2 Sheets--Sheet 1.

A. M. COMSTOCK.

Flour and Middlings Purifier.

No. 167,502. Patented Sept. 7, 1875.

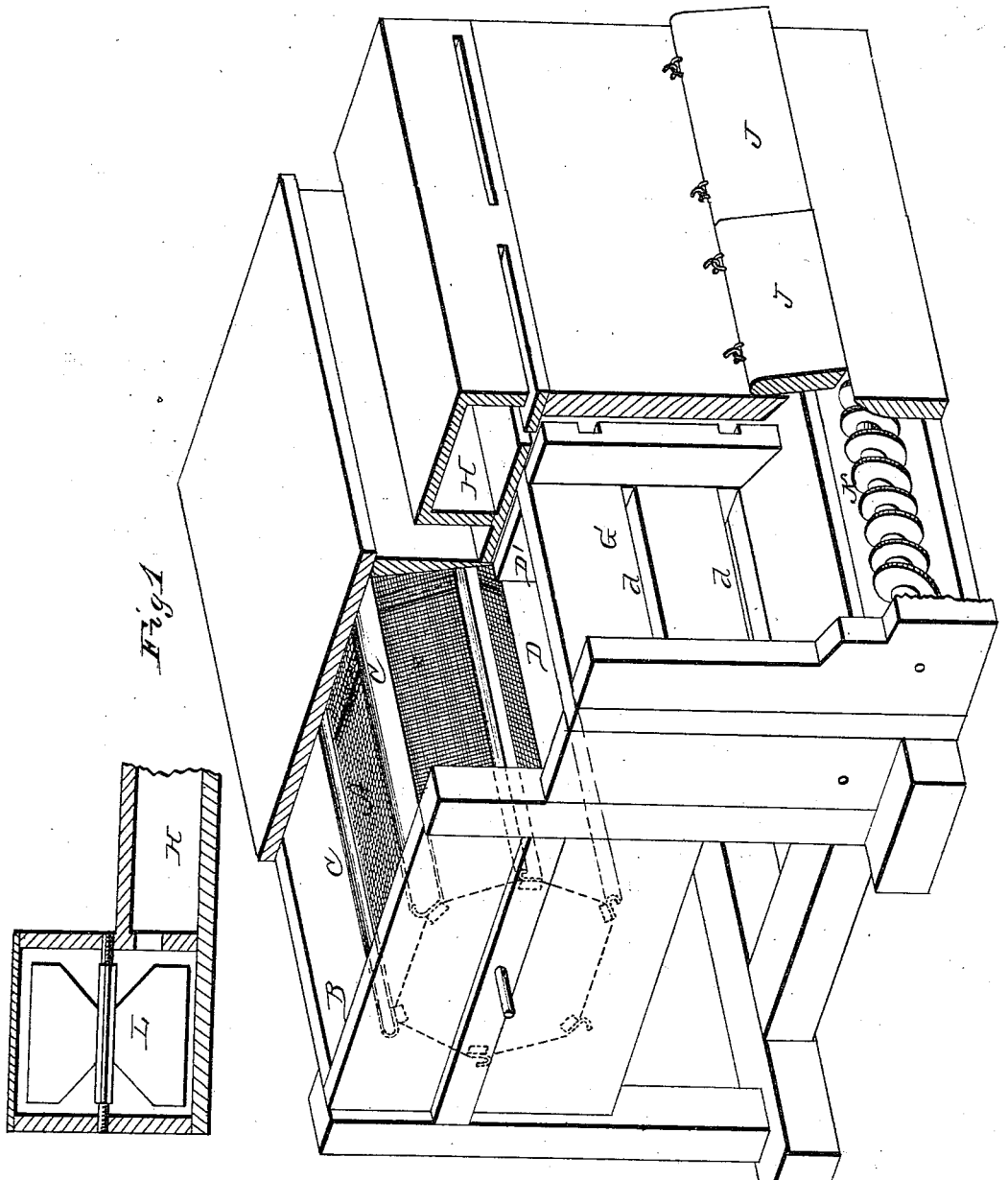

Fig. 1.

WITNESSES

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2 Sheets--Sheet 2.

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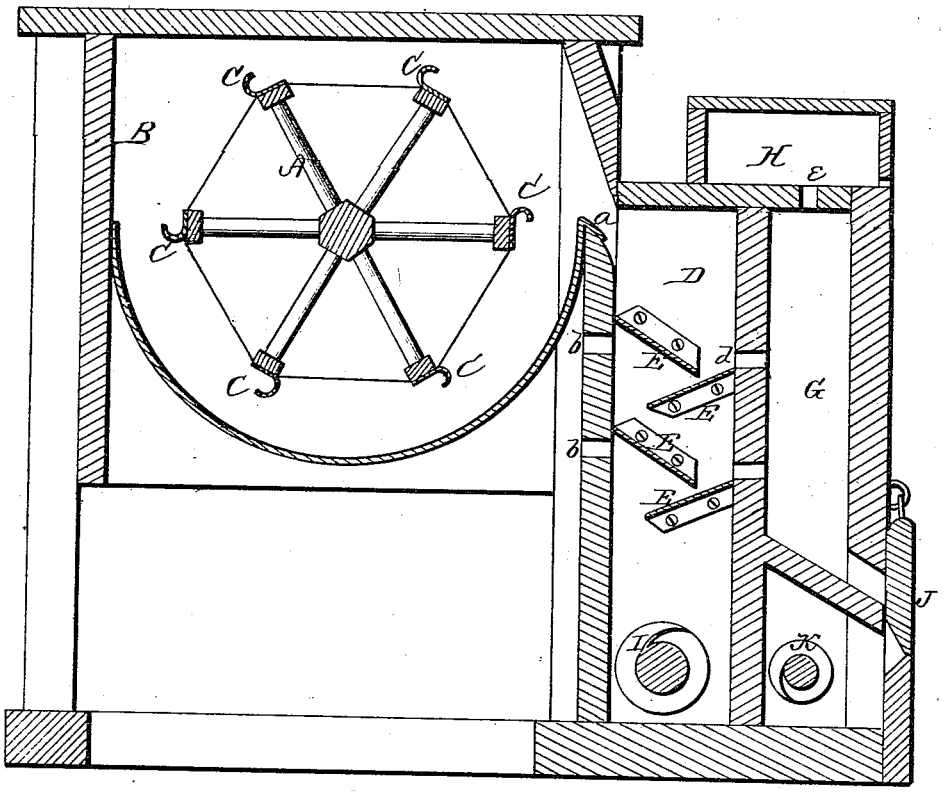
Fig. 2.



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UNITED STATES PATENT OFFICE.

AUSTIN M. COMSTOCK, OF BATTLE CREEK, MICHIGAN.

IMPROVEMENT IN FLOUR AND MIDDLINGS PURIFIERS.

Specification forming part of Letters Patent No. **167,502**, dated September 7, 1875; application filed February 24, 1875.

To all whom it may concern:

Be it known that I, AUSTIN M. COMSTOCK, of the city of Battle Creek, in the county of Calhoun and in the State of Michigan, have invented certain new and useful Improvements in Flour Bolts and Separators; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in cup-shaped troughs or elevators running lengthwise of and attached to the periphery of each rib of the reel, whereby the product is delivered through suitable openings into a chamber or chambers situated parallel with the bolt-chamber, and a fan for creating air-currents through the chamber or chambers. Also, in combining the bolt and its troughs and the opening with the chamber or chambers, having a series of inclined shelves and regulated air-currents so arranged with reference to each other and to the descending product that the latter is deflected from one toward the opposite side of the chamber, and vice versa, while the ascending counter-current of air is also deflected, but in an opposite direction, the current of the one crossing the course of the other at each and every shelf, thus eliminating the lighter from the denser portions of the product, the latter falling down, by reason of its greater gravity, to the bottom, and passing out of the chamber into the well-known conveyer provided underneath, while the lighter portions pass upward with the air through openings into a chamber on top, where any valuable portion still remaining, gradually settling down to the bottom of this chamber, passes out into a conveyer there provided. Also, in the combination of the bolt and its troughs with the two chambers, their respective conveyers, and a fan for creating air-currents. Also, in a vacuum-chamber, from which air is drawn for the purpose of creating an air-current for purifying middlings, with a flour-bolt and purifying-chambers, in combination with the bolt having troughs and chambers, as hereinafter described, so that the strength of the current of air in each sub-chamber may be governed at will, independently of the others, by means of apertures for the ingress and egress of air, regulated by suitable slides.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is a perspective view of my flour-bolt partly broken open to show the interior. Fig. 2 is a transverse vertical section of the same.

A represents the ordinary flour-bolt, revolving in the chamber B, and provided with troughs C C attached to the ribs of the reel, and running the entire length thereof. D represents a chamber situated parallel with the bolt-chamber, and communicating therewith by openings *a*. This chamber is divided by vertical partitions D′ into sub-chambers corresponding with the different numbers of cloth on the reel. In each of these sub-chambers is a series of inclined shelves, E, attached on opposite sides alternately, as shown in Fig. 2. Under each shelf E is an air-inlet, *b*, and on the opposite side above the shelves are air-outlets *d*, which latter communicate with a chamber, G. Above the chamber G is a vacuum-chamber, H, communicating therewith by openings *e*, which, in a full-sized machine, are to be regulated by suitable slides.

The operation of my flour-bolt is as follows: The product passes through the meshes of the cloth composing the bolt-screen, and is caught up by the longitudinal troughs C C and projected through the openings *a a* into the sub-chambers D D, where it falls upon, and passes over, the inclined alternate shelves E E, taking a zigzag direction. In its descent it is met by a counter-current of ascending air pursuing a similar path, but in an opposite direction, the two opposing currents of the product and air crossing each other at each and every shelf, and in this simple manner eliminating the coarser and lighter portions from the finer and denser. The latter pass down to the bottom of the chambers D and out of suitable openings into the ordinary conveyer I underneath, while the former pass upward and are carried over into the chamber G through the openings *d d*, where any valuable portion yet remaining gradually settles to the bottom of

said chamber, when that also is secured by means of a trap-door, J, and the usual conveyer, K, there provided. The air-current is induced by means of a suitable fan-wheel, L, which, as it rapidly revolves, exhausts the air from the vacuum-chamber H, and as the openings *e* are to be provided with suitable slides the strength and velocity of the air-current in each sub-chamber may be regulated independently of the others.

These sub-chambers are in number the same as the number of sections of the bolt-containing cloth of different degrees of texture, corresponding with the grades of product.

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

1. The combination of the bolt A, provided with an exterior cup-shaped trough, C, on each longitudinal rib, the opening *a*, the chamber or chambers D, and a fan for creating air-currents through said chamber or chambers, all substantially as set forth.

2. The combination of the bolt A, having cup-shaped troughs C, as described, the opening *a*, the chamber or chambers D, the inclined shelves E E, arranged to overlap one another, and alternately on opposite sides, and a fan for creating air-currents through said chamber or chambers, substantially as set forth.

3. The combination of the bolt A with troughs C C and the chambers D and G, arranged with their respective conveyers I and K, and fan L, substantially as and for the purposes herein set forth.

4. The combination of the bolt A with troughs C C, chambers D, with shelves E, chambers G, conveyers I K, vacuum-chamber H, and fan L, all constructed and arranged to operate substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 22d day of January, 1875.

AUSTIN M. COMSTOCK.

Witnesses:

JABEZ L. HAYWARD,

TOLMAN W. HALL.