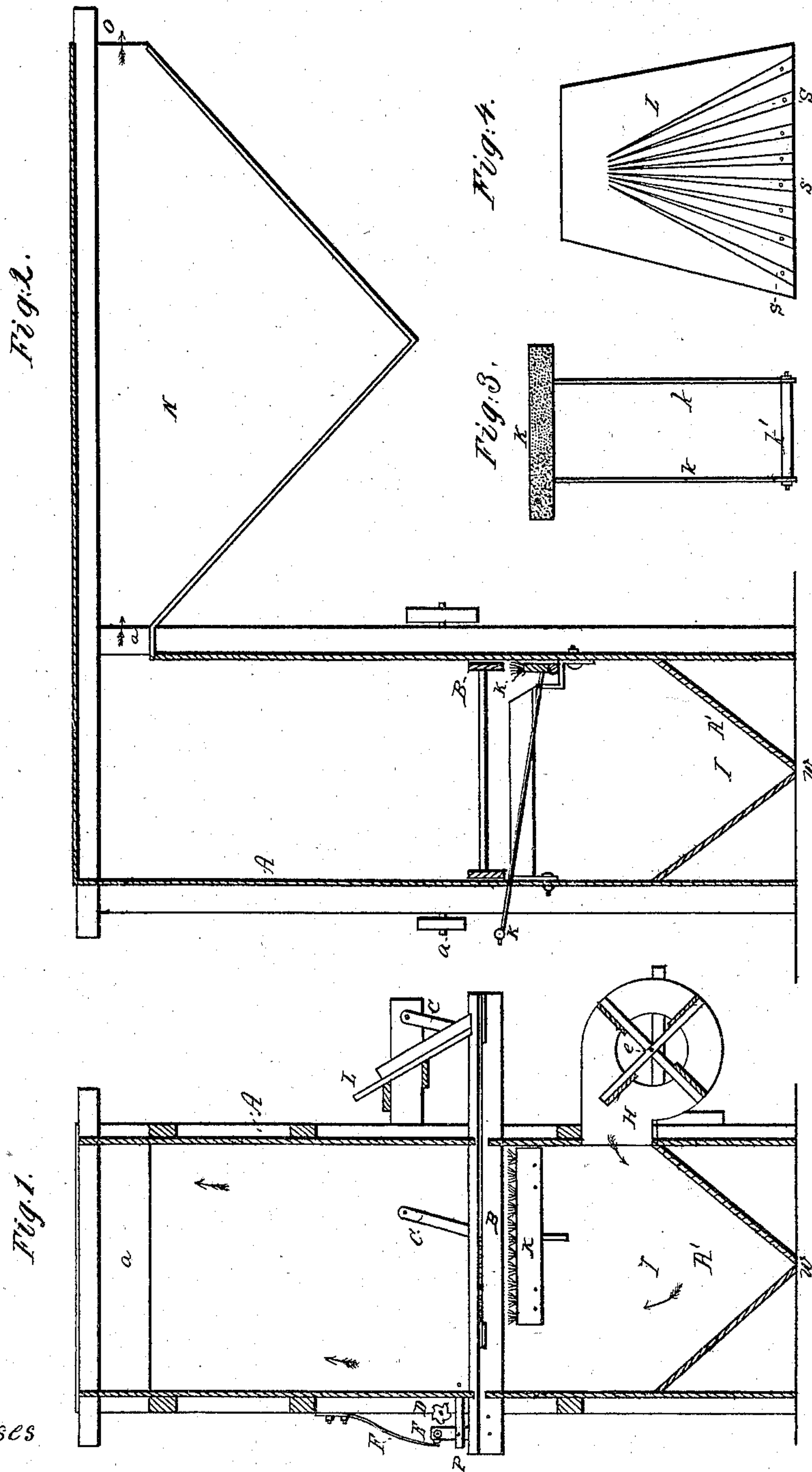


A. HUNTER & C. E. WHITMORE.

Middlings Receivers, Coolers, and Dusters.

No. 137,449.

Patented April 1, 1873.



Witnesses

Inventor.

F. F. Marcy
Dodge

Andrew Hunter
Charles Edward Whitmore

UNITED STATES PATENT OFFICE.

ANDREW HUNTER AND CHARLES E. WHITMORE, OF QUINCY, ILLINOIS.

IMPROVEMENT IN MIDLINGS RECEIVERS, COOLERS, AND DUSTERS.

Specification forming part of Letters Patent No. **137,449**, dated April 1, 1873; application filed March 17, 1873.

To all whom it may concern:

Be it known that we, ANDREW HUNTER and CHARLES E. WHITMORE, of Quincy, county of Adams, State of Illinois, have invented certain new and useful Improvements in Middlings Receiver, Cooler, and Duster, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a side elevation. Fig. 2 is an end elevation, also showing the side of the dust-chamber. Fig. 3 is a top view of the brushes, and Fig. 4 is a front view of the feed-board and spreaders.

Similar letters of reference denote corresponding parts in all the figures.

Our invention relates to a novel construction of a receiving apparatus into which the middlings are conveyed in the condition in which they escape from the bolting-reel, and in which said middlings, spread out into an attenuated sheet or into small bodies or streams, are subjected to the action of a current of air for removing the specks and lighter particles of bran, and, in a measure, the moisture, and also for cooling the middlings before they are subjected to the usual re-screening; and, to this end, our invention consists, first, in the employment of a vertical tube or cylinder provided at or near its lower end with a fan or other suitable means for forcing a current of air upward through the said tube, and, near midway of its height or length, with suitable means for delivering the middlings in small streams or in an attenuated sheet into said tube or cylinder for subjecting them to the action of the current of air, as hereinafter described; second, the invention consists in a novel construction of the spreader for effecting the even spreading of the middlings upon the apron or conveyer, or in case it is used in connection with the bolt or screen of a middlings-purifier, upon and across the entire width of the receiving end thereof, as hereinafter explained; third, our invention consists in a novel construction and arrangement of brush for cleaning the delivery-openings in the conveyer, or opening the meshes when it is used in combination with a bolt or screen; and, lastly, the invention consists in certain details of arrangement, all as hereinafter fully explained.

In the accompanying drawing, A represents an upright tube of any suitable construction, either square, polygonal, or cylindrical in form, and from ten to fifteen feet in height, (more or less,) according to capacity required and the room for its accommodation, and provided with a hopper-shaped bottom, A', and at its upper end with an outlet or opening, *a*, leading to the dust-chamber. B is the conveyer arranged near midway of the length or height of the tube, said conveyer extending through the tube transversely, and supported or suspended upon inclined pivoted links C attached to the sides of the tube and to supporting-bars attached to said tube and overhanging the projecting receiving end B' of the conveyer B, as shown in Fig. 1. D represents cam-wheels mounted upon a horizontal shaft secured to the outer face of the tube-frame for imparting a short, quick vibratory movement in one direction to the conveyer B, the movement in the opposite direction being imparted by springs F, and both acting upon the upper ends of pivoted levers E through the medium of friction-rollers secured to said levers. The levers E are pivoted to the rear projecting end of the conveyer B on opposite sides, and to bars P overhanging said end, and serve to assist the links C in properly supporting the conveyer B. H is a fan, of any suitable construction, mounted on a shaft, at *e*, and arranged near the lower end of the tube A for throwing a blast or current of air into said lower end. K is a brush, of suitable construction, provided with rods *k k*, which are of a length conforming to the diameter of the tube and passing out through slots or perforations in one side thereof. *k'* is a handle uniting the outer ends of the handle-rods *k*. Ways, cleats, or ledges are connected with the sides of the tube under the conveyer for the ends of these brushes to rest upon, in such manner that the brush, when drawn back and forth, will be brought into contact with the lower face of the conveyer or screen for cleaning the openings, slits, or perforations therein through which the middlings are discharged. The brush is operated by hand, and when not in use rests in sockets or recesses at the side and out of the way of the conveyer or bolt and descending middlings. L is a spreader for receiving the middlings from the

ordinary conductor-spout and spreading them evenly across the receiving end of the conveyer B or screen, and is composed of an inclined plane or board provided with a series of pivoted radiating slats, *s*, spread out at their lower ends, and pivoted to the board L and converging toward their upper ends, where the inclined board L receives the middlings, as shown in Fig. 4, in such manner that the middlings, falling in a stream on said upper end of the board or plane, shall be spread out in descending over the inclined face thereof and deposited in an attenuated sheet upon the receiving end of the conveyer or screen, from whence they are conveyed into the tube A in good shape to be acted upon by the current of air. By pivoting the slats *s*, as described, their upper ends may be readily adjusted so as to equalize the spread and delivery of the middlings. N is a dust-chamber communicating with the upper end of tube A for receiving the lighter particles of dust and "fuzz" carried up by the current of air; and O is an outlet from said chamber, permitting the air to escape after depositing the dust, &c., carried by it up and out of tube A.

The operation is as follows: The machine being set in motion, the middlings are fed upon the end of the screen or conveyer B by the spreader L, as explained, and, passing thence into the tube through the action of the vibrating and percussion movement imparted to said conveyer or screen, are discharged in attenuated form, as explained, through openings therein, and subjected to the action of an ascending current of air thrown into said tube by the fan. The air serves to cool the middlings, and, in part, to remove the moisture and consequent adhesiveness or stickiness therefrom, and at the same time to carry off all dust and fuzz, thereby preparing them to enter the middlings purifier or bolt in much better con-

dition to be acted upon thereby, inasmuch as the tendency to clog such bolt is greatly diminished. The middlings descend by their superior gravity through the current of air and are deposited upon the hopper-shaped bottom A', whence they escape through an outlet-opening at *w*, and are conveyed to and acted upon by the purifier in any usual or approved manner.

The action of the receiver, cooler, and duster is such as not only to facilitate the work of the purifier, but has been found, in practice, to greatly improve the character and quality of the flour made from the middlings.

The fan and cam shaft may be operated in any usual or convenient manner.

Having thus described our invention as a middlings receiver, cooler, and duster, what we claim as new, and desire to secure by Letters Patent, is—

1. The tube A, in combination with a discharging-conveyer, and the fan, or its equivalent, for producing a current of air through the tube, substantially as and for the purpose set forth.

2. The spreader L, provided with radiating slats *s*, substantially as and for the purpose described.

3. The hand-brush K, provided with rods *k* and handles *k'*, in combination with a conveyer, bolt, or screen, substantially as and for the purpose described.

4. The combination, with the tube A, of the conveyer B, brush or brushes K, and fan H, all arranged and operating as and for the purpose set forth.

ANDREW HUNTER.

CHARLES EDWARD WHITMORE.

Witnesses:

F. V. MARCY,
E. DODGE.