E. R. BENTON.

Bran Duster.

No 7,336.

Patented May 7, 1850.

Fig. 3

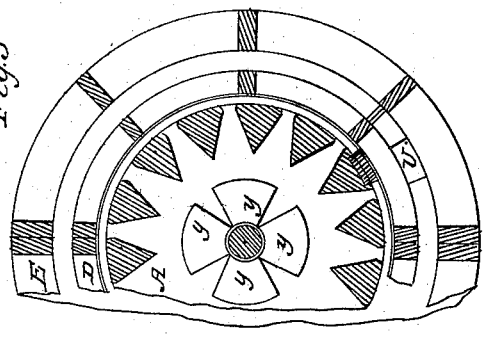


Fig. 1

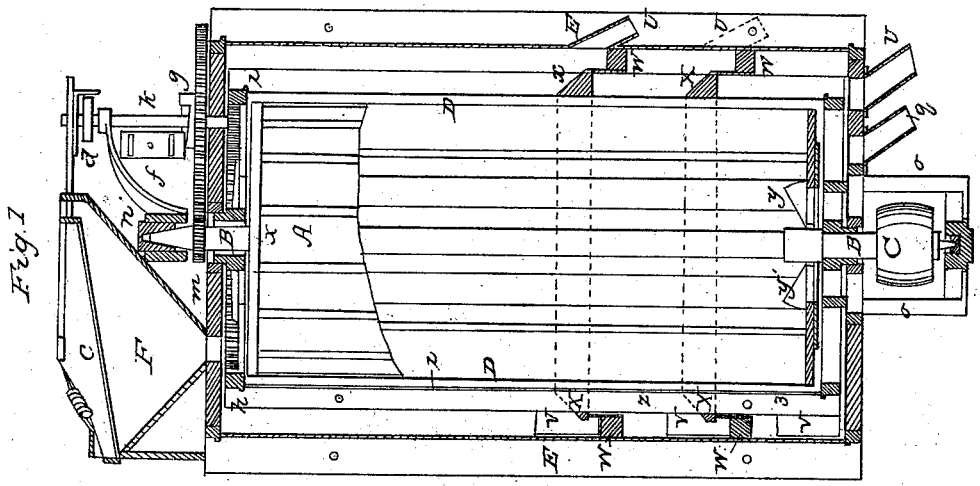
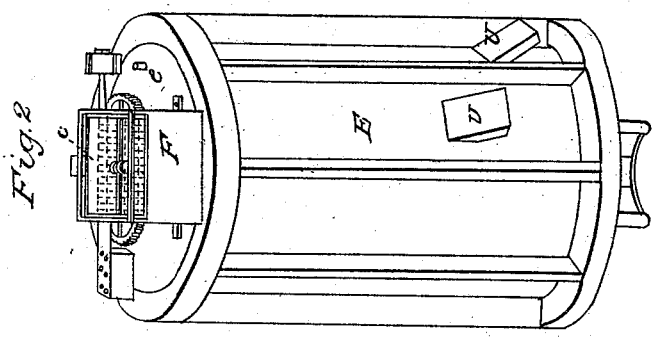


Fig. 2



UNITED STATES PATENT OFFICE.

EZRA R. BENTON, OF MILWAUKEE, WISCONSIN.

BRAN-DUSTER.

Specification of Letters Patent No. 7,336, dated May 7, 1850.

To all whom it may concern:

Be it known that I, EZRA R. BENTON, of Milwaukee, of the county of Milwaukee and State of Wisconsin, have invented a new and Improved Bran-Separator; and I do hereby declare that the following is a full and accurate description of my invention.

The nature of my invention consists in the construction of a machine for separating the flour, shorts and dustings, from bran as it comes from the bolts, which machine or bran separator, as it is called, is composed of one exterior stationary, and two interior revolving cylinders, so formed and arranged that the interior cylinders rotate in opposite directions and agitate the bran and other stuff subjected to their action, and separate the flour, shorts and dustings, from the bran, depositing each quality of stuff in different receptacles and thereby saving a large percentage of flour, &c., which would otherwise be left in the bran, and greatly increasing the profits of milling.

In order that others skilled in the art may understand and use my invention, I shall now proceed to describe my invention in detail, reference being had to the annexed drawings, which form a part of this specification:—

Figure 1, is a longitudinal section. Fig. 2, is a perspective view. Fig. 3 is a transverse section of the lower end.

The same letters always refer to the same parts.

The machine, as shown in Fig. 1, is composed of three cylinders, one within the other, of which A, is the interior cylinder; D, the intermediate cylinder; and E, the exterior and stationary cylinder, or frame.

The main central cylinder A, is formed of wooden staves framed longitudinally into cast heads *z*, *z*, the staves being placed a little way apart, for the passage of air through the openings, as hereinafter explained. Through the center of the cylinder A, runs a shaft B, on the lower end of which is a pulley C. The external faces of the staves forming the cylinder A, are covered with tin or other sheet metal, perforated like a grater, to make the surface rough. In the bottom of the cylinder is a ventilator *y*, as shown in Fig. 3, for the admission of air, which is provided with a revolving slide for regulating the quantity of air admitted. This ventilator may be placed in the top, but the bottom of the cylinder is preferable.

Inclosing the cylinder A, with a small space between, is the bolting or sifting cylinder D, which is a light frame made in segments and screwed together, and on the inner side covered with wire-cloth of different qualities, varying in the mesh according to the different qualities of stuff to be separated from the bran; the finest quality of wire-cloth is placed around the cylinder D, at its upper end, as indicated by the (Fig.) 1, the next quality around the section of the cylinder below, as indicated by the (Fig.) 2, and the next quality still lower, as indicated by the (Fig.) 3. Between the different kinds of wire-cloth are beveled or shelving rings *x*, *x*, which encircle the cylinder D, and serve to conduct the flour and other stuff into circular or endless troughs *w*, *w*, that are placed on the inner side of the exterior or stationary cylinder E, which incloses the two cylinders A, and D, and is lined on the inside with zinc or sheet iron.

On the outside of the cylinder D, and at the lower edge of the different qualities of wire-cloth, are fastened small blocks or sweepers *v*, *v*, *v*, which set down in the troughs *w*, *w*, and on the lower head of the cylinder E, and by the revolution of the cylinder D, discharge the flour, &c., at the spouts *u*, *u*, *u*, respectively: the bran passes off through the spout *q*, under the bottom of the machine.

The journal-box *p*, of the lower end of the shaft B, rests in a bridge *o*; this and the upper journal box *n*, are cast in a piece with the iron frames of the respective heads of the cylinder E.

The cylinder D, is operated by a combination of gear wheels, thus: The pinion *m*, on the shaft B, drives the wheel *l*, on the small shaft *k*, which passes through the upper head of the stationary cylinder E, and carries close against the inside, a small pinion *i*, which works into cogs on the inner periphery of the wheel rim *h*, that is secured on the head of the cylinder D, which thus receives its motion, contrary to that of the main cylinder A.

On the small shaft *k*, is a circular inclined plane or cam *g*, so arranged as to lift a spring mallet or hammer *f*, at every revolution of the shaft, and allow it to fall with a smart blow upon a block *e*, Fig. 2, which

passes through the head of the cylinder E, and strikes upon the upper rim of the cylinder D, to prevent it from becoming foul or clogged with flour, &c.

On the upper end of the shaft *k*, is also a set of cams *d*, which shake a wire-sieve *c*, on the hopper F; the sieve receives the uncleaned bran &c., from the bolts, and carrying off the coarse matters which might injure the machine, drops the rest in the hopper F, from which it passes through the head of the cylinder E, between the arms of the head of the cylinder D, on to the head of the cylinder A, and down between these two revolving cylinders.

The operation of my bran separator is as follows:—The bran and other stuff adhering to and mixed with it, being carried into the hopper F, and thence through a hole in the head of the cylinder E, down between the revolving cylinders D and A, where the whole is subjected to a powerful agitation and friction by the rapid revolution of the cylinders in opposite directions, disengaging all the particles of bran, flour and dustings from each other; a strong current of air is drawn into the cylinder A, through the ventilator *y*, and is driven by the motion of the cylinder through the spaces between the staves of which it is made, forcing the finer particles, or flour, against and through the wire-cloth on the upper part of the cylinder D, whence it falls into the upper endless trough *w*, and is carried around by the sweeper *v*, to the spout *u*, where it is discharged. By the same means and process, the next or inferior quality of flour, is driven through the coarser wire-cloth between the rings *x*, *x*, and discharged in like manner; and in the same way the shorts or dustings are passed through the coarsest wire-cloth at the lower end of the cylinder and discharged as before, while the bran falls down between the two revolving cylinders and discharges through a spout at the bottom of the machine.

By divisions of the cylinder D, any number of qualities of stuff that may be desirable, can be separated from the bran.

Having described the construction and operation of my bran separator, what I claim as my invention and desire to secure by Letters Patent, is—

The combination and arrangement of the exterior stationary shell or cylinder E, the intermediate revolving cylinder D, covered in sections with wire-cloth of different qualities, and the central revolving cylinder A, with the ventilator *y*, for the admission of air, and the openings betwen the staves in the cylinder, for the emission of air to drive the flour and other stuff separated from the bran, through the wire-cloth, the several parts, with their driving gear and apparatus, being constructed and arranged substantially as herein described and intended for the purposes set forth.

E. R. BENTON.

Witnesses:
A. SMITH,
C. WALWORTH.