

L. G. BINKLEY.

Improvement in Middlings Separators.

No. 131,079. Patented Sep. 3, 1872.

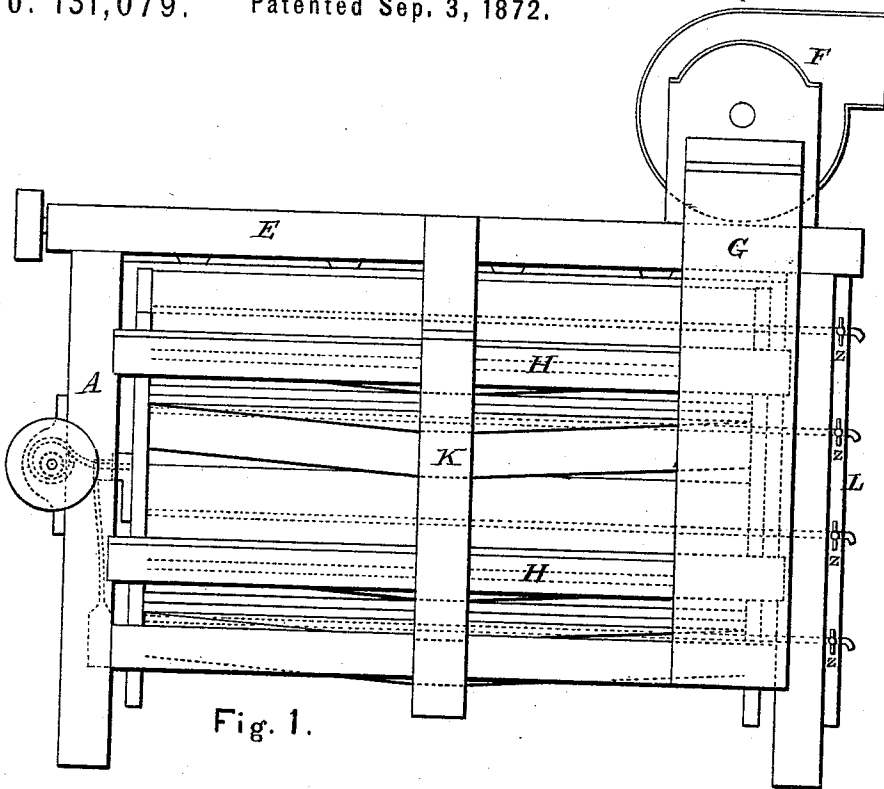


Fig. 1.

Fig. 3.

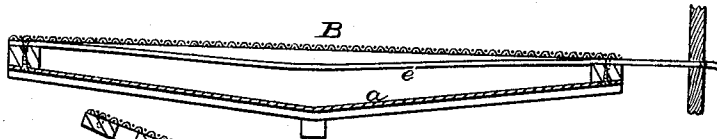


Fig. 4.

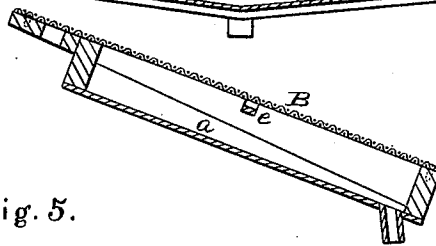


Fig. 5.

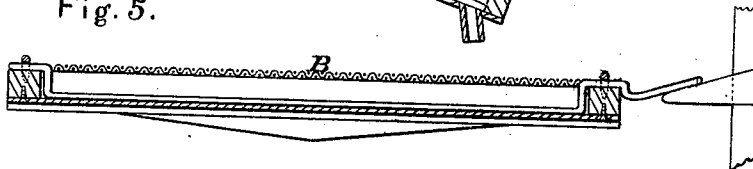
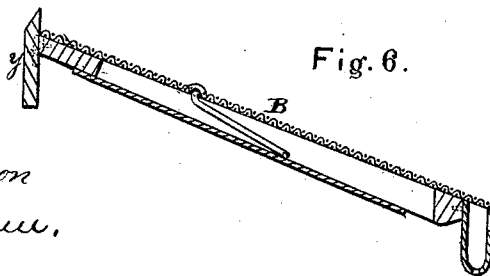


Fig. 6.



Witnesses

*Villette Anderson*  
*Geo. E. Plann.*

Inventor.

*L. G. Binkley,*  
*Chapman & Co.,*  
*Atty.*

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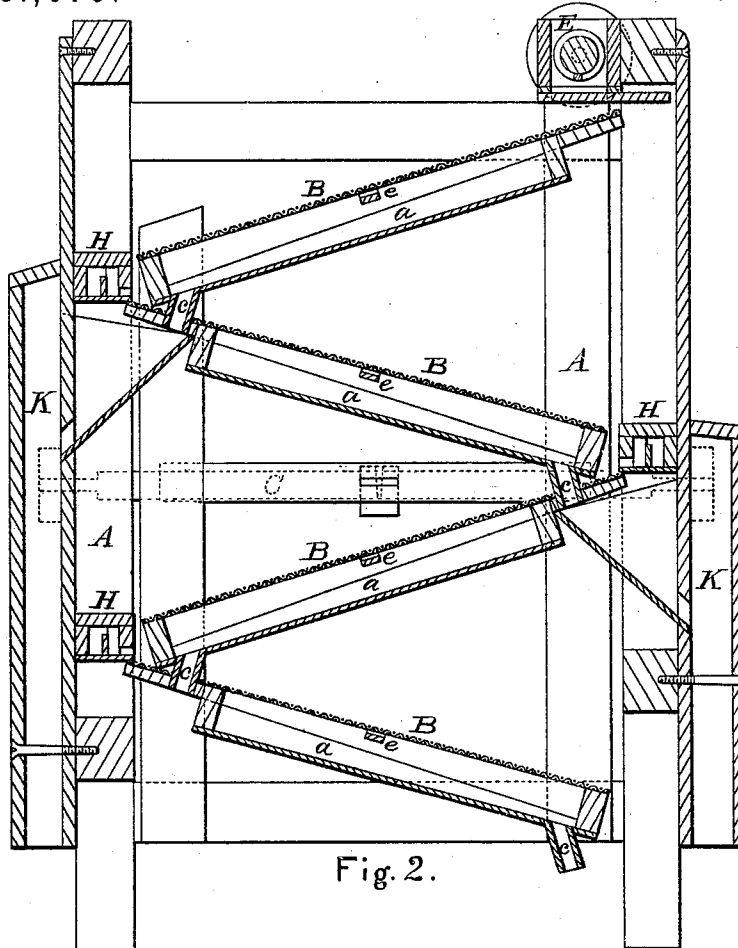


Fig. 2.

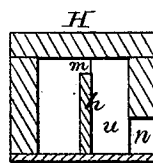


Fig. 9.

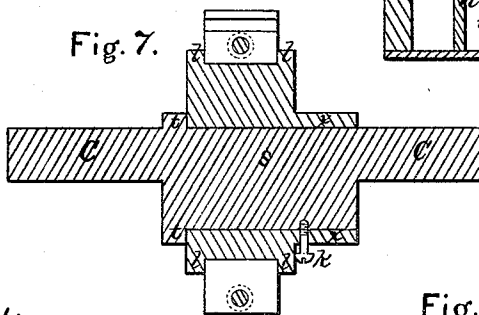


Fig. 7.

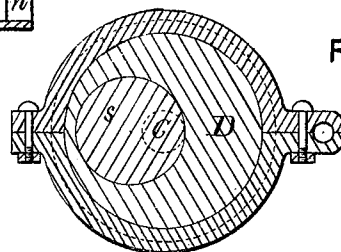


Fig. 8.

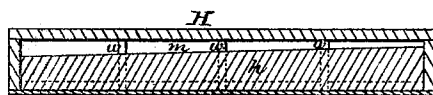


Fig. 10.

Witnesses.

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# UNITED STATES PATENT OFFICE.

LEMUEL G. BINKLY, OF BAUGHMAN, OHIO.

## IMPROVEMENT IN MIDLINGS SEPARATORS.

Specification forming part of Letters Patent No. 131,079, dated September 3, 1872.

*To all whom it may concern:*

Be it known that I, LEMUEL G. BINKLY, of Baughman, in the county of Wayne and State of Ohio, have invented a new and valuable Improvement in Middlings Separators; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a side view of my invention. Fig. 2 is a sectional view of the same. Figs. 3, 4, 5, 6, 7, 8, 9, and 10 are details of the same.

This invention has relation to the purification of the middlings in the manufacture of flour; and it consists in the novel construction and combination, with a series of reciprocating bolting-sieves, of one or more suction-spouts, whereby a suction-draft is applied to the mixture of feed and middlings in its transition from the lower end of each or any screen of the series to the upper end of the next, said operation being carried on without interfering with the conduction of the fine flour which has passed through the bolting-cloth. It also consists in the combination, with a conveyer placed at the head of the purifier, of a series of equally-spaced and adjustable valves, whereby it is designed to effect a regular and equal distribution of the charge of middlings as it is fed to the first or top screen; also, in the construction of the long suction-spouts, whereby they are adapted to produce an equalized draft throughout the entire length of the fall of the middlings, as it passes by gravitation from the end of one screen to the head of the next. Further, in the adaptation of flat leather straps to strike the under side of the bolting-cloth for the purpose of keeping it clear; and, finally, in the combination, with said rapping-straps, of the double eccentric for regulating and adjusting the throw of the sieves.

The object of my invention is to make the separation of the fine flour from the feed, in the purification of middlings, as perfect as possible; and the principle upon which my purifier operates is to blow off the light feed at the moment when a stratified separation from the heavier feed and flour has been effect-

ed by the action of the screen, and at the same time to heap and remix the stratified residue as it falls on the head of the succeeding screen, and thus to avoid the thinning down of the layer of middlings on the sieves, and the consequent deterioration of the fine flour which is bolted through by an admixture of fine feed passing with it through the bolting-cloth.

In the accompanying drawing, the letter A designates the frame-work of a purifier, within which slide a series of reciprocating screens, B, arranged in a zigzag manner with reference to each other. Usually these sieves are attached to a common sliding frame, connected by a rod and yoke with an operating-shaft, C, to which power is applied. D represents the adjustable eccentric on the shaft C for regulating the throw of the sieves. E designates the feeding-conveyer with its worm and series of valve-slides, whereby the distribution of the charge of middlings, whether it be full or limited in quantity, is properly equalized throughout the length of the leading or top sieve. The valve-slides serve to adjust the size of the discharge-openings to the quantity of the charge. F represents the suction-fan with the usual side boxes, and the vertical chambers G into which the suction-spouts H, arranged just below the tail of one screen and the head of the next, open at the angles of the zigzag arrangement of the screens. K represents the conductors, which receive the fine flour which is bolted through the sieves. Each sieve B is so arranged that its head shall extend a little beyond the vertical plane of the lower edge of the preceding sieve. The floor *a* of the sieve-box is made slanting to the center usually, to gather the fine flour which has passed through the cloth *b* into the discharging-spout *c*, which conveys it through the extended head *d* of the succeeding sieve into the funnel of the conductor K. Flat straps, *e*, are attached to each sieve below at one end, and pass under the bolting-cloth through an opening in the other end of the sieve to the upright L. The straps are adjusted to the length of the throw by sliding their ends through perforations in said upright, set-screws *z* being provided to fix the adjustment. During the reciprocating movement of each screen its strap becomes alternately loose and tightly stretched or rapped

against the lower surface of the bolting-cloth, thus clearing the same effectually and without injury. Each suction-spout H is open throughout the length of the sieves between which it operates; therefore a construction is necessary which will equalize the draft at the further or weak end with that of the end nearest the fan, and the following has been devised: Each spout H has its opening along its lower and inner edge. It is also divided partially by a central longitudinal partition, *h*, extending nearly to the top of the spout, the space or opening *m* between the upper edge of the partition and the top of the spout becoming gradually less as it approaches the draft-tube G, or as the suction becomes more powerful. The division *u*, next the longitudinal mouth, is further divided by transverse partitions *w*, extending vertically from the top to the bottom of the spout into a series of vertical entrance-tubes, *n*, which tend to lead the light feed by the draft-current vertically upward over the longitudinal partition *h*. R designates the double eccentric on the operating shaft for adjusting the throw of the screens. This device I construct as follows: An eccentric, *s*, is placed on the operating shaft. This eccentric is long, and is provided at one end with a flanch, *t*. The large eccentric *v* is made narrow, but is provided with a sleeve, *x*, projecting from one side of it, immediately around its eccentric opening, which is prolonged thereby for the full length of the eccentric core *s*. Flanches *l* extend from the edges of the peripheral surface of the large eccentric, within which the connecting-yoke is fitted, and the adjustment of the eccentrics with reference to each other is secured by means of a set-screw, *k*, passing through the flanch *x* to the core *s*.

In the above description the draft is applied to the middlings as they are bolted over, the

fine flour being bolted through. By a simple change of sieves, the construction illustrated in Figs. 5 and 6 may be employed, the draft being applied to the large feed, which is bolted over in this case, a coarser cloth being used. When this kind of sieve is used a hinged ledge, *y*, is arranged at the head of the succeeding sieve, to enable the operator to turn the feed on the sieve in case there is much flour intermixed.

What I claim as new is—

1. The combination, with a series of inclined reciprocating screens, of intermediate draft-separating spouts for purifying middlings, substantially as set forth.

2. A horizontal draft-spout open along the lower edge of its inner wall to form the mouth, and centrally divided by a vertical longitudinal partition, having its upper edge separated from the top of the spout by a tapering draft-passage, *m*, substantially as specified.

3. In a horizontal draft-spout, the transverse entrance-tubes leading from a horizontal entrance slot arranged at the lower edge of the inner wall of the spout through a tapering throat, *m*, arranged at the top of the longitudinal partition *h* to the horizontal draft-passage in rear of said partition, substantially as specified.

4. In combination, with the reciprocating screens, of a middlings-purifier and the adjusting double eccentric for operating the same, the adjustable rapping-straps, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

LEMUEL G. BINKLY.

D. D. KANE,  
GEO. E. UPHAM.