W. H. FORD.

DRIER.

APPLICATION FILED NOV. 10, 1909.

994,915. Patented June 13, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

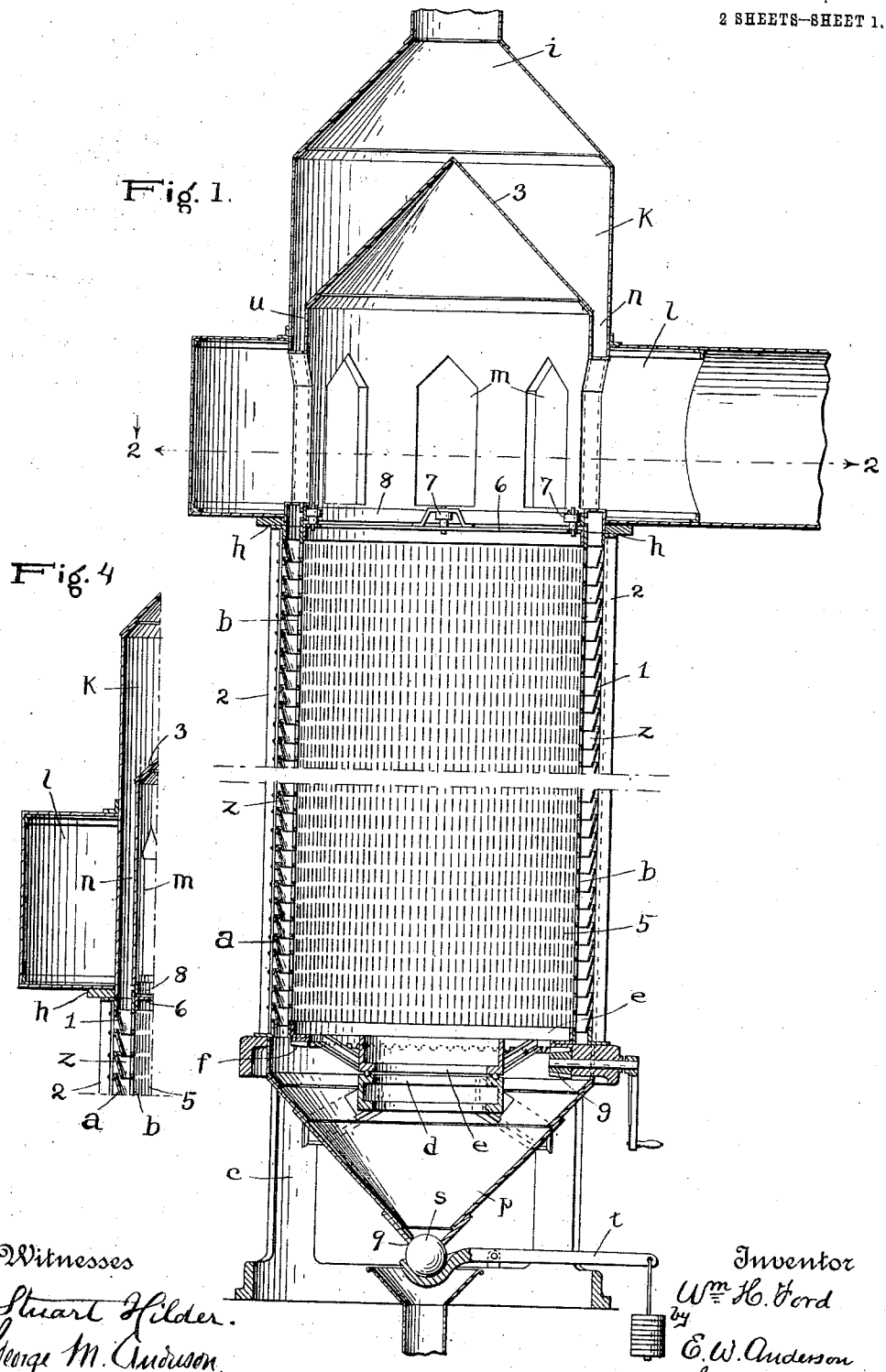

Fig. 4

Witnesses

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2 SHEETS—SHEET 2.

Fig. 2.

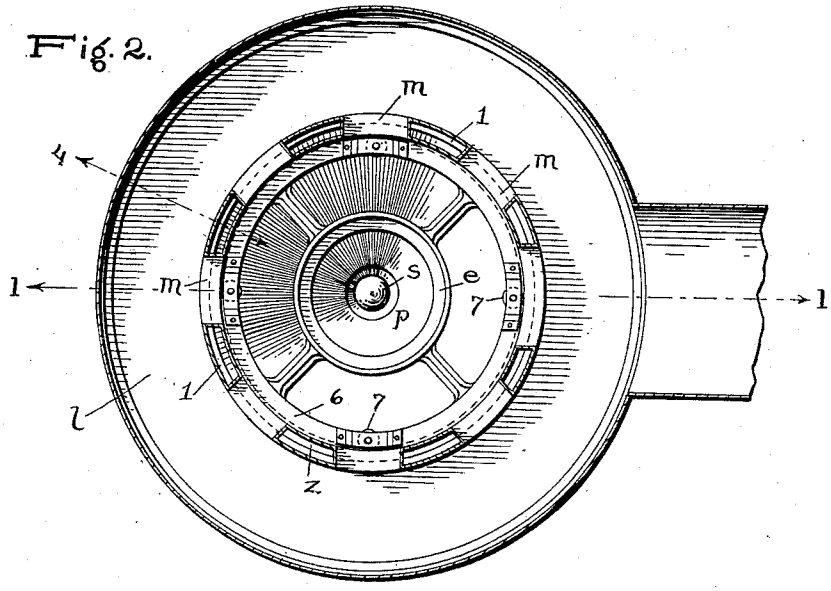
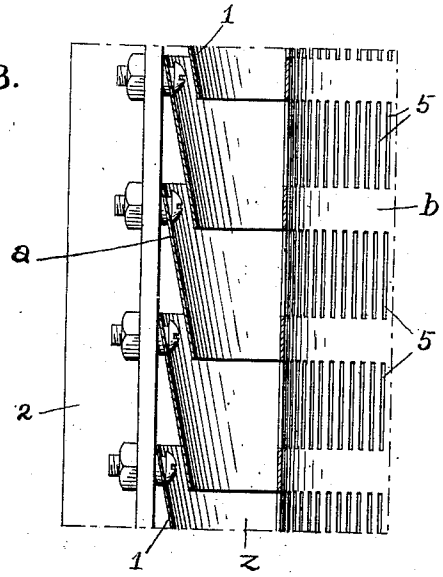


Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM HENRY FORD, OF NIAGARA FALLS, NEW YORK, ASSIGNOR TO THE SHREDDED WHEAT COMPANY, OF NIAGARA FALLS, NEW YORK.

DRIER.

994,915. Specification of Letters Patent. Patented June 13, 1911.

Application filed November 10, 1909. Serial No. 527,220.

To all whom it may concern:

Be it known that I, WILLIAM HENRY FORD, a citizen of the United States, resident of Niagara Falls, in the county of Niagara and State of New York, have made a certain new and useful Invention in Driers; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it appertains to make and use the invention, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 is a central vertical sectional view through the line 1—1 Fig. 2. Fig. 2 is a horizontal sectional view through the line 2—2 Fig. 1. Fig. 3 a sectional view showing details, somewhat enlarged. Fig. 4 is a vertical sectional detail view at the line 4.

The invention has relation to vertical cylindrical driers of the class designed for absorbing the surface water from grain or other granular goods as it descends through an annular interspace or chute, and it consists in the novel construction and combinations of devices as hereinafter set forth.

In the drawings are shown an exterior cylinder *a*, having a slat-work wall, an interior cylinder *b*, concentric therewith but separated therefrom and provided with perforations, and an exhaust connection with the interior cylinder, which is movable. In the construction shown the cylinder casing *a*, is supported on a base frame *c*, which is provided with a circular bearing *d*, of ball bearing type, on which rests the base *e*, of the interior cylinder *b*, said base being of open or spider form and having a concentric horizontal bevel-toothed wheel *f*, which is engaged by a bevel pinion *g*, having its shaft bearing in the frame, and provided with a crank handle by the operation of which the interior cylinder may be moved. The interior cylinder is separated from the exterior cylinder by a cylindrical interspace or drying chute *z*, through which the grain passes downward.

The wall of the exterior chamber *a*, is composed of series of upward and outward sloping slats 1, which have a slight lap, said slats or reversed louvers being secured to upright frame irons 2, which are secured at their ends to the base *e*, and to a circular head *h*, which carries above it the receiving chamber *k*, and the exhaust chamber *l*, which surrounds the receiving chamber and is in communication with the interior cylinder by the ports *m*. From the exhaust chamber extends a pipe or pass-way leading to an exhaust fan which may be located in any convenient position. The top portion 3, of the inner wall of the receiving chamber is of conical or centrally raised form and is connected to the ported cylindrical portion *u*, to form a guide or spreader for the grain entering by the hopper throat *i*, to the circular chute *n*, between the inner and outer walls, through which it passes down into the interspace *z*, between the exterior and interior cylinders.

The wall of the interior cylinder or cylindrical flue *b*, is provided with series of perforations 5, of small size, and may be preferably series of narrow slots opposite the slats of the outer wall. These perforations are designed to be small enough to prevent the grain from entering the interior cylinder.

At the upper end of the interior cylinder is secured a circular rim 6, which is provided with roller bearings 7, designed to move against a circular bearing 8, of the head *h*, and thereby facilitate movement of the cylinder while keeping it steady.

Below the cylinders in the base is a concentrating hopper *p*, preferably of conical form, terminating in an outlet opening 9, which is controlled by means of a ball valve *s*, adjustable by means of a lever device *t*.

Wet grain or other material, having been introduced into the receiving chamber and falling upon its conical floor 3, is spread evenly and thus delivered to the annular chute *n*, through which it falls to the interspace *z*, between the exterior and interior cylinders, through which it continues its descent until obstructed by the ball valve which is designed to regulate the flow. Meanwhile the exhaust fan is continuously drawing air through the passages between the slats of the outer cylinder and through the passing grain into the interior cylinder and carrying the moisture and vapors with said air up and away. On account of the louver or slatted construction of the outer cylinder, the wet grain is apt to choke or stick in its downward way through the annular chute or interspace *z*, between the outer and inner cylinders, and in order to remedy this diffi-

culty and facilitate the movement of the grain one of these cylinders, preferably the interior cylinder, is made movable. In case of such choking of the grain a rotary movement of the cylinder will readily loosen the mass so that the grain will resume its downward movement.

The valve device for the outlet opening at the bottom of the hopper forms no part of my invention, and I disclaim the same.

Having described the invention, what I claim and desire to secure by Letters Patent is:

1. A vertical drier having an exterior cylinder provided with series of slat-work openings, and concentric therewith an interior perforated cylinder, these cylinders being separated to provide an annular interspace therebetween, a feed chamber communicating with the annular interspace, an exhaust chamber communicating with the interior cylinder, anti-friction bearings at the upper end of one of said cylinders, a support at its lower end and means for giving rotary motion to such cylinder, substantially as specified.

2. In a vertical drier having an exterior cylinder provided with series of oblique slat-work passages, and an interior concentric cylinder having perforations, these cylinders being separated to provide an annular interspace therebetween, an exhaust chamber communicating with the interior cylinder, anti-friction bearings at the upper end of the interior cylinder, an annular bearing at the lower end of the same, and means for giving rotary motion thereto, substantially as specified.

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

WM. HENRY FORD.

Witnesses:
W. C. MARLOW,
JAS. TRAVERSE.