October 20, 1913.

DRAWING

5,238

A careful search has been made this day for the original drawing or a photolithographic copy of the same, for the purpose of reproducing the said drawing to form a part of this book, but at this time nothing can be found from which a reproduction can be made.

Finis D. Morris,

Chief of Division E.

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UNITED STATES PATENT OFFICE.

JAMES R. STAFFORD, OF CLEVELAND, OHIO.

APPARATUS FOR DRYING GRAIN, FLOUR, &c.

Specification of Letters Patent No. 5,238, dated August 14, 1847.

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, Flour, Meal, or other Substances or for Cooling the Same; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1, is a perspective view of the apparatus, and Fig. 2, a portion of the same detached.

A, is a cylinder, composed ⅛ inch boiler iron,—or other suitable metal—twenty inches in diameter and twenty feet in length. The cylinder is put together in such manner as to render it perfectly steam tight; the ends of the cylinder are riveted to the heads *a*, *a*, and corked so as to render the connection perfectly tight. The heads *a*, *a*, are of cast iron, about half an inch thick. *b*, *b*, are hollow bearing journals cast solid with the heads *a*, *a*.

c', c^2, c^3, &c., are horizontal radial flanches, secured at regular intervals upon the periphery of the cylinder; 2, 2, 2, &c., are helical or screw flanches secured to the periphery of the cylinder, passing around the same from one end to the other, and intersecting the horizontal flanches *c*, *c*, at a uniform distance from each other. The flanches are three inches in height. The horizontal flanches *c*, *c*, have lips secured to their outer edge projecting at right angles—more or less—one inch over the face of the same. I generally make the flanches of cast iron ⅛ of inch thick. The horizontal flanches *c*, *c*, I rivet to the periphery of the cylinder,—the helical flanches are cast in sections and secured to the horizontal flanches. If preferred however, the flanches may be constructed of sheet metal.

The cylinder A, is placed in a trough or box B, constructed of wood, or other suitable nonconducting material, of the form represented in Fig. 1, in the accompanying drawings. The concave form of the bottom of the box B, corresponds to the convexity of the outer edges of the flanches on the cylinder. The journals *b*, *b*, have their bearings in the ends of the box B. Suitable pipes are connected to each of the hollow journals *b*, *b*, for the purpose of conducting steam or hot air into and from the cylinder, when the apparatus is used for drying different substances; and for conducting cold air into the same, from some blowing machine, when the apparatus is used for cooling meal, flour, or other substances.

The cylinder is revolved in the direction of the arrow; the materials to be operated upon, are admitted on to the cylinder at *d;* the action of the helical flanches 2, 2, 2, gradually moves the grain or other material from one end of the box B, to the other,—the horizontal flanches *c*, *c*, *c* at the same time serving to keep every portion of the surface of the cylinder covered with, and balanced by, the substances acted upon, so that the same shall receive the entire radiation from the cylinder; and they also serve to agitate the substances as they fall from one flanch to and between the others,—thereby causing every particle of the same to be equally acted upon. The open top of the box or trough B, allows the moisture freely to escape, while the process of drying is going on; and the heat to escape while flour or other substance is being cooled.

f, is the discharging spout in the end of the box or trough B, through which the various substances are discharged after having been operated upon as herein described.

I sometimes omit the helical flanches and place upon the cylinder A, a series of horizontal lipped-flanches only, arranged near to each other; when I make use of a cylinder thus armed, I give to it and the trough B, in which it revolves, a sufficient inclination to cause the grain, flour, &c. operated upon to be gradually moved forward and discharged at the lowest end of the trough. A slight winding or diagonal direction may be given to the horiozntal lipped flanches, whether used by themselves, or in combination with the helical flanches, if preferred.

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

The method of drying or cooling grain, flour, meal or other substances, on the external surface of a hollow cylinder (A,) armed with flanches or other devices arranged and operating substantially as herein described, and combined with a trough, (B,) the cylinder to be filled with hot air or steam when used for drying, and with cold air when used for cooling purposes, as herein set forth.

JAMES R. STAFFORD.

Witnesses:
I. W. ALLEN,
L. C. TURNER.