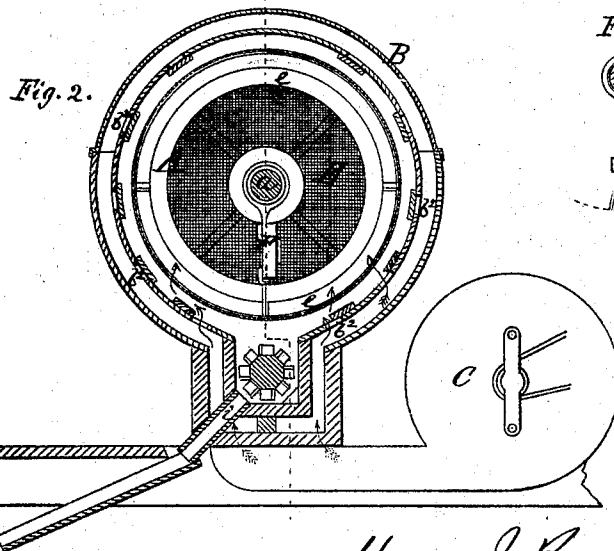
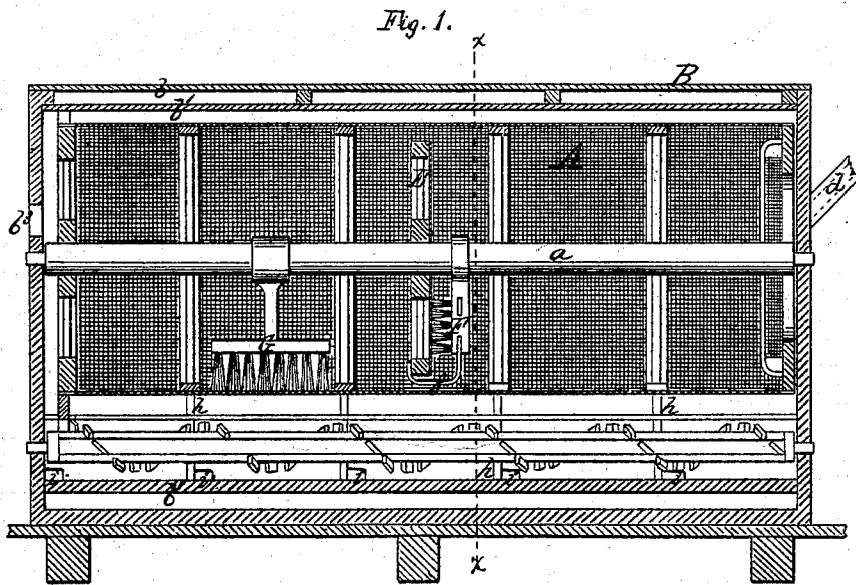


H. J. BURDICK & C. S. FULLER.
Middlings-Purifiers.

No. 144,056.

Patented Oct. 28, 1873.



John J. Bonner
Henry H. Penix Witnesses.

Harvey J. Burdick
Clark S. Fuller, - Inventors,
by Jay Hyatt Atty.

UNITED STATES PATENT OFFICE.

HARVEY J. BURDICK AND CLARK S. FULLER, OF OSWEGO, NEW YORK.

IMPROVEMENT IN MIDLINGS-PURIFIERS.

Specification forming part of Letters Patent No. **144,056**, dated October 28, 1873; application filed October 6, 1873.

To all whom it may concern:

Be it known that we, HARVEY J. BURDICK and CLARK S. FULLER, of the city and county of Oswego and State of New York, have invented certain Improvements in Middlings-Separators, of which the following is a specification:

The invention consists, first, of a reel or bolt arranged within a casing having hollow walls, which form an air-chamber, provided with gates or valves, through which the admission of air into the bolt at various points around its circumference is regulated, the particles of bran and other impurities being separated from the middlings by the air admitted into the bolt, and carried in suspension and discharged, with the air, through one end of the machine; second, in the combination, within the bolt, of a diaphragm of less diameter than the bolt, for arresting and deflecting any lighter particles or granules of the middlings that may have been partly raised by the air-current back on the bolt-cloth, while the fibrous particles and other impurities are forced or drawn through the diaphragm or carried around the edge thereof by the air-current; third, in the combination, with the bolt and diaphragm, of a brush suspended from the bolt-shaft for clearing the meshes of the diaphragm; fourth, in the combination, with a revolving reel-bolt, of a brush journaled loosely upon its shaft, and suspended therefrom so as to come in contact with the bolt-cloth and clear the meshes thereof as the bolt revolves.

In the accompanying drawing, Figure 1 is a longitudinal section; Fig. 2, a cross-section in line *x x*. Fig. 3 is a cross-section of the shaft with one of the bolt-clearing brushes attached thereto.

Like letters of reference designate like parts in each of the figures.

A is a slightly-inclined reel-bolt, having graded cloths, increasing in size of mesh from the head to the tail, in the usual manner. *a* is the bolt-shaft, which has its bearings in the casing B, which is constructed with double walls *b b'*. C is a fan-blower, communicating with the space between the walls *b b'*, by which the air, under sufficient pressure, is supplied to the machine. The inner wall of the casing is provided with a number of openings or perforations, *b²*, distributed around the bolt and provided with slides or valves, by which these openings can be partially or entirely closed, and through which the air can be admitted into the bolt from any point around its periphery, and the force thereof regulated as may be required. The outer head of the casing B is closed, except at the point where the spout *d*, through which the material is fed into the bolt, enters, while the tail end of the casing is provided with a suitable opening, *b³*, for the escape of the air and impurities. E is the diaphragm, made or covered with cloth of fine texture and secured on the shaft *a* so as to revolve with it, the diameter of the diaphragm being less than that of the bolt, so as to leave an annular space, *e*, between its edge and the periphery of the bolt. A number of these diaphragms, arranged at suitable distances apart, may be employed, if desired. F is a brush suspended from the reel-shaft, on which it loosely fits, and made of sufficient weight, so as to hang stationary while the shaft revolves. The inclination of the reel-shaft tends to keep the brush lightly in contact with the diaphragm E, while a hook, *f*, secured to the lower end of the brush and bearing against the opposite face of the diaphragm, also serves to retain it in place. G is one of a series of brushes suspended from the reel-shaft in a similar manner to that of brush F just described, but arranged to bear against the inner surface of the bolt-cloth and sweep and clear the same as the bolt revolves. One of these brushes G is designed to be used with each division of the graded cloth of the bolt. The bottom of the bolting-case is reduced to the form of a trough and provided with partitions *h h*, which form separate compartments, corresponding with the different sections of the bolt-cloth. A conveyer of usual construction is arranged in the bottom of these compartments for discharging the middlings in the various compartments through spouts *i i* leading therefrom.

The unpurified middlings enter the spout *d* at the head of the bolt and fall by their gravity to the bottom and lower part of the reel. The valves around the lower part of the reel being opened, the blasts of air are directed upward through the meshes of the bolting-cloth, and the contents agitated thereby. The fibrous matter and other impurities being lighter than

the granules, they are raised by the force and direction of the blast to the center, and along the upper part of the reel to the tail-end, where they are discharged with the air through the outlet b^3 , while, by the revolution of the reel, the granules are sifted and graded through it into as many grades as there are divisions of bolting-cloth. Any light particles of middlings of scarcely less gravity than the impurities, if raised with them by the intensity of the blast, are arrested by the diaphragm E and deflected upon the bolting-cloth, while the impurities pass through and around the diaphragm toward the outlet at the tail of the machine. The air, being let into the bolt on its under side, operates, in connection with the action of the bolt, in a most efficient manner, separating the impurities from the middlings.

What we claim as our invention is—

1. A reel-bolt arranged within a casing having double walls, forming an air-chamber between them, with the inner walls provided

with openings arranged around the reel, for directing air into it, substantially as and for the purpose hereinbefore set forth.

2. The arrangement, within a reel-bolt having an air-current through the same, of the diaphragm E, of less diameter than the bolt, substantially as and for the purpose hereinbefore set forth.

3. The combination, with a reel-bolt and diaphragm, E, of a clearing-brush, F, loosely suspended from the shaft, so as to sweep the face of the diaphragm, substantially as hereinbefore set forth.

4. The combination, with a reel-bolt, of a clearing-brush, G, loosely suspended from the reel-shaft, so as to sweep the cloth of the bolt, substantially as hereinbefore set forth.

HARVEY J. BURDICK.
CLARK S. FULLER.

Witnesses:

O. H. BROWN,
ORVILLE M. MORSE.