

T. WALLACE.
Bran-Cleaner.

No. 220,951.

Patented Oct. 28, 1879.

Fig. 1.

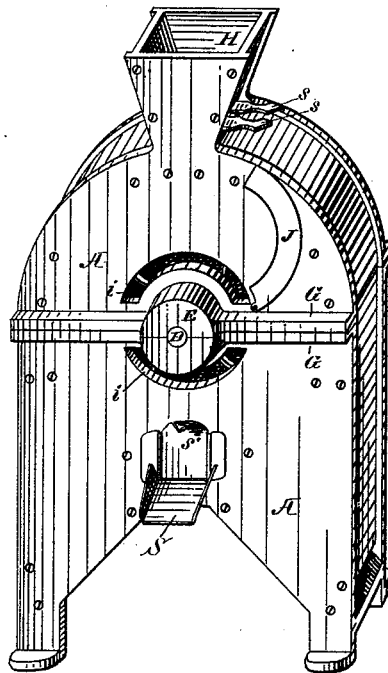


Fig. 2.

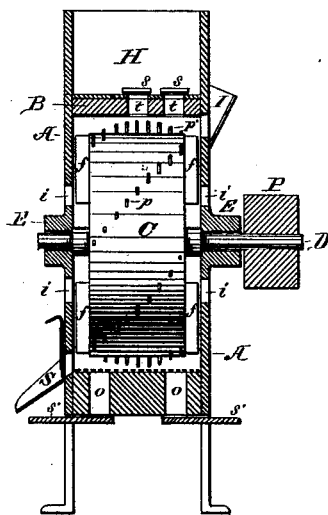
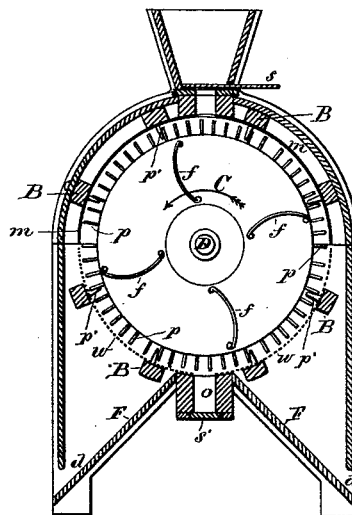


Fig. 3.



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THOMAS WALLACE, OF JOLIET, ASSIGNOR OF FIVE-SIXTHS OF HIS RIGHT TO WALLACE WARREN, OF CHICAGO, ILLINOIS, AND NATHAN P. CURRIER, J. CARL JACKSON, AMBROSE S. BEVERLY, AND WILLIAM S. CAMP, OF LOCKPORT, NEW YORK.

IMPROVEMENT IN BRAN-CLEANERS.

Specification forming part of Letters Patent No. **220,951**, dated October 28, 1879; application filed March 12, 1879.

To all whom it may concern:

Be it known that I, THOMAS WALLACE, of Joliet, in the county of Will and State of Illinois, have invented certain new and useful Improvements in Bran-Cleaners; and I 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, which form a part of this specification.

My invention relates to that class of bran-cleaners in which the bran is operated upon or whipped by two sets of pins, one set applied to a stationary and another to a movable surface, between which two surfaces the bran is passed.

It consists, first, in a horizontal cylinder having pins on its face, and a concentric outer cylinder, with pins arranged to alternate with those first named, and perforations in said outer cylinder among the pins set therein, to give immediate discharge to the flour substance while detached; second, in two or more inlet-openings and corresponding discharge-openings, arranged as hereinafter described, to give a more or less direct course to the bran in its passage through the mill.

In the drawings, Figure 1 is an exterior perspective view of the machine complete. Fig. 2 is a central vertical section, and Fig. 3 is a longitudinal vertical section, of the frame or casing, exposing each a face of the rotating cylinder.

A represents a suitable frame and housing, divided horizontally through the central line of the inclosed cylinder. The upper part is removably secured to the lower by bolts passed through the flanges G G, or by equivalent means.

C is a cylinder of, say, twenty to thirty inches diameter and ten to twelve inches face, mounted in the bearings E by the shaft D, which is provided with the driving-pulley P.

B B are cross-bars, arranged and secured in the frame as shown, to support the inner casing formed by the plates *m* and screen *w*, which surround the cylinder C at a uniform distance therefrom of about two inches. In

each of the several cross-bars B are set a row of one-fourth-inch pins, *p'*, projecting inwardly, as shown, reaching to within about an eighth of an inch of the cylinder C, and distant from each other about half an inch. Like pins *p* are set in the periphery of cylinder C, in the oblique direction shown in Fig. 2, spaced to work freely between the fixed pins *p'* without contact when the cylinder is rotated.

H is a hopper communicating with the space about the cylinder C by the openings *t t*, which are closed or regulated by the slides *s s*. I is a side inlet, also provided with a slide, and on the opposite side of the mill is the outlet S, closed by slide *s''*. Exit-passages are also provided in the immediate bottom of mill, having the slides *s' s'*.

In the operation of the mill the bran to be cleaned is admitted and discharged through either of the several passages indicated, according to its quantity and condition, or, in other words, to the amount of whipping it may require. Ordinarily the side opening, *t*, of the hopper, as the same is herein shown, and the opposite bottom or the side discharge will be used. For more severe and protracted work the opposite side passages, I and S, will be used, and for less severe work the central inlet, *t*, and both outlets *o o*.

Each of the several outlets, it should be observed, is provided with a slide, by which it may be wholly or partially closed. This slide constitutes a means complete in itself, or useful in co-operation with the variable courses provided through the mill, by which the action of the pins upon the bran may be regulated.

Obviously the greater the quantity of material within the mill the more severe will be the action of the pins thereon, or of the bran-flakes upon each other, and it is plain that the quantity continuously held back in the mill may be varied and controlled at pleasure by adjustment of the slides mentioned.

By means of the screen *w*, which is made of wire-cloth of from forty to fifty mesh, and which, as stated, forms the lower portion of

the immediate casing of the cylinder C, the middlings and flour are completely separated from the bran, the latter passing out at either of the outlets *o* or S, and the former through the screen *w*, down the chutes F, and out at the openings *d d*.

The centrifugal action of the mill greatly facilitates this mode of discharge for the middlings and flour, which, as they form the relatively weightier, as well as the more subdivided, part of the material are naturally driven to the outer wall of the space in which such material is whirled. The bran is crowded toward the side opening, S, by reason of the obliquity of the rows of pins *p*. (Clearly shown in Fig. 2.) The degree of obliquity to be given to the rows of pins *p* will depend somewhat upon the speed of the cylinder to which they are affixed, and will be determined by little observation.

For the purpose of maintaining a proper temperature in the material being worked I have provided, on either one or both disk-faces of the cylinder C, a number of narrow fan-blades, *ff*—say, one-fourth to three-fourths inch in width—which are so arranged as to induce a current through the central side openings, *i i*. The latter are provided with suitable registers, as J, Fig. 1, by which the amount of air admitted may be regulated.

The tendency of this air-current will be to drive the contents of the mill outward by all openings. It therefore improves the action of the separating-screen *w* very materially, and promotes free discharge at S or *o*. By keeping the hopper or inlet-spout full the feed is not retarded by such current.

In a bran-cleaner having exclusively peripheral action, like that described, the machine can be run at a minimum speed and with minimum power. The material is admitted immediately to the point of greatest and most effective motion, at which, moreover, the action is entirely uniform and determinate.

Among the pins, all equally distant from the center, the wear is uniform and the centrifugal force expended is utilized in bringing the middlings and flour to the points where provision is made for their discharge, and in aiding their discharge at those points. Thus not only are both operations of cleaning and separating performed by the same machine, but with no more cost of power than is required for cleaning alone, and, of course, with material saving of time.

Brushes applied to concentric exterior and interior cylindrical surfaces, or to one of them, to form that kind of a bran-cleaner known as a "bran-duster," will possess every advantage over the old arrangement of disk-faces that has been above mentioned in connection with pins.

The feature of uniform wear will, indeed, be of more importance in the case of brushes than in the case of pins, since, as is well known, the great inequalities in the wear of brushes when rotated on a disk-face is fatal to the practical use of that form of bran-duster.

With respect to the relative points of feed and discharge, I do not limit myself to the horizontal arrangement of the axis of cylinder C, with its concentric curb or casing shown, for they may be vertically arranged, if desired, with substantially the same effect. In the second case, however, the wire-cloth should extend entirely around the cylinder, and an outer curb should embrace the whole, in order to direct the discharge downward or otherwise, as required. I however prefer the horizontal arrangement of the cylinder, as herein shown.

Having described my invention, I claim and desire to secure by Letters Patent—

1. The combination of the horizontal cylinder C, having the pins *p* arranged from end to end on its face, and the concentric outer cylinder, *m w*, having pins *p'* arranged in the lower part, *w*, to alternate with the pins *p*, and having the part *w* perforated among the pins *p'*, to give immediate discharge to the flour substance when detached, substantially as described.

2. In a bran-cleaner, the combination, with the cylinder C, provided with peripheral pins *p*, of two or more inlet-openings, *t t*, and two or more discharge-openings, *o* and S, arranged substantially as shown, to give a more or a less direct course to the bran in its passage through the mill, as may be desired.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

THOMAS WALLACE.

Witnesses:

M. E. DAYTON,
R. D. O. SMITH.