

Imp'ts in

James H. Jones

No. 120,198.

Bran Duster & Flour Bolt

Patented Oct. 24, 1871.

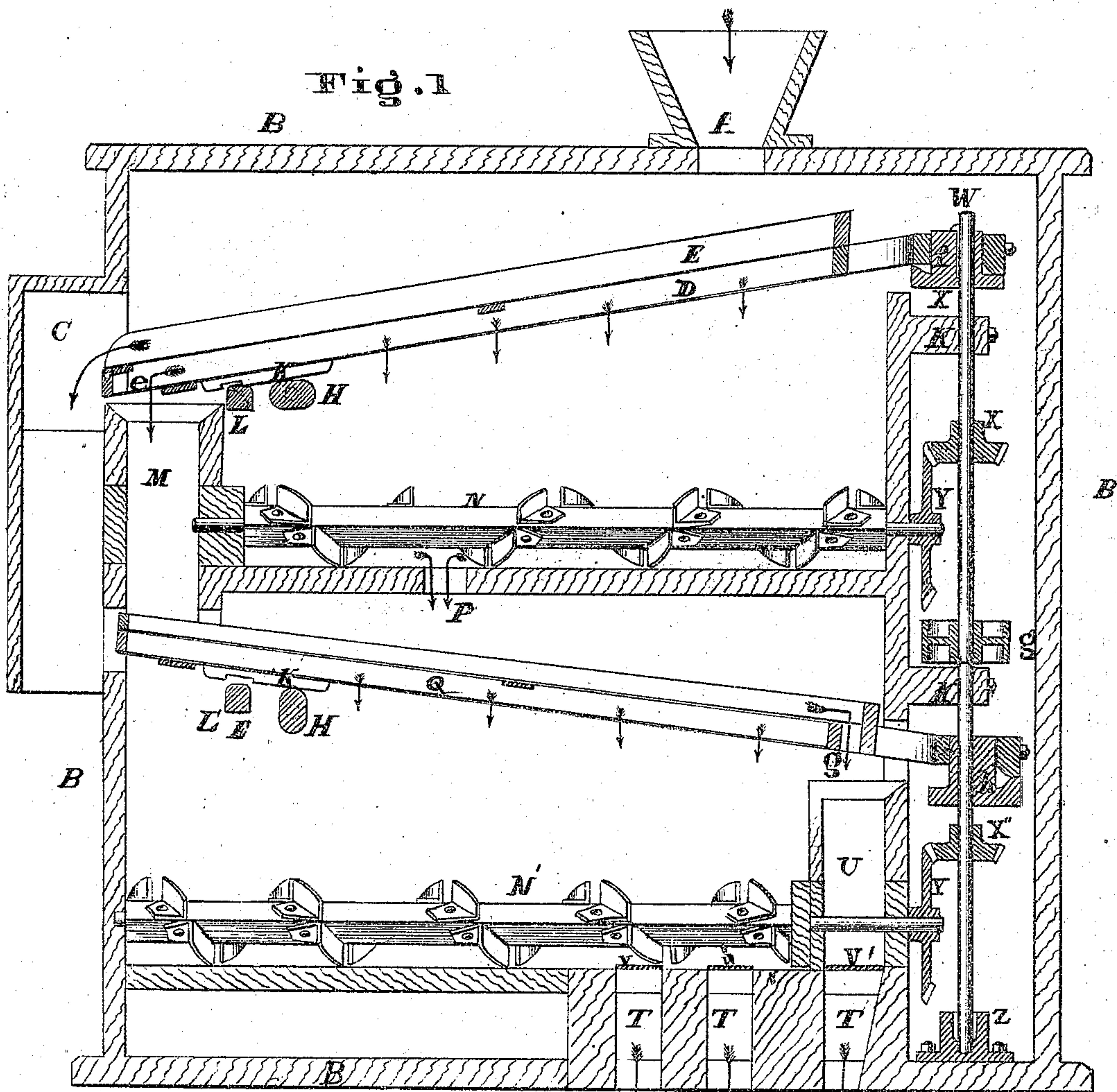
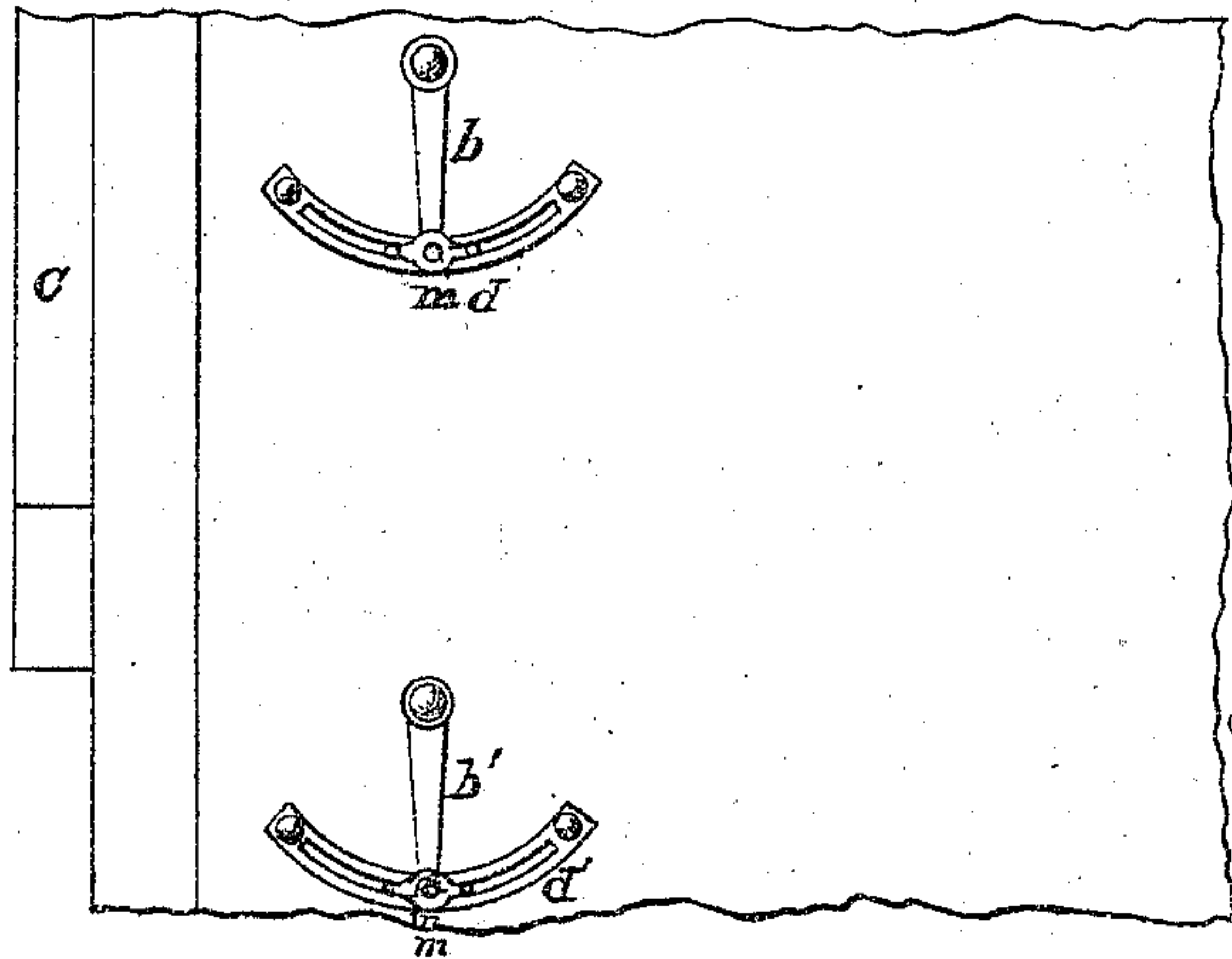


Fig. 2



Attest
C. L. Hale
B. Stover

Inventor
James H. Jones,
by Fisher & Fisher,
Attys in fact.

UNITED STATES PATENT OFFICE.

JAMES H. JONES, OF YELLOW SPRINGS, OHIO, ASSIGNOR OF ONE-THIRD HIS RIGHT TO JOSEPH S. PARROTT, OF SAME PLACE.

IMPROVEMENT IN BRAN-DUSTERS AND FLOUR-BOLTS.

Specification forming part of Letters Patent No. 120,198, dated October 24, 1871.

To all whom it may concern:

Be it known that I, JAMES H. JONES, of Yellow Springs, in the county of Greene and State of Ohio, have invented certain new and useful Improvements in Bran-Dusters and Flour-Bolts, of which the following is a specification:

The first part of my invention relates to the introduction into a bran-duster or flour-bolt of a device for causing vertical vibration in the said bran-duster or flour-bolt, thereby keeping them open and causing them to bolt free. The second part of my invention relates to an eccentric arm or arms and to a device for operating the same, whereby the vertical agitation of the slide may be perfectly regulated or entirely prevented. The third part of my invention relates to a combination of a bran-screen, a flour-screen, a bran-discharge spout, an intermediate flour-spout, and a conveyer, in such a manner that the flour is more perfectly cleaned.

Figure 1 is a vertical longitudinal section through the center of a bran-duster and flour-bolt, embodying my several improvements. Fig. 2 is a side elevation of a portion of one side of said bran-duster and flour-bolt, showing the device by which the position of the eccentric arm already alluded to is regulated.

B is the outer frame of the bran-dusting and flour-bolt. A feeding-hopper, A, is located in the top of this frame, and over the upper end of the upper screen E. The screens E and D, screen E being directly over screen D, occupy the upper part of the upper chamber in the box B. These screens are sufficiently inclined longitudinally to properly discharge the bran or sifting, &c., from their lower ends. Their upper ends are directly under said hopper A. The lower end of screen E empties into discharge-spout C, and the screen D empties into intermediate discharge-pipe M. Under and parallel with the screens D and D is a large screw, or technically, a conveyer, N. Directly below the conveyer and open to it is a discharge-orifice, P. Under orifice P and discharge-pipe M extends a screen, Q, having about the same inclination longitudinally as screens D and E, but in the opposite direction. The upper end of this screen is under the intermediate discharge-pipe M. The screen extends longitudinally from end to end of the interior of the lower chamber or box B, and under the orifice P and at its lower end discharges into dis-

charge-pipe U. N' is a conveyer below screen Q, and in the bottom of the same chamber V V are slides regulating or preventing the discharge of flour from the conveyer or N' into discharge-tubes T T. V' is a slide to prevent or regulate the discharge from pipe U into discharge-pipe T'. A vertical shaft, W, at one end of B communicates motion to the screens and conveyers. The lower end of this shaft rests on and turns in a bearing, Z. The shaft near its top is supported by and turns within a bearing, K'. A third bearing, K, supports the shaft at or near its middle.

The mechanism for operating the screens is as follows: Upon the upper end of the shaft W is fitted a horizontal eccentric, *f*, which revolves with the shaft W. From the lower edge of this eccentric projects a flange, horizontal and level, except at one point, and that is usually where the eccentric projects most, and here it rises in a small bulb or protuberance. Attached to the upper end of screen D is a collar, which fits around the eccentric *f*. The bottom of this collar is level, except at one point, usually located on that side of the collar opposite the screen, and here it projects downward in a point or protuberance. To operate screen Q in the lower chamber an eccentric, *h*, similar in all respects to the eccentric *f* just described, is attached to shaft W. To the end of screen Q is attached a collar fitting over eccentric *h*, and similar in every respect to the collar attached to screen D. Upon the end of conveyer N is a beveled gear-wheel, Y, geared into and operated by a beveled pinion, X, fixed on and turned by shaft W. The conveyer or N' is operated by beveled gear similar to that by which conveyer N is made to revolve. Upon each side of the bottom of screen D, near its lower end, there are fastened two long flat projections or bumpers K K, each of which has a notch in its lower side near its lower end. Directly below the notch of each bumper when the screen is in the middle of its longitudinal vibratory journey, a block or ledge, L, narrow enough to fit said notch is bolted and screwed to side of frame B. A mechanical equivalent of these blocks would be a bar extending across the screen directly under the notch of each bumper when the screen is at the middle of its journey. Parallel with block or ledge L, and near to it, extends an eccentric arm, H. This block or ledge

L is near enough to the bottom of the notch in *k*, so that when the eccentric arm is not in use this bar will support screen D and E. Under screen Q are two notched bumpers K' and K'; also a block or ledge, L', and eccentric arm H', similar, respectively, to bumpers K K, block or ledge L, and eccentric arm H, already described. The shaft of eccentric H passes through and extends beyond the outside frame B. Upon this extension a lever, *b*, is attached. The lower end of this lever slides in a slotted guide, *d*, of the form of a quadrant of a circle whose radius is that of the lever. (See Fig. 2.) The lever is secured at any point in the guide by a set-screw, *m*. To regulate the shaft of eccentric arm H' a device consisting of lever *b'*, guide *d'*, and set-screw *m'*, and similar to the device for regulating eccentric arm H, is placed on the outside of frame B below the device for eccentric H. *g* is the belt-wheel for operating the shaft.

The mode in which the afore-described machine with my improvements operates is as follows, viz: The shaft W being caused to revolve, the eccentrics *f* and *h* revolve and give longitudinal reciprocal motion to their respective screens; at the same time the projecting flanges of said eccentrics give a vibratory vertical movement to the screens. This vertical movement gradually decreases toward that end of the screen which is furthest from shaft W, and at such end there is no vertical motion. The object of the longitudinal and vertical vibration is to agitate the newly-ground unbolted grain, so as to thoroughly screen and separate the bran and chaff from the flour. The longitudinal and vertical vibrations already alluded to are often insufficient to thoroughly screen the flour. My vibratory device then becomes of advantage in the following manner: The side of the eccentric arm H is presented to the bumpers K K by turning lever *b* and fastening it on guide *d* by set-screw *m*. This position of the eccentric arm H allows the bumpers K K to rest on the block or ledge L. As the screens D and E and bumpers K K are moved backward and forward, once in every such backward and once in every such forward movement, the notch of the bumpers K K will fit the block or ledge, and at the moment of such fitting the screens D and E will fall with the bumpers the depth of the notch. But as this falling of these screens occurs at the middle of their forward or backward stroke, as the stroke continues the bumper will be moved along and the notch will rise up from block or ledge L and be moved along. As the notch rises the bumpers K K and the screens rise. Thus in every backward or forward movement that end of the screens D and E which is furthest from the shaft W will be suddenly raised and as suddenly lowered with a sharp vertical jolting motion or vibration, thus often materially aiding in screening the ground grain. Whenever the vibratory movement by block or ledge L is not needed, the lever *b* is turned, so that the position of the eccentric is changed, so that its end raises up the bumpers K K and with them

the screens D and E. Neither the bumpers K K or their notches will then touch the cross-bar, and thus all vibration from the junction of the notch and cross-bar will be prevented. The unbolted flour enters the frame B through hopper A and falls upon coarse screen E. As this screen and screen D are in violent agitation the flour sifts through E and into screen D while the bran remaining on E is shaken down to the lower end of D and is discharged into the discharge-passage C. The flour which has sifted through E into screen D is there resifted, and the finer portions fall directly through the screen onto the bottom of the upper chamber whence they are conveyed by the revolving conveyer N into orifice P and fall through said orifice into the lower conveyer, which is also in violent agitation. The bran and coarser siftings of screen D are discharged from the lower end of screen D into discharge-tube M, through which they pass into screen Q. All the fine flour passes through said screen Q into the bottom of this lower chamber and is conveyed by the conveyer N to the slides V V. These latter regulate its discharge into the final discharge-tubes T T; the coarse siftings which will not pass through screen Q are discharged at its lower end into discharge-passage U, whence its flow into final discharge-tube T' is regulated by discharge-door V'. By gradually moving the end of lever *b* along the guide *d* between the points of full vibration and where vibration ceases, more or less vertical vibration will be given to the screens, according to the amount of junction of the notch and cross-bar. The lower screen Q, notched bumpers K' K', block or ledge L', and eccentric H', are regulated and operated in a way similar to that just mentioned in relation to bumpers K K, block or ledge L, eccentric arm H, and screens D and E.

What I claim as new is—

1. The eccentric arm or shaft H, in combination with the block or ledge L, and notched bumper K, when applied to a bran-duster or flour-bolt, as and for the purposes herein set forth.
2. In combination with the eccentric arm H the adjusting device herein shown, consisting of the lever *b*, guide *d*, and set-screw *m*, when arranged as and for the purpose of regulating the inclination and vertical agitation of the screen, as set forth.
3. The combination of the screen or duster E, flour-bolt D, discharge-spout C, intermediate spout M, conveyer N, and the secondary screen or bolt Q, substantially as and for the purposes set forth.
4. The combination of the screen or duster E, flour-bolt D, discharge-spout G, intermediate spout M, conveyer N, and the secondary screen or bolt Q, substantially as and for the purposes set forth.

JAMES H. JONES.

Witnesses:

WM. G. MCKEE,
GEO. M. MILES.

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