(No Model.)

J. A. TILDEN.

ROTATING CYLINDER FOR GERMINATING AND DRYING GRAIN.

No. 578,845. Patented Mar. 16, 1897.

Fig. 1.

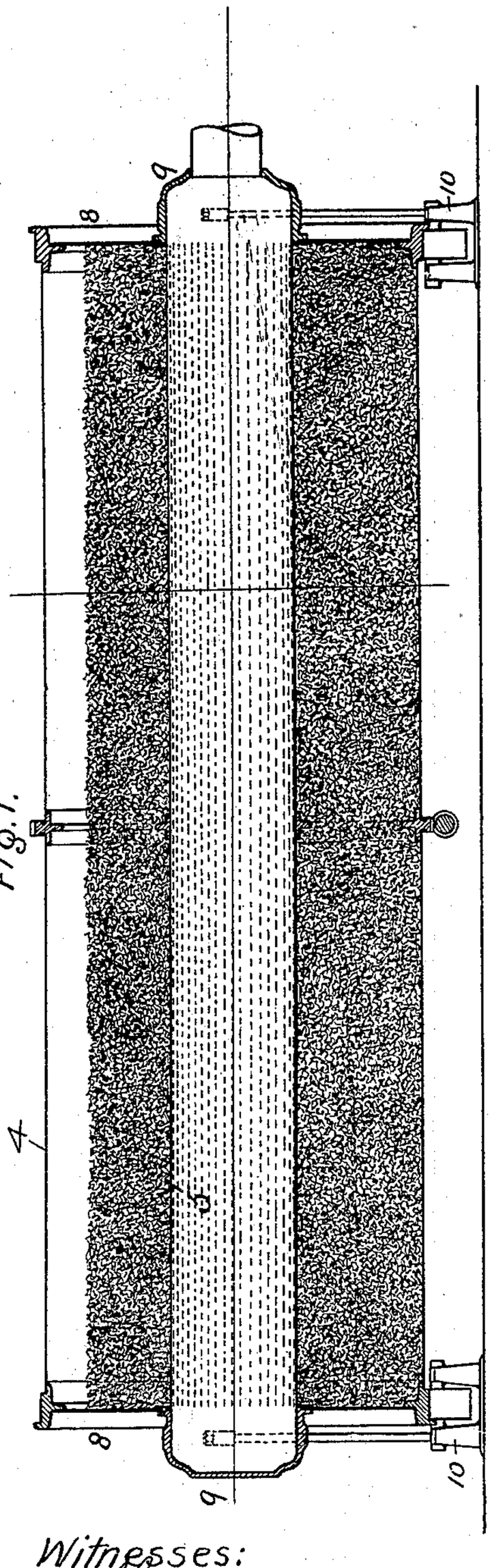


Fig. 3.

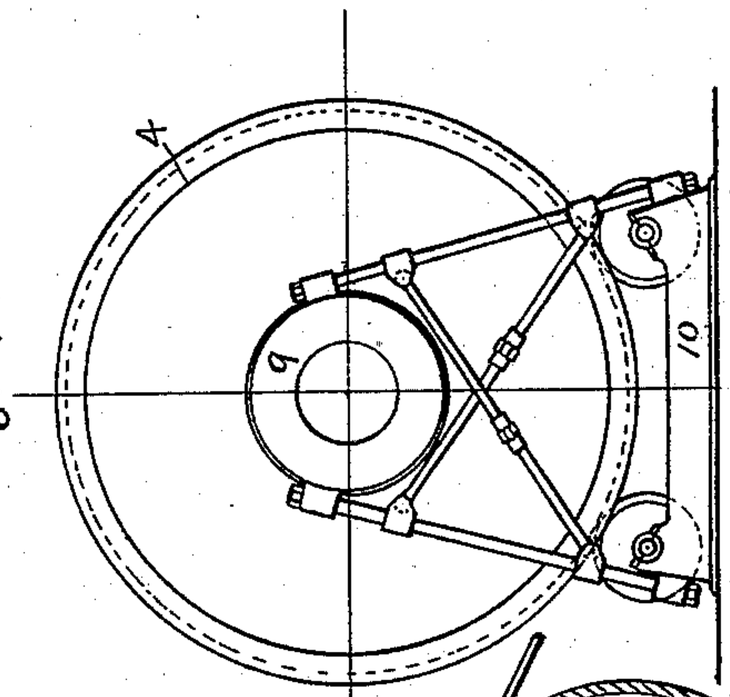


Fig. 5.

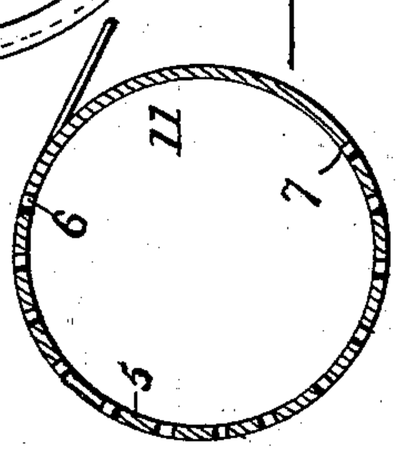


Fig. 4.

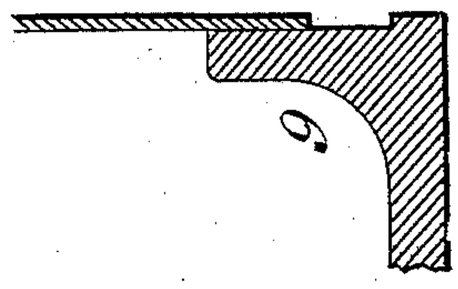
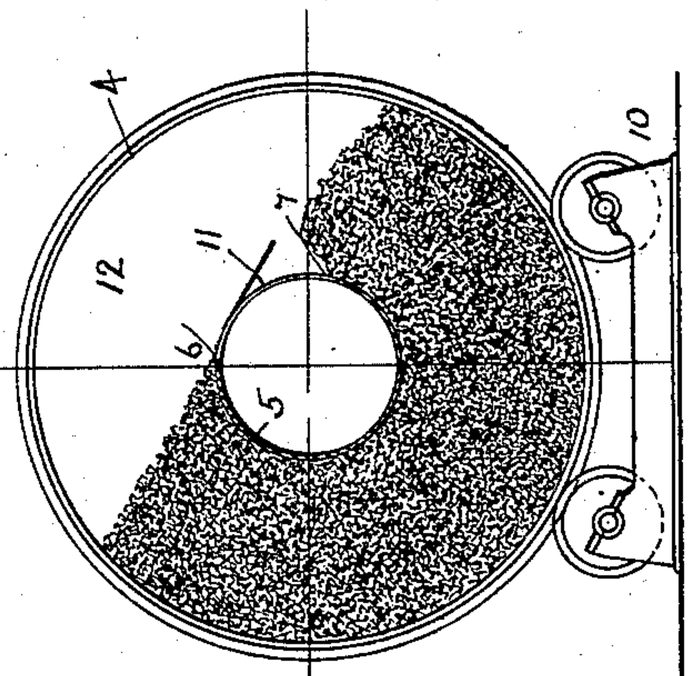


Fig. 2.



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ROTATING CYLINDER FOR GERMINATING AND DRYING GRAIN.

SPECIFICATION forming part of Letters Patent No. 578,845, dated March 16, 1897.

Application filed August 6, 1894. Serial No. 519,566. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. TILDEN, a citizen of the United States, residing at Hyde Park, in the county of Norfolk and State of Massachusetts, have invented a new and useful Improvement in Rotating Cylinders for Germinating and Drying Grain, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

This invention relates to rotating cylinders adapted to germinate and dry grain, and particularly to that class of cylinders in which the grain to be germinated or dried, or both, occupies an annular space between concentric cylinders, one or both of which are wholly or partially perforated, so as to allow currents of air to pass through the grain either from the inside outward or outside inward. In cylinders of this description the grain does not entirely fill the annular space. Consequently in the rotation thereof the grain changes its position relative to the cylinder and more or less mixes the entire mass. I have found that this mixing is quite well effected near the outside cylinder, but is little carried on close to the inside cylinder, and it is toward the improving of the mixing of the grain that the first part of my invention is directed. When these cylinders are used for drying, so much shrinkage of the material takes place that there is quite a large area of the inside cylinder in a line with the slope of the grain which is uncovered, and consequently there is a considerable waste of heat at this point if the inside cylinder is all perforated and rotated with the outside cylinder, and the second part of my invention is to prevent this waste.

In the drawings, Figure 1 is a longitudinal section of a cylinder adapted to the germinating or drying of grain or to both germinating and drying. Fig. 2 is a cross-section. Fig. 3 is an end elevation. Fig. 4 is a detail section showing the line of contact of the cylinder-heads. Fig. 5 is an enlarged detail sectional view of the inside cylinder and its shelf.

The outside cylinder 4 is sufficiently perforated throughout its circumference to allow free passage of the air. The inside cylinder 5 is also perforated, with the exception of that part from 6 to 7 which is adjacent to the vacant part 12 of the annular space between the cylinders. Air is admitted to the inside cylinder from either end, and is forced through the grain and thence through the outside cylinder. In germinating this air is a saturated atmosphere at about 62° Fahrenheit. In drying the air is deprived of moisture as much as possible and of a temperature adapted to the material to be dried.

Ordinarily cylinders of this class have been made in such a way that both the inside and outside cylinders were secured together, and consequently rotated together; but in order to make the grain mix more thoroughly I have made the inside cylinder stationary, as will be seen by referring to Fig. 1. The inside cylinder 5 projects through the outside cylinder-heads without circumferential contact. It is not secured where the cylinder-head 8 comes in contact with the inside cylinder extension-head 9, but the head 8 simply presses laterally against the head 9, as clearly shown in Fig. 4, and is free to rotate in relation to head 9. The inside cylinder is supported on a frame of rods extending from the base 10 to the head 9, as shown clearly in Fig. 3.

It will be observed that a special feature of this invention consists in there being lateral contact only between the heads of the two cylinders. Lateral contact has advantages over circumferential contact in that where the latter is used the cylinders have to be either absolutely concentric or the outside cylinder has to revolve on the inside cylinder as if the latter were a shaft running through the outside cylinder, in which case there is great friction and an opportunity for the hard dry grains to work into the circumferential contact and cause additional friction, rutting, and binding. Lateral contact is free from all these disadvantages. It will be further observed that the external cylinder-heads 8 are represented in the drawings as being made of thin sheet-iron, which has the further advantage of allowing the grain to force them by its own pressure into lateral contact with heads 9 and maintain them there. The inside cylinder being stationary then, it will be

seen that if a shelf 11 is located in the line of motion of the grain tangent to the inside cylinder the grain will, in the rotation of the large cylinder around the small one, be carried to a point away from the inside cylinder and thus thoroughly mixed, accomplishing that which is described as the first part of this invention. Then again the inside cylinder not being perforated in the part 6 to 7 or that part which is uncovered as the grain shrinks in drying there will be no waste of air through the vacant space, as it is all forced through the grain, thus accomplishing that which is described as the second part of this invention.

Having thus described my invention, it is clearly evident that whether the outside cylinder be wholly or partially perforated, or whether there is a jacket or a portion of a jacket outside of that again, or whether the air passes from the inside outward or from the outside inward, that is, whether it is forced or drawn through, it makes no difference so far as the application of my invention is concerned, as it is easily adapted to any of the well-known germinating and drying cylinders.

I claim—

1. In a rotating cylinder adapted to the germinating or to the drying of grain, or to both, the combination of an exterior rotating cylinder with a concentric stationary internal cylinder, said external cylinder having lateral contact only at the heads with said internal cylinder, substantially as described.

2. In a rotating cylinder adapted to the germinating or to the drying of grain, or to both, the combination of an external cylinder with a concentric internal cylinder, the said cylinder passing freely without circumferential contact through heads which are connected to the outside cylinder, the said inside cylinder being supported at the ends by extension-heads outside of the said external cylinder-heads, substantially as described.

3. In a rotating cylinder adapted to the germinating or to the drying of grain, or to both, the combination with an external cylinder of an internal stationary cylinder in lateral contact only provided with a shelf projecting from said stationary cylinder, adapted to cause the thorough mixing of the grain, substantially as described.

4. In a rotating cylinder adapted to the germinating or to the drying of grain, or to both, the combination of an external cylinder with an internal stationary cylinder free circumferentially, a portion of said stationary cylinder as at 6 to 7, adjacent to the annular space between said cylinders, being made of non-perforated material, the air passing entirely through that part of the cylinder which is adjacent to the grain, substantially as described.

5. In a rotating cylinder adapted to the germinating or to the drying of grain, or to both, the combination with an external cylinder, and an internal stationary cylinder passing freely through heads secured to said external cylinder, said heads being adapted to make lateral contact with heads secured to the inside cylinder and free to rotate in relation to the latter.

6. In a rotating cylinder adapted to the germinating or to the drying of grain, or to both, the combination of an exterior rotating cylinder provided with flexible heads, with a concentric stationary internal cylinder provided with extension-heads, said flexible heads being adapted to be brought into lateral contact with said extension-heads and maintained there by the pressure of the material in the annular space between the two cylinders.

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