

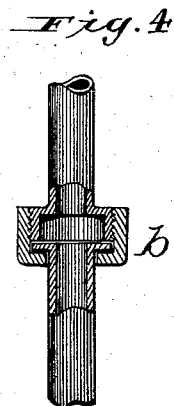
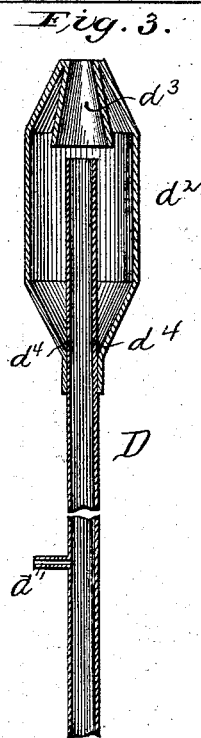
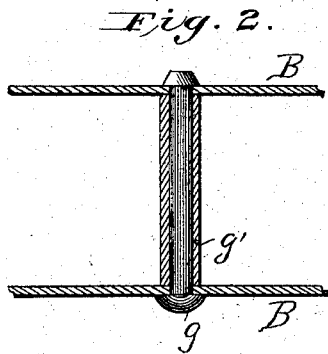
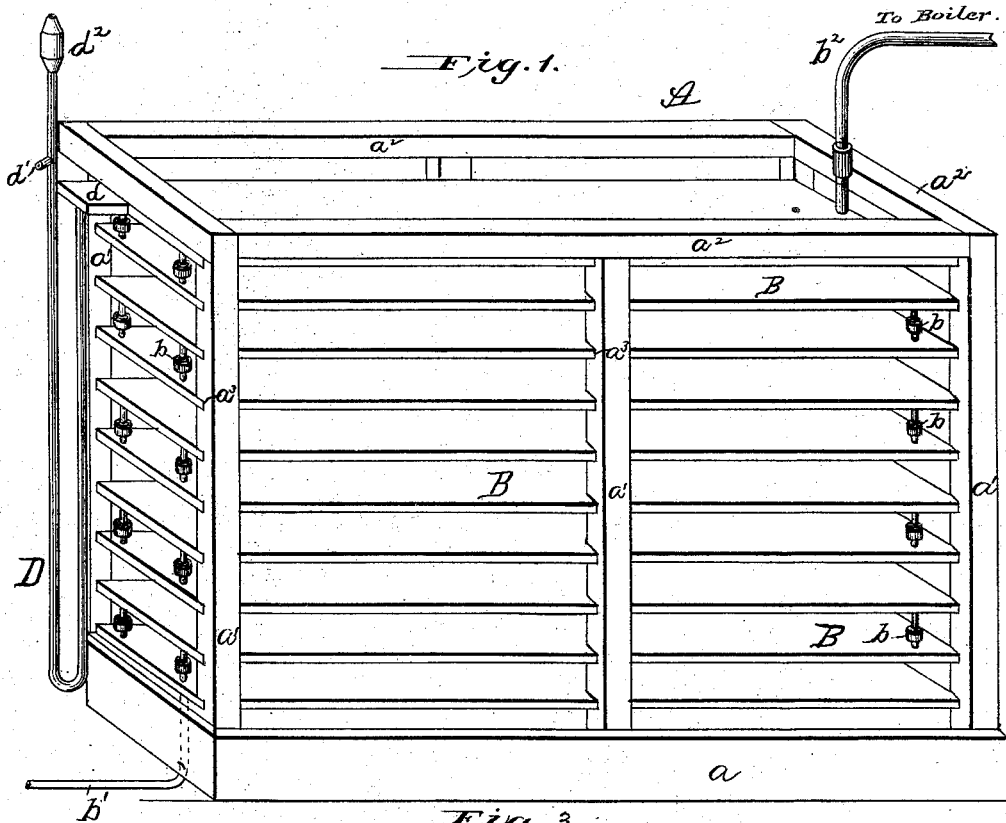
(No Model.)

F. A. HOOKER & F. S. BELCHER.

FRUIT EVAPORATOR.

No. 262,045.

Patented Aug. 1, 1882.



Witnesses:
A. M. Long,
W. J. Cogood.

Inventors:
Frank S. Belcher,
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UNITED STATES PATENT OFFICE.

FRANK A. HOOKER AND FRANK S. BELCHER, OF CHARLOTTE, MICHIGAN.

FRUIT-EVAPORATOR.

SPECIFICATION forming part of Letters Patent No. 262,045, dated August 1, 1882.

Application filed June 17, 1882. (No model.)

To all whom it may concern:

Be it known that we, FRANK A. HOOKER and FRANK S. BELCHER, citizens of the United States, residing at Charlotte, in the county of Eaton and State of Michigan, have invented certain new and useful Improvements in Fruit-Evaporators, of which the following is a specification, reference being had therein to the accompanying drawings.

Our invention relates to fruit-driers; and it consists in the construction and arrangement of its several parts, as will be hereinafter fully set forth, and pointed out in the claims.

In the drawings, Figure 1 is a perspective view; Fig. 2, an enlarged detail view of the steam-section braces; Fig. 3, an enlarged detail of the safety-valve, and Fig. 4 is an enlarged detail section of one of the unions which connect the sections.

A is a frame, of any desired length and size, in which are arranged the evaporating-sections, and it consists of the base a , the uprights a' , and upper connecting-bars, a^2 . The uprights a' have grooves a^3 cut in them at any desired distances apart, and in which slide the evaporating-sections. The grooves are arranged at the same distance apart, so that the sections, which extend the entire length of the frame, find suitable support in each upright, as shown.

B are the evaporating-sections. They slide in the grooves a^3 and are adapted to be removed from the frame by disconnecting the unions and sliding them out from either end. The sections communicate with each other through suitable unions, b , arranged between the sections at alternate ends, as shown, so that the steam entering the upper section through the supply-pipe will pass along its length, descend to the section below through the unions, along it, thence down through the unions b at the opposite end, and so on down to the bottom section, when it escapes with the condensed water through the waste-pipe b' . This waste-pipe may be provided with a valve to prevent too rapid an escape of the steam. Steam is supplied to the sections through the pipe b^2 , which communicates with the boiler. The upper section B has a projection, d , to the lower side of which is secured the pipe D. This pipe descends vertically to a point slightly below the lower section, where it is turned and

carried upwardly, parallel with the descending portion, to a point slightly above the upper section. A vent-pipe, d' , is placed in the ascending portion of the pipe, at about the level of the upper section, as shown.

Around the upper portion of the pipe is placed a nozzle or reservoir, d^2 , into which the end of the pipe projects. The upper end of the nozzle is open and has secured around it and descending into it the funnel d^3 , its object being to convey the steam which escapes from the mouth of the pipe D rapidly out of the reservoir. In the pipe and near the bottom of the nozzle are vent-holes d^4 , the object of which will be hereinafter set forth.

In the operation of the drier, before the steam is turned onto the supply-pipe water is poured into the nozzle of the pipe D until it has filled the lower third of the ascending portion of the pipe. The steam is then turned onto the sections A, and immediately enters the vacant portion of the pipe D and presses upon the water in the pipe, depressing it in the descending portion and causing it to rise in the ascending portion. As the pressure in the sections fluctuates, the water in the pipe, being acted on by the steam, constantly gives more space or less, as the pressure requires, so that in the sections the pressure is at all times the same, and the plates are not injured by the constant varying of the pressure. When the pressure becomes too great the water is forced up in the ascending portion of the pipe D until the vent d' is reached, when a portion of the water can escape, thus allowing the steam to expand very rapidly. If, however, the increased pressure is very great, the water will be forced entirely out of the pipe, escaping into the nozzle d^2 , and the steam passes freely out of the pipe until the pressure is diminished, when the water runs back into the pipe through the vent-holes d^4 and prevents the further escape of steam.

To prevent bulging or sagging of the section-plates, rivets g are placed through them at suitable intervals, which prevents the bulging, and around the rivets are placed collars g' , the ends of which meet the plates and prevent sagging.

The advantages of the drier are that the sections can be easily removed, that the machine can be added to or decreased in size with but

little labor, and that the steam is all times kept at a union-pressure.

What we claim is—

1. The combination, with the frame A, its 5
uprights a' , and grooves a^3 , of the sections B, adapted to enter the said grooves and to be readily removed therefrom, substantially as set forth.
2. The combination, with the frame A, its 10
uprights a' , and grooves a^3 , of the sections B, connected by the unions b at alternate ends, said unions being adapted to be disconnected, whereby the sections, or any one of them, can be easily removed from the frame, as described.
- 15 3. The sections B, joined by unions b and provided with rivets g and collars g' , placed around said rivets, whereby sagging and bulging of the sections are prevented, as set forth.
4. The pipe D, secured to the projection d of 20
the upper steam-section, descending vertically to a point slightly below the lower section,

bent and carried upwardly parallel with the descending portion to a point slightly above the upper section, and having a nozzle, d^2 , around its end, into which it projects, and provided further with a vent-pipe, d' , and vent-holes d^4 , substantially as set forth. 25

5. The nozzle d^2 , arranged around the end of the pipe D, which projects into it, as shown, and provided with a funnel, d^3 , substantially 30
as shown and described.

6. The frame A, its uprights and grooves, the steam-sections B, supply-pipe b^2 , waste-pipe b' , and safety-pipe d' , all combined to operate substantially as shown and described. 35

In testimony whereof we affix our signatures in presence of two witnesses.

FRANK A. HOOKER.
FRANK S. BELCHER.

Witnesses:

L. O. SMITH,
JOHN C. FILE.