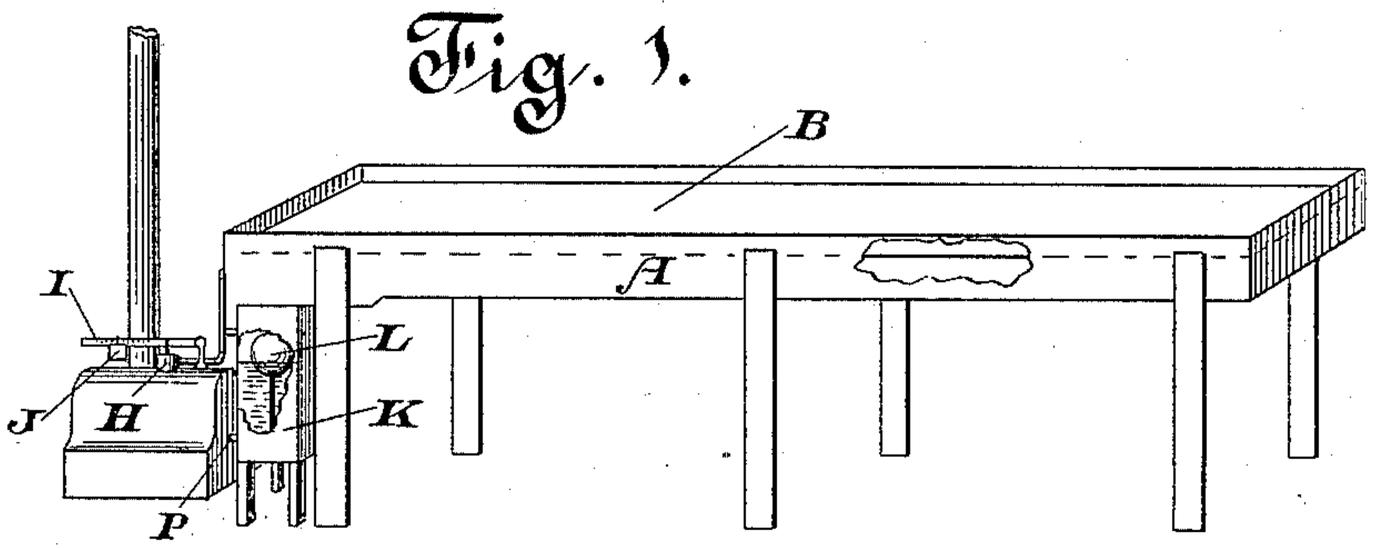


Fig. 2.

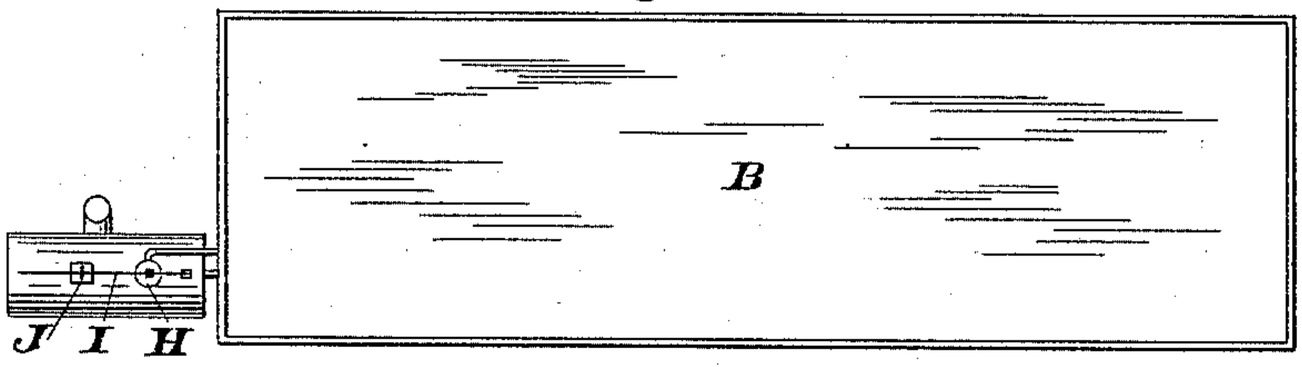


Fig. 3.

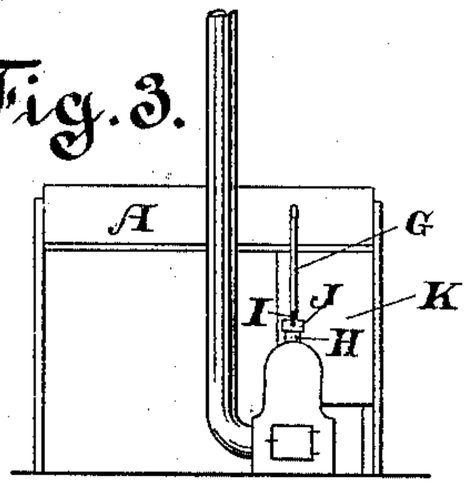


Fig. 4.

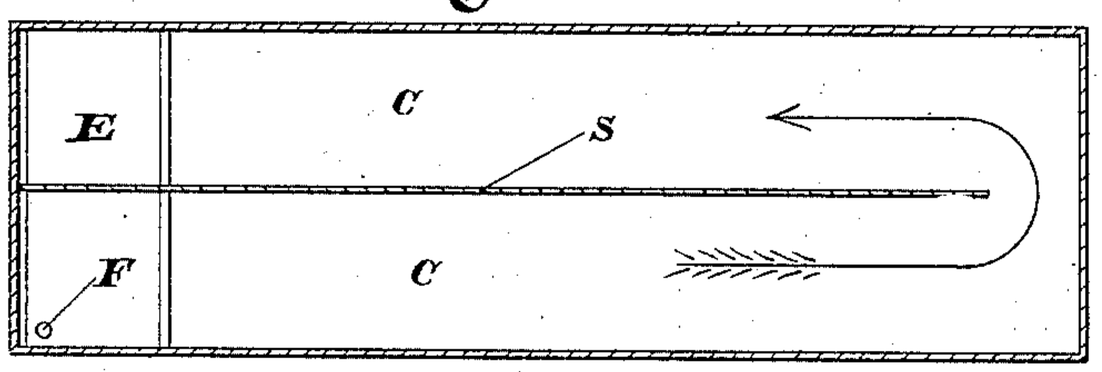


Fig. 5.

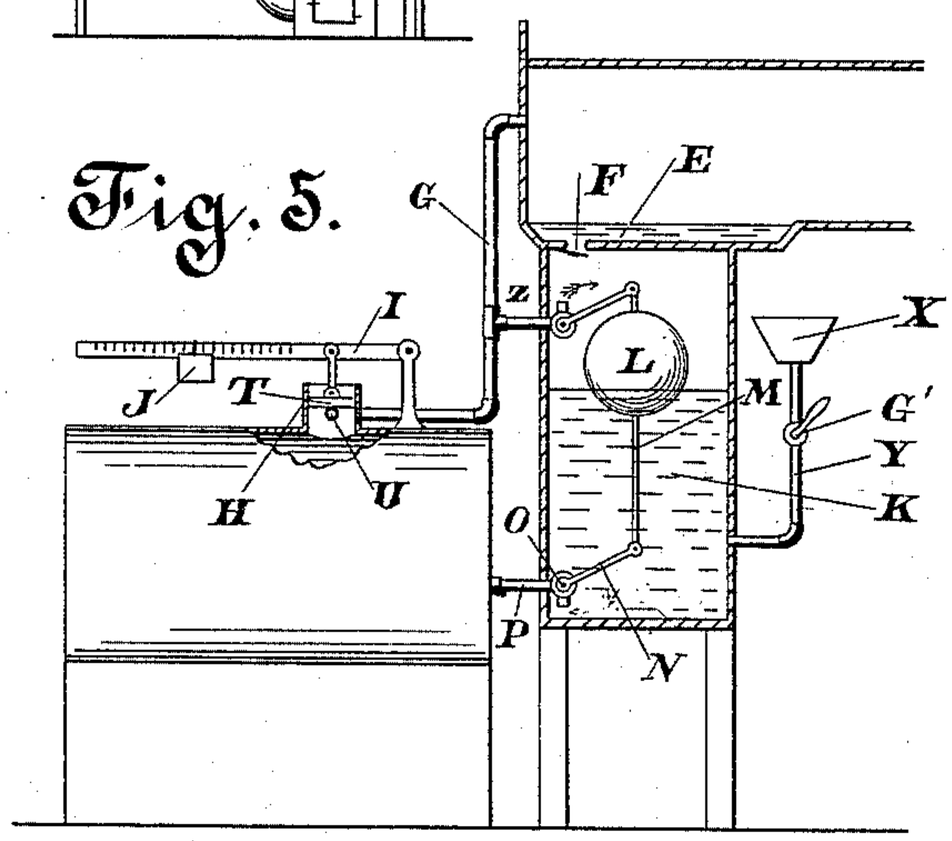
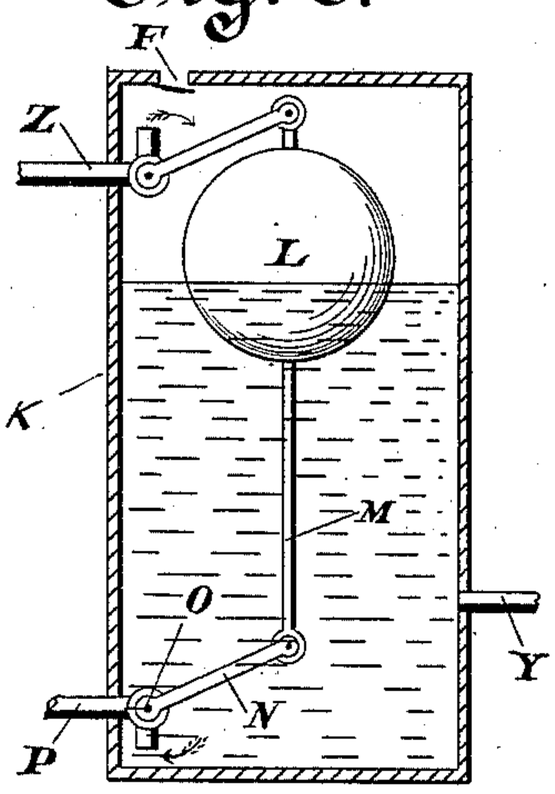


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE W. THURSTON, OF SAN FRANCISCO, CALIFORNIA.

FRUIT-DRIER.

SPECIFICATION forming part of Letters Patent No. 426,478, dated April 29, 1890.

Application filed August 17, 1888. Renewed February 19, 1890. Serial No. 341,004. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. THURSTON, a citizen of the United States, residing in the city and county of San Francisco, and State of California, have invented a new and useful Fruit-Drier, of which the following is a specification, reference being had to the accompanying drawings and the letters referring thereto.

Figure 1 is a perspective view with portions broken out for the purpose of showing the construction of the interior; Fig. 2, a plan view; Fig. 3, an end elevation; Fig. 4, a sectional view showing the heating-pan cut horizontally through the steam-passages just below the bottom or floor B; Fig. 5, a broken sectional view showing the construction and general arrangement of my improved drier. Fig. 6 is an enlarged view, partly in section, of the condensed water-chamber.

My invention has especial relation to steam fruit-driers; and it consists in the combination of the following instrumentalities, by means of which the steam heat to which the fruit is subjected can be regulated or tempered according to the varying conditions of the fruit during the process of drying, as will be fully understood from the following description.

This invention relates to an improvement in fruit-driers; and it consists in the combination and arrangement of devices, as will be hereinafter more fully described, and particularly pointed out in the claim appended.

I employ steam-pressure to regulate the heat of the steam employed under the drying-pan, thereby regulating the heat of the drying-floor B. I form the pans of the same material as that employed in the usual construction of that class of manufacture, such as sheet metal, &c. I form the partition S to serve as a support to the bottom of the pan as well as to divide the steam-space and form the passages C and C. The arrows show the direction of the steam under the drying-floor B.

I form the steam-admitting space of any required size to allow a convenient space for attaching the steam-supply.

I form the condensed-water space E for the purpose of receiving the water as it is condensed and runs from the floor of the steam-passages C and C on its way to the condensed water chamber K. The condensed-water chamber K, I generally construct of sheet metal of sufficient strength to sustain a pressure equal to that of the steam in the boiler, with which it is connected by the pipe P. I construct the float L, the connecting-rod M, the valve-lever N, the valve O, and connecting-pipe P of such material and in the same manner as that class of machinery is generally constructed. I employ any suitable style of furnace and boiler. I place the steam-pressure valve H upon the top of the boiler, as shown, and connect the same with the drying-pan by means of the opening U and pipe G. I connect the valve T with the gage-lever I and place the weight J at the distance out or in upon the beam or gage lever I to insure the required amount of resistance or bearing upon the piston T, as will be more fully explained.

The following is the operation of my improved drier: The fruit to be dried is placed upon the floor B of the drying-pan. The weight J is then adjusted upon the beam I to give the required bearing upon the piston T. The amount of pressure of steam to insure the required heat of steam I generally ascertain, as well as the point where the weight is to be placed, by experiment, as they will vary according to the rapidity with which the steam is condensed, owing to the varying temperature of the pan in drying different kinds of fruit; but the scale upon the beam is of advantage, for the reason that it may be relied upon in a general way and to limit the steam to ascertain the pressure of the steam in the boiler and limit the same. It will be seen that the weight being set out upon the beam to a point where the steam must be heated to cause a given amount of pressure, as soon as the steam is heated above that point the pressure opens the passage through the opening U, the pipe G, and continues to flow in as long as the heat is sufficient to raise the piston T above the opening U, thus filling the spaces C and C, and as fast as the steam radiates its heat to the pan and is condensed it is replaced by fresh dry steam from the boiler, and the condensed steam in the form of water is allowed to flow through the pipe F into the condensed water and feed chamber

K. When the condensed water and feed chamber K is filled sufficiently, the float L is raised, operating the valve O by means of the connecting-rod M and lever N, thereby opening the passage through the valve O and at the same time admitting steam to the chamber K through the pipe Z.

It will be observed from the foregoing that I combine with an evaporating-pan having steam-circulating passages a regulated steam-supply and a reclaimer for the water of condensation, which water in a more or less heated state is returned as feed-water to the boiler automatically. By these means I am not only able to utilize the water and save fuel, but my main object is to maintain such a varying temperature of steam heat as the condition of the fruit requires.

It will be observed that I employ a water-box X, arranged on a pipe Y, leading to the condensed-water chamber K, and provide the pipe with a valve or cock G, whereby the said pipe may be opened when it is desirable to feed water to the chamber at the box X. It will also be understood from the foregoing description that when the float has been raised by the water in the chamber K, and the valve O being open to admit the water to the boiler, the valve at one end of the pipe Z will also be opened to admit steam into the chamber K.

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

The herein-described steam-heated fruit-drier, consisting essentially, of a pan having steam-passages C C below a floor B, a condensed-water space provided with an outlet-pipe F, a condensed-water-reclaiming chamber provided with a float-actuated valve O, applied to a return-pipe leading into a steam-boiler, a main steam-pipe leading from this boiler into a chamber F beneath the floor of the drier, and a branch pipe leading from the main pipe into the reclaiming-chamber, provided with a valve actuated by said float, all constructed and adapted to operate substantially as described.

GEORGE W. THURSTON.

Attest:
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