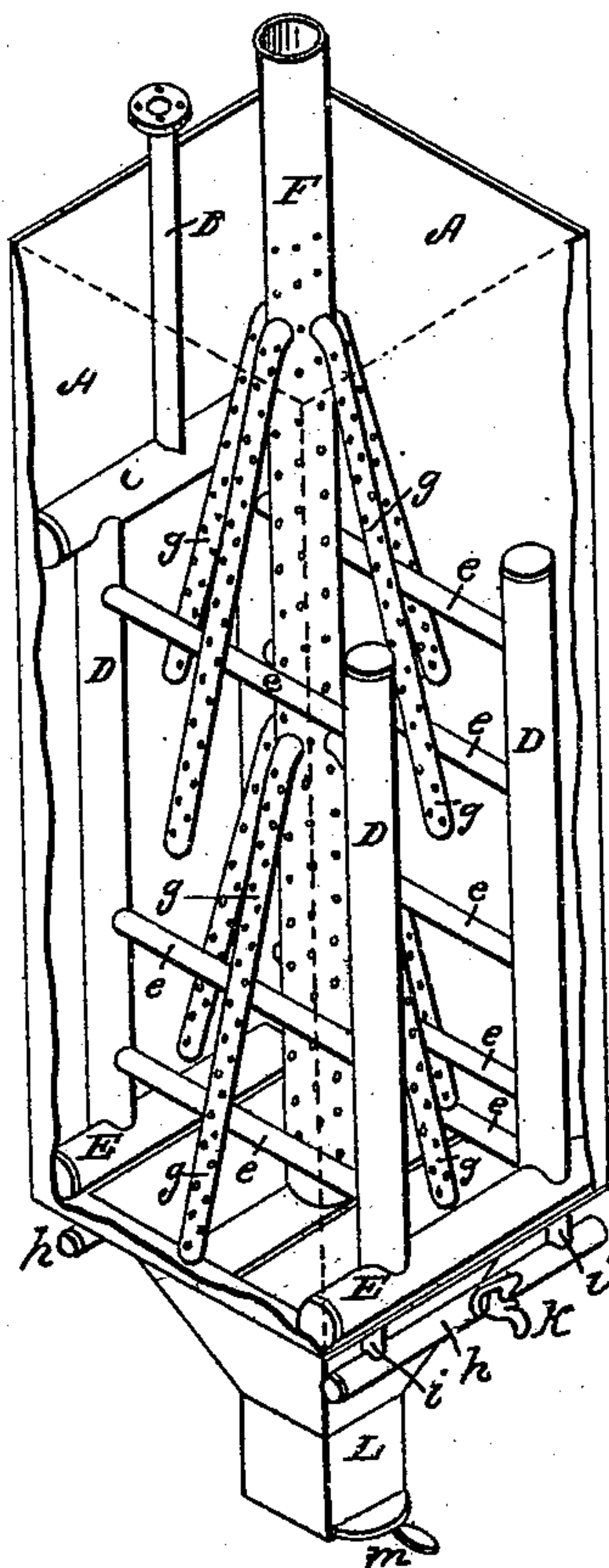


J. R. STAFFORD.

Grain Drier.

No. 5,519.

Patented April 18, 1848.



UNITED STATES PATENT OFFICE.

JAMES R. STAFFORD, OF CLEVELAND, OHIO.

GRAIN-DRIER.

Specification of Letters Patent No. 5,519, dated April 18, 1848.

To all whom it may concern:

Be it known that I, JAMES R. STAFFORD, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and Improved Apparatus for Drying Grain or other Substances; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, making
10 a part of this specification.

My apparatus for drying grain (or other substances), is composed of a vertical box or casing, in which is placed a series of heating tubes or pipes, for heating the
15 grain during its slow passage through the box among the heating tubes, combined with a series of perforated tubes or other devices for carrying off the moisture disengaged from the grain by the heat.

20 In the accompanying drawing, A, is the box, the sides of which should be inclosed in some suitable non-conducting substance. The box A, terminates at its base in a funnel spout L, in which is placed a regulating
25 gate m.

B, is a steam pipe, connected to the horizontal pipe C, the vertical tubes D, D, D, D, and the horizontal connecting tubes e, e, e, &c., as represented in the drawing.

30 E, E, are horizontal pipes connecting the lower ends of each pair of the vertical pipes D, D, and which receive the water of condensation from the same.

35 h, h, are horizontal tubes placed outside the box A, connected with the pipes E, E, by the short vertical tubes i, i, for the purpose of receiving the water of condensation and discharging the same through the stop cocks k, inserted into each pipe h.

40 F, is a perforated pipe placed in the center of the box A, having inclined perforated branches g, g, connected to it on all sides, extending to the sides of the box, between

the heating tubes e, e. The object of the perforated pipe and tubes is to carry off 45 the vapor and moisture from the grain, as fast as it is disengaged from the same by the heating tubes.

The heating tubes may be arranged in any manner that may be deemed preferable; and 50 the perforated tubes may also be arranged and combined with the heating tubes in any manner that may be deemed most judicious, or substituted by some other device to produce the same effect. I intend sometimes to 55 construct the sides of the box of double steam-tight casings, for the reception of steam or other heating agent; and connect the inner sides of the casings by transverse tubes communicating with the space between 60 the two.

The grain or other substance is dried during its slow progress through the box among the heating and perforated tubes; the box is kept full of grain or other substance acted 65 upon, the same being admitted to the top of the box as rapidly as it is discharged through the regulating gate at its base.

What I claim as my invention and desire to secure by Letters Patent, is— 70

The improved apparatus for drying grain or other substances, composed of a box or casing having a regulating gate at its base, and having a series of heating tubes or surfaces within the casing, combined with a 75 series of perforated tubes or other devices for carrying off the vapor disengaged by the heat; the whole combined and operating upon the grain or other substance during its passage through the box or casing, substantially in the manner herein set forth. 80

JAMES R. STAFFORD.

Witnesses:

CHAS. STETSON,
SAM. L. MATHER.