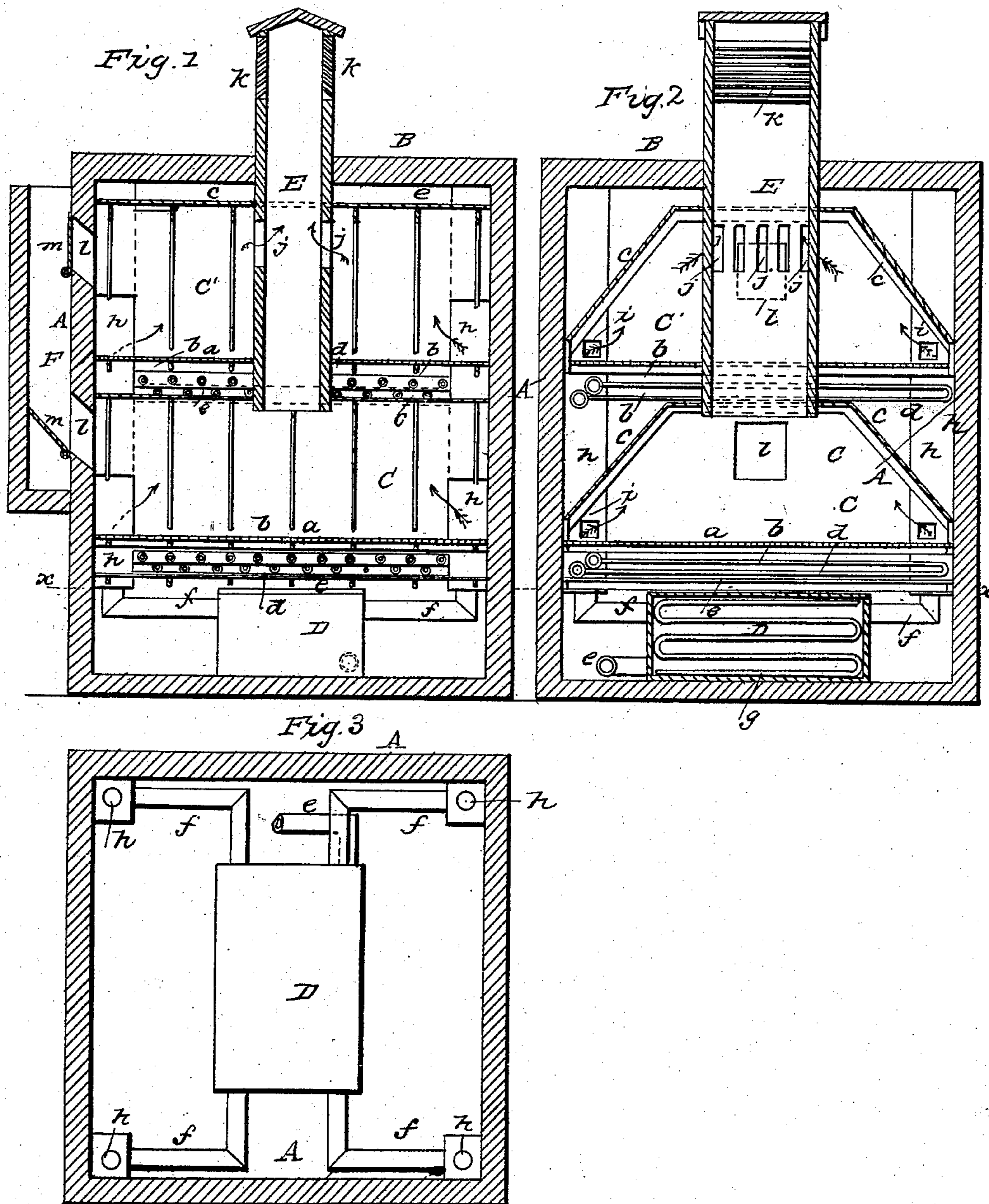


W. J. RAND.  
Desiccating Kiln.

No. 48,492.

Patented June 27, 1865.



Witnesses  
Henry T. Brown  
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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN DESICCATING-KILNS.

Specification forming part of Letters Patent No. 48,492, dated June 27, 1865.

*To all whom it may concern:*

Be it known that I, W. J. RAND, of the eastern district of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Kilns for Desiccating Vegetable and other Substances; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figures 1 and 2 are central vertical sections, taken at right angles to each other, of a kiln constructed according to my invention. Fig. 3 is a horizontal section of the same in the line indicated by the plane *x x* in Figs. 1 and 2.

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

The three most important requirements in a kiln for the economical desiccation of vegetable and other substances are an economical mode of applying the heat, a perfect distribution of the heat through the substances to be desiccated, and an effective means of ventilation for carrying off the moisture expelled from the substances by the heat.

The main object of this invention is to combine all these requirements in the least practicable horizontal area; and to this end it consists in a novel construction of and mode of heating and ventilating a kiln with several floors or chambers situated one above another.

It also consists in a novel means of supplying the material to be desiccated to the several floors or chambers of the kiln.

To enable others skilled in the art to make and use my invention, I will proceed to describe it with reference to the drawings.

A A are the walls, and B the roof, of the kiln.

C C' are the desiccating-chambers, arranged one above another. Only two of these chambers are represented; but there may be any number, according to the height which it may be deemed convenient or expedient to construct the kiln, each chamber being generally of such height as to allow the walking about within it of the person whose duty it is to spread over the floor the substances to be desiccated and remove the said substances when desiccated.

The floors are constructed double or hollow—that is to say, each being composed of a floor proper, *a*, made of perforated sheet metal supported upon suitable rafters *b b*, and a tight ceiling, *c*, of sheet metal or other material below, the ceiling forming the top of the chamber below, and being preferably sloped upward at two or more sides toward the center of the kiln, as shown in Fig. 1.

In the spaces *d*, between the floors proper, *a*, and the ceiling *c* below, steam-pipes *e* are arranged in any suitable manner for the heating of the floors proper and the chambers above.

Under the lowest of the floors there is an air heating and distributing chamber, D, into which air is admitted by a pipe, *e*, from a blower or by natural draft, and in which the air so admitted is heated by steam-pipes *g* for distribution through a number of pipes, *f f*, which convey it to vertical flues *h h* at the sides or corners of the kiln, the said flues extending up into the uppermost desiccating-chamber, and being provided with openings *i i* in the lower part of every chamber, for the introduction of the air to the several desiccating-chambers. These openings *i i* may be fitted with shutters or registers to regulate the admission of air to the chambers.

In the center of the kiln there is an upright ventilating-shaft, E, extending from the lowest desiccating-chamber, C, upward through the roof of the kiln to the atmosphere, for the escape of the moisture evolved in the several chambers from the substances undergoing desiccation therein. The lowest desiccating-chamber, C, communicates with the said shaft through the open bottom of the said shaft, and the chambers above through slits *j j* in the sides of the said shaft. The top of the said shaft is covered to exclude rain, and the ventilation is effected through lower openings, *k k*, in the sides, above the roof of the kiln. The openings from the several chambers to the said shaft should be as near as practicable to the top of each chamber.

At one side of the kiln, on the exterior thereof, there is an upright feeding-trunk, F, extending from the lowest desiccating-chamber up to the highest one, with an aperture, *l*, to each chamber.

Each aperture *l* is fitted with a door, *m*,

hinged at the bottom, and so constructed that when it is thrown back to open its respective aperture *l*, as illustrated by the lowest door, *m*, in Fig. 1, it closes the trunk *F* and forms an inclined plane, down which the substances to be desiccated, on being deposited into the trunk at the top, will slide into the chamber, the doors of all the chambers above being closed when the substances are to be introduced into a chamber below.

Each desiccating-chamber should be provided with a door on one side, for the entrance of the person whose duty it is to spread the substances to be dried over the floor, and for the removal of the substances when desiccated.

The operation of the kiln is as follows: The vegetable or other substances spread over the floor *aa* are heated by the heat from the steam-pipes *d d* below, and their moisture thereby expelled in the form of vapor, while the dry heated air admitted from the chamber *D* through the pipes *ff*, flues *h h*, and openings *i i* over the said substances quickly absorb the vapor and carry it off through the ventilating-shaft *E*. The substances may be turned over from time to time during the desiccating process by a rake or other implement in the hands of a person entering the desiccating-chambers for the purpose, and the desiccating process thereby expedited.

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

1. A kiln for desiccating purposes constructed with two or more desiccating-chambers, *C C'*, one above another, having double or hollow floors *a c*, heated by steam-pipes *d*, with an air heating or distributing chamber below, from which heated air enters the desiccating-chambers by flues *h h* at the sides or corners thereof, and with a central ventilating-shaft communicating with the several chambers for the escape of the moisture, the whole combined, arranged, and operating substantially as herein specified.

2. In combination with a kiln having several desiccating floors or chambers arranged one above another, one feeding-trunk, *F*, common to all the chambers, communicating with them by apertures fitted with doors *m m*, hinged at the bottom, and so constructed that when thrown back from the said apertures they close the feeding-trunk below and form inclined planes, down which the substances slide into the desiccating-chambers, substantially as herein specified.

WM. J. RAND.

Witnesses:

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