DRYING GAS OR VAPOR IN CONTACT WITH SOLIDS.

167

No. 852,765. PATENTED MAY 7, 1907.

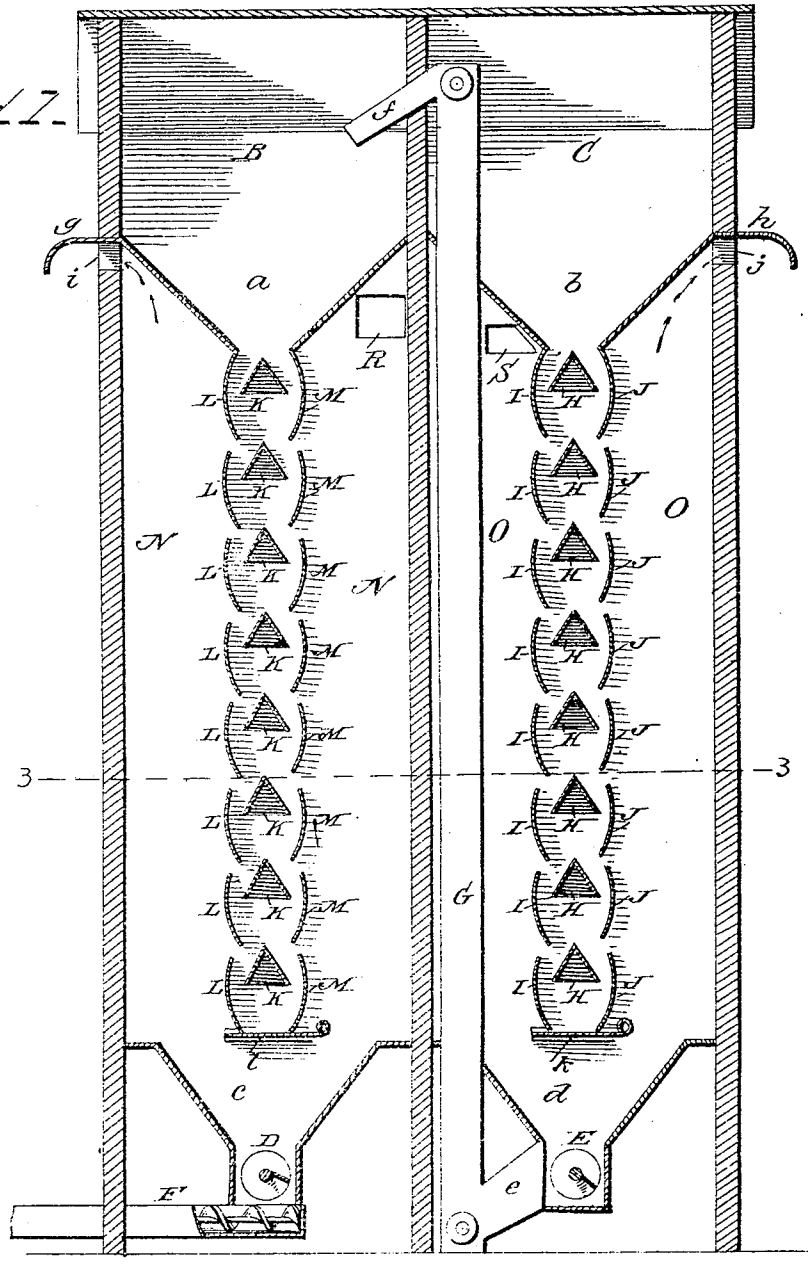
A. L. BRANNOCK.

GRAIN DRIER.

APPLICATION FILED OCT. 5, 1905. RENEWED APR. 5, 1907.

3 SHEETS—SHEET 1.

Fig. 1.



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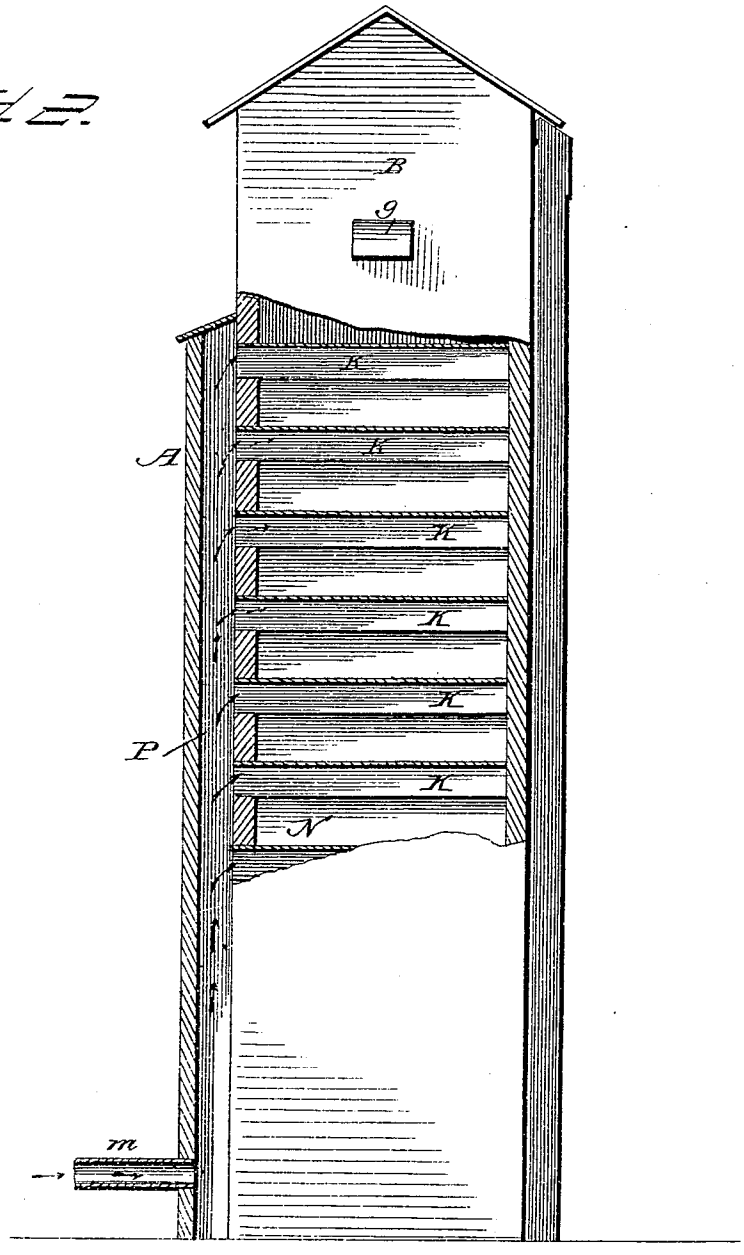
3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

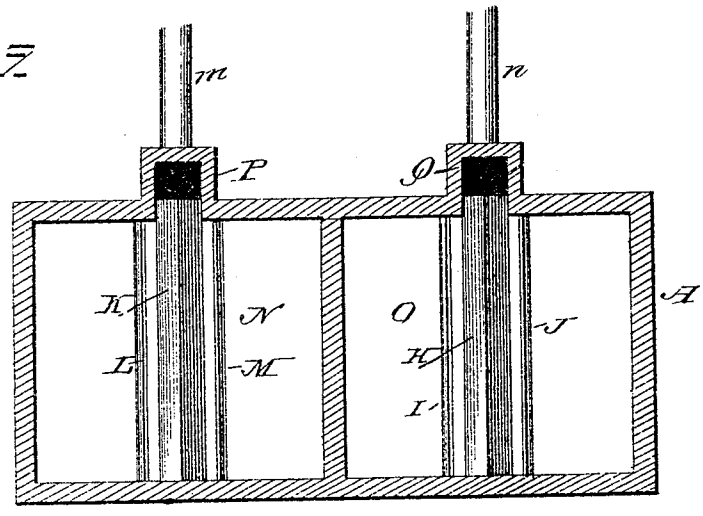
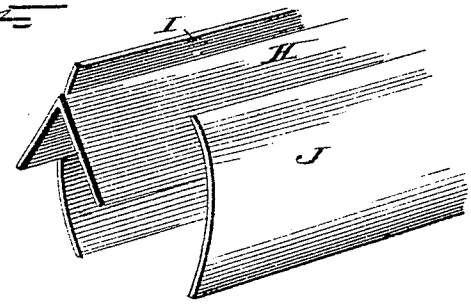


Fig. 4.



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UNITED STATES PATENT OFFICE.

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GRAIN-DRIER.

No. 852,765. Specification of Letters Patent. Patented May 7, 1907.

Application filed October 5, 1905. Renewed April 5, 1907. Serial No. 366,623.

To all whom it may concern:

Be it known that I, ARTHUR L. BRANNOCK, a citizen of the United States, residing at Neosho, in the county of Newton and State of Missouri, have invented certain new and useful Improvements in Grain-Driers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

The present invention has for its object to provide a grain drier that will be simple in construction and effective in thoroughly relieving the product of any moisture therein, the grain in its course passing down between peculiarly formed inverted V-shaped or angular and curved plates and subjected to a hot blast and afterward subjected to a cold blast and passes out onto a suitable screw conveyer and thence out from under the drier and afterward returned to the elevator in any convenient manner, the triangular and also the curved plates and their arrangement with each other securing a perfect means for treating the grain in its course and rendering the machine perfect in its action thereon and materially enhancing the value and successful operation thereof.

The invention consists in a grain drier constructed substantially as shown in the drawings and hereinafter described and claimed.

Figure 1 of the drawings is a sectional elevation of a grain drier constructed in accordance with my invention, showing the construction and arrangement of the inverted V-shaped or angular and curved plates. Fig. 2 is a side elevation partly in section. Fig. 3 a horizontal section taken on line 3 3 of Fig. 1. Fig. 4 a detail view on an enlarged scale showing a portion of one of the inverted V-shaped or angular plates and two of the curved plates one arranged each side thereof.

In the accompanying drawings A represents a suitable building or other structure of brick or other suitable material and of the proper height and size and is provided at its upper end with garners B C as shown in Figs. 1 and 2 of the drawings, said garners having funnel shaped bottoms *a* and *b* respectively.

At the bottom of the structure A are hoppers *c d* which are provided respectively with screw or other suitable conveyers D E, the former mentioned hopper also having a conveyer F communicating therewith and the latter mentioned hopper having the upright elevator G, the boot *e* thereof communicating with said hopper.

The upper end of the elevator G has a spout *f* extending into the garner B, and underneath the inclined or funnel shaped hoppers *a b* are suitable hoods *g h* respectively, which hoods extend over outlets *i j*, said outlets enabling the air to escape from the chambers of the drier as indicated by the arrows in Fig. 1 of the drawings, the moisture being carried with it.

The grain is received in the garner C and passes down over the inverted V-shaped or angular plates H and is deflected in its course against the concavo-convex or curved plates I J upon each side of said angular plates, said plates being arranged with relation to each other that the grain will not overflow, and the grain while passing through this chamber is subjected to a hot blast.

In opening the slide *k* at the bottom of the series of concavo-convex plates I J, the grain will flow through and onto the screw or other similar conveyer E which will bring the grain out from under the drier proper and empty it into the elevator boot *e* where it is carried upward by said elevator and dumped into the cooling chamber N, first passing into the hopper *a* and thence down between the plates K and the concavo-convex or curved plates L M.

The grain after being subjected to a hot blast in the chambers O it is subjected to a cold blast in the chambers N and by opening the slide *l* the grain is allowed to drop onto the screw or other form of conveyer D which brings it out from under the drier again when it is returned to the elevator through the conveyer F or by any other suitable and well known means found most convenient.

The inverted V-shaped or angular plates and the concavo-convex or curved plates hereinbefore described are arranged horizontally and of a length to extend the entire width of the chambers and are connected to the walls thereof in any suitable manner or supported thereby.

Suitable chimneys P Q communicate with the chambers N O respectively, which chimneys or air ducts may be of any suitable form and construction and extend from the ground to the top set of plates in each chamber, as

shown in Fig. 2 of the drawings, the chimneys being covered at the top so that the cold or hot air as it passes or is forced into the chimney through the medium of any suitable means well known to the art, the air will be forced to seek an outlet through the openings under the plates H K.

The air through suitable means is supplied to the chimney or air duct through the pipes *m n* shown in Fig. 3 of the drawings, the air passing up into the chimney or air duct as indicated by the arrows in Fig. 2 of the drawings.

The walls of the chambers adjoining the air ducts or chimneys are closed with the exception of the openings through them which are directly on line with the inverted V-shaped or angular plates, consequently the air as it passes up the air ducts or chimneys will be forced to seek an outlet through the openings in the walls, which openings are of a shape to correspond with the shape of the plates above referred to and under the same. As the air passes through the openings it also passes through the grain between the inverted V-shaped or angular plates and the curved plates arranged each side thereof after which the air escapes through suitable outlets R S is the chambers N O respectively and also through the outlets *i j*, or any other means may be employed for the cold and heated air to escape from the chambers of the drier after passing through the grain.

I do not wish to be understood as limiting my invention to any particular means employed for the escape of the air from the building or structure after having passed through the grain or that the plates H K be exactly of the form shown so long as the plates are angular, and many changes or modifications may be resorted to without in any manner detracting from the efficiency of the drier, such changes suggesting themselves to the ordinary judgment of mechanic without departing from the essential features of the invention.

Having now fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a grain drier, a plurality of angular deflecting plates extending horizontally in a vertical row one above the other, and curved plates, one arranged upon each side of the angular plates, and an air duct or chimney communicating with the spaces underneath the angular plates, substantially as and for the purpose set forth.

2. In a grain drier, the walls thereof having a plurality of openings therethrough, a plurality of angular deflecting plates extending horizontally in a vertical row one above the other, curved plates, one arranged upon each side of the angular plates, the space upon the under sides of the angular plates communicating with the openings in the walls of the chambers of the drier, and air ducts or chimneys adjacent to the walls of the chambers and communicating with the openings through the walls thereof, substantially as and for the purpose described.

3. A grain drier comprising two chambers with garners and hoppers at the upper ends, hoppers at the lower ends of the chambers and conveyers located therein, one of said hoppers having a second conveyer and an elevator to take the grain from one chamber and transfer it to the other chamber, a vertical row of angular plates extending horizontally one above the other, curved plates arranged each side of the angular plates within each chamber, suitable slides upon the lower pair of the curved plates, and air ducts or chimneys adjacent to the walls of the chambers and communicating with the interior thereof, substantially as and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

ARTHUR L. BRANNOCK.

Witnesses:

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W. J. THURMAN.