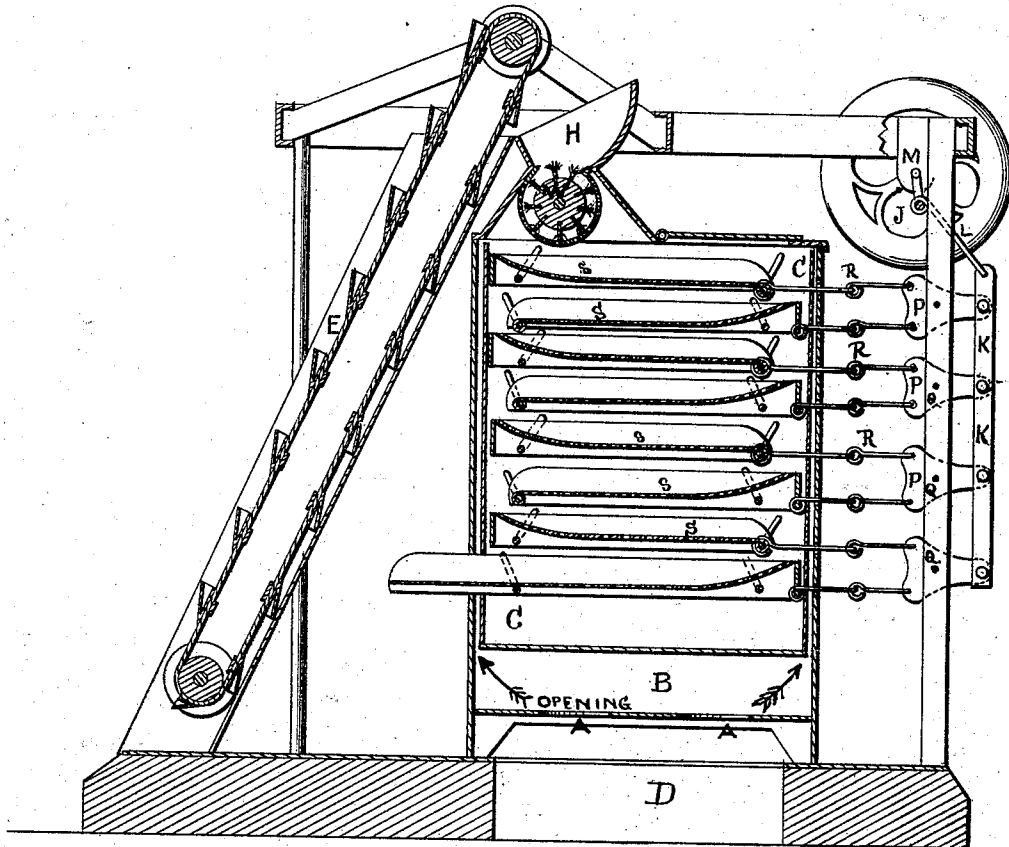


M. S. SEYMOUR & A. HICKS.

DRYING APPARATUS.

No. 173,741.

Patented Feb. 22, 1876.



Witnesses:

J. Thayer
J. S. Brown.

Inventor:

Mason S. Seymour
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By this Attorney
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UNITED STATES PATENT OFFICE.

MASON S. SEYMOUR AND ALONZO HICKS, OF FLUSHING, NEW YORK.

IMPROVEMENT IN DRYING APPARATUS.

Specification forming part of Letters Patent No. **173,741**, dated February 22, 1876; application filed November 10, 1875.

To all whom it may concern:

Be it known that we, MASON S. SEYMOUR and ALONZO HICKS, of Flushing, Queens county, in the State of New York, have invented certain new and useful Improvements in Drying Apparatus for driving out moisture from grain, earth, and other vegetable and mineral substances; and we do declare the following to be a full and exact description of the same, reference being had to the accompanying illustration, forming a part of this specification.

The object of this invention is to accomplish the drying or desiccation, in a rapid and uniform manner, by a convenient and favorable application of heat, which may be from the circulation of steam in pipes or passages, or, preferably, and more simple, from the direct combination of naphtha, or some other cheap fuel.

The apparatus consists of a drying-chamber, C, having a sufficient height to admit placing therein, in a slightly-inclined position, a series of reciprocating shelves, S S S, which are, preferably, made with perforated or wire bottoms, which will allow more or less circulation of heated currents through them, to effect direct contact of the same with the material to be dried.

The material is delivered into the hopper. H at the top of the apparatus by means of an elevator, E, raising it from the main supply below. The hopper is provided with a revolving feed-wheel, W, which has arms or branches to break-up the lumps of the material so that it may enter upon the top sieve or shelf in small and as nearly uniform sized particles as may be practicable. The shelves are each made to move in their respective places, so as to gently disturb the material, and cause it to move gradually along to the end of the shelf, and then fall over upon the next shelf below, which receives it, and along which it, in turn, passes to the end, when it again falls upon the next shelf below, and so on till the end of the last moving shelf is reached, where it is delivered into a receptacle or spout properly dried ready for use or packing. The motion to the shelves is given by the rods R connecting them to the rocking pieces P, which are actuated by the mo-

tive force which also drives the wheel W in the hopper.

The drying-chamber consists of an open space inclosed within double walls, between which the artificial heat is admitted at the bottom in the direction shown by the arrows. The heat is applied from below, and when naphtha is used for fuel it is allowed to burn in quantities gradually supplied from a reservoir by dripping upon a mass of sand, from which it burns with a steady heat. The degree of heat is very easily regulated by graduating the supply of fuel, and we find that the temperature may be so accurately adjusted and maintained in our apparatus as to limit the variation of the temperature to two or three degrees at any point of the drying-chamber which may be selected for the test. This uniformity of temperature is very important in some drying operations, such as drying yeast, wherein an excessive change or great irregularity in the heat supply will destroy the useful properties of the material being dried.

This invention does not allow the products of combustion to pass through or into contact with the material to be dried, but confines it to the space between the walls of the apparatus.

The fire may be kept in the combustion-chamber or space B, or below in that marked D, the openings A A serving to admit the necessary air for the fire when above, or the heated air and products of combustion when the fire is below, in D.

The main shaft M carries a crank, J, which, through the connecting-rods L and K, works the rocking pieces P P on the pins Q Q.

An opening is made at the back of the apparatus, near the top, for a pipe or chimney to carry off the gases. (Not shown in the drawing.)

The object of moving the shelves is to agitate the material while being dried, and to cause it to gradually move down the incline of the shelves till finally discharged from the apparatus.

We claim as our invention—

1. A drying apparatus, consisting of a double inclosing-case provided with shelves arranged in a zigzag manner, in combination with the rocking pieces P P and the connect

ing-rods K and R R, for communicating motion to said shelves, substantially as shown and described.

2. A drying apparatus, having a double case, in combination with rocking pieces and connecting-rods, substantially as described.

3. The combination, with the shelves S S, in a drying apparatus, of the rocking pieces P P and the connecting-rods K and R R, for com-

municating motion to said shelves, substantially as shown and described.

Dated and signed on this 22d day of September, 1875.

M. S. SEYMOUR.
ALONZO HICKS.

Witnesses:

THOS. FOSTER,
JAMES S. SMITH.