2 Sheets--Sheet 1.

J. W. HOUGHTELIN.

Middlings-Purifier.

No. 162,555. Patented April 27, 1875.

Fig 1.

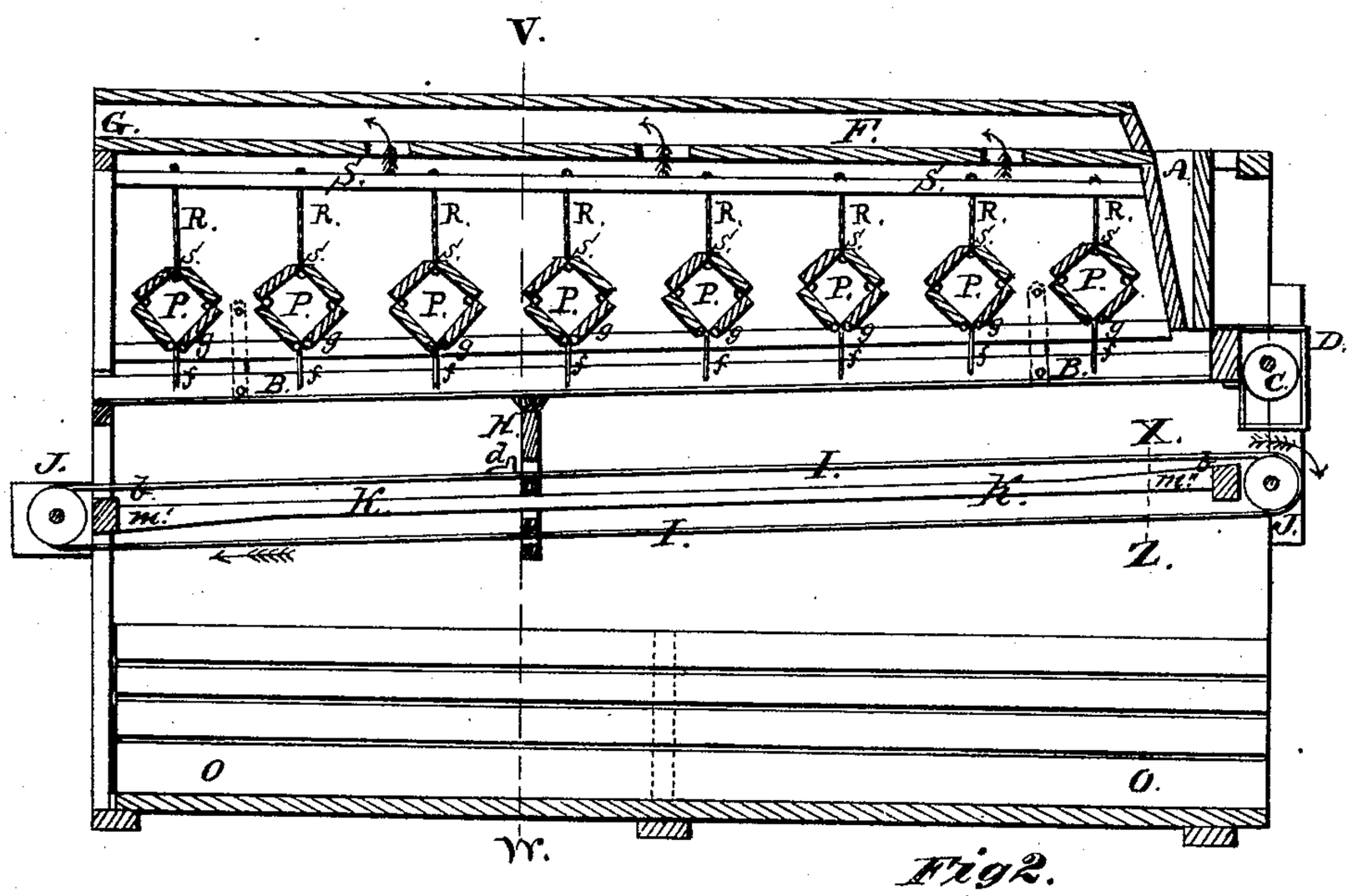


Fig 2.

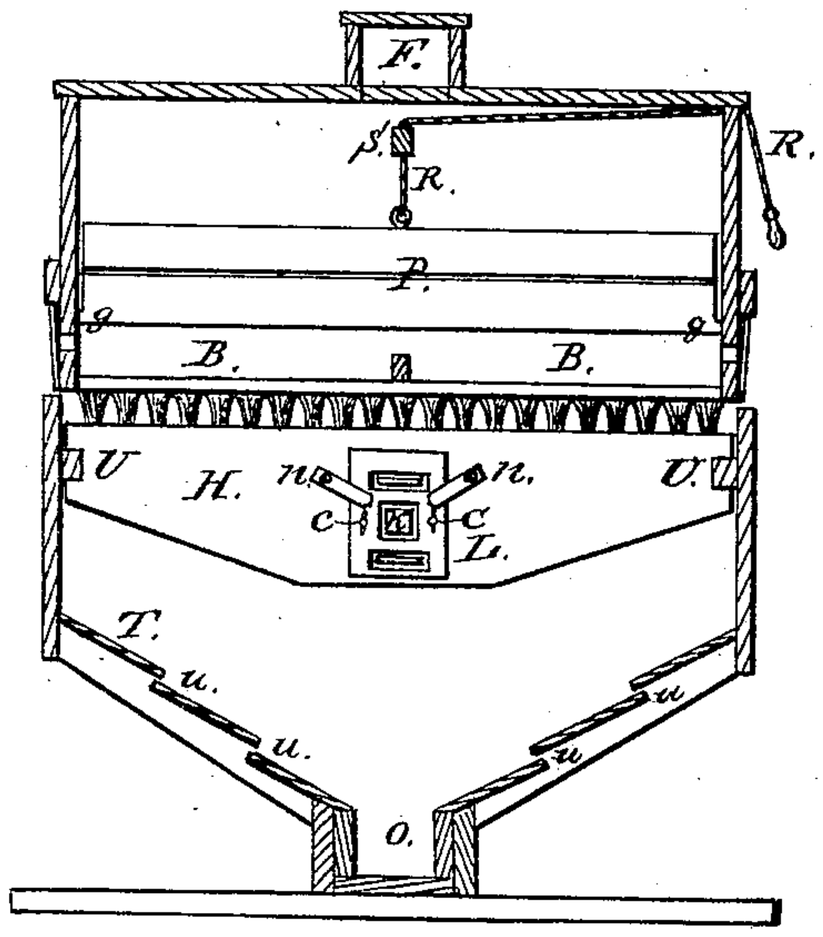
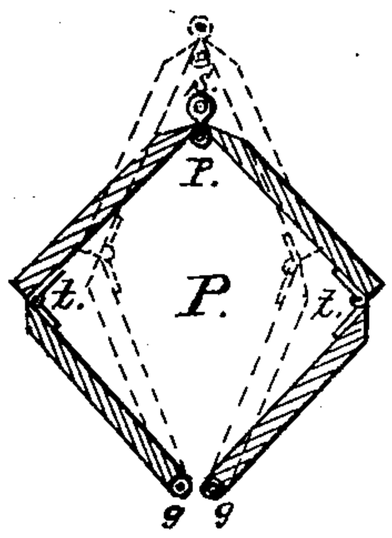


Fig 3.



Witnesses:

L. L. Champlin
Henry F. Hole.

Inventor:

J. W. Houghtelin

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2 Sheets--Sheet 2.

J. W. HOUGHTELIN.

Middlings-Purifier.

No. 162,555. Patented April 27, 1875.

Fig 4.

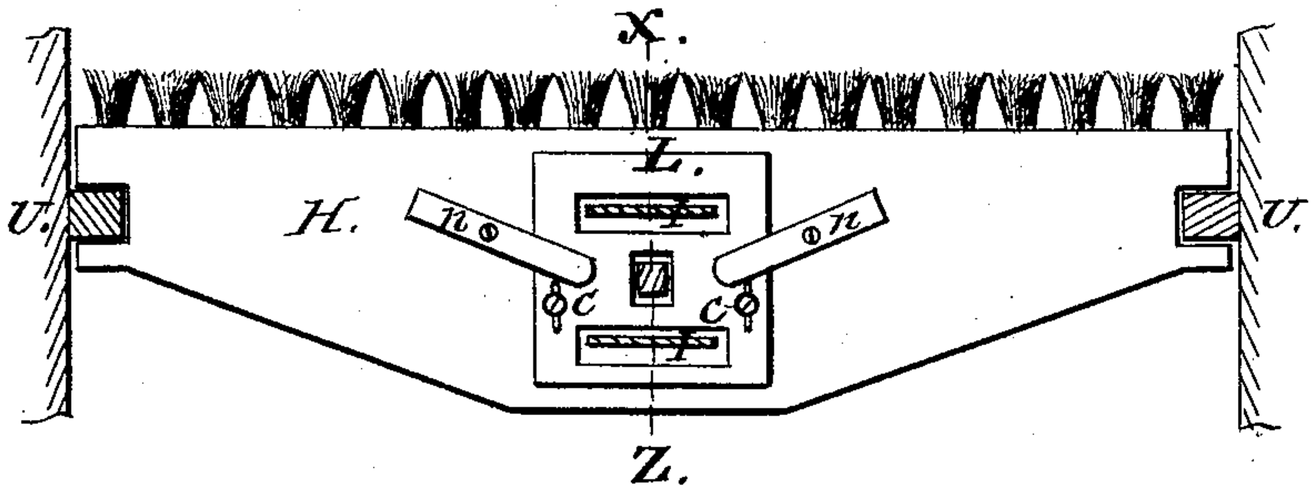
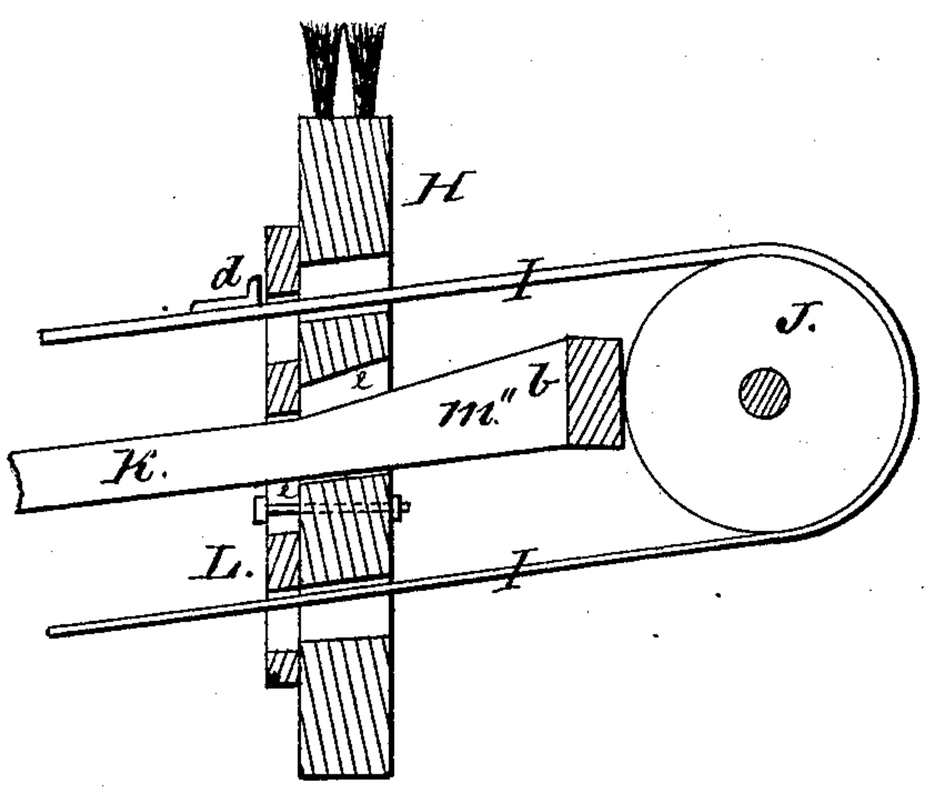


Fig 5.



Witnesses:

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THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

JARVIS W. HOUGHTELIN, OF FAIRBURY, NEBRASKA.

IMPROVEMENT IN MIDDLINGS-PURIFIERS.

Specification formirg part of Letters Patent No. **162,555**, dated April 27, 1875; application filed April 22, 1874.

To all whom it may concern:

Be it known that I, JARVIS W. HOUGHTELIN, of Fairbury, in the county of Jefferson and State of Nebraska, have invented a new Improvement in Middlings-Purifiers, of which the following is a specification:

My improvement relates to that class of middlings-purifiers in which a suction or exhaust fan is employed—also a brush used under the shaking screen or bolt; and relates to the construction and operation of the same, as specifically set forth.

Figure 1 is a longitudinal sectional elevation. Fig. 2 is a transverse section at the line V W of Fig. 1; Fig. 3, a detail view of the valve; Fig. 4, an end view of the brush and frame.

Similar letters of reference indicate corresponding parts in the different figures.

The outer casing is represented by the exterior line, and is inclosed by any suitable frame. B B represent a shaking screen or bolt, the bottom of which is covered with suitable cloth of any required fineness to allow middlings to pass through, the same receiving a reciprocating or shaking motion from the rotary eccentric C, working in keeper D, which is firmly secured to the end of the screen. H is a traveling brush, passing backward and forward under and brushing the cloth to keep it open and free that the sharp middlings may pass through. Said brush travels on ways U U, and is moved backward and forward by means of an endless belt passing through the body of the brush. Upon the belt I is secured a projection or lug, *d*, which catches against sliding plate L. The openings in the plate and brush are sufficiently large to allow the belt and lug to pass through freely. K K is a stationary rod secured to timbers *b b*. Said rod is provided with incline planes at its ends *m' m''*, and around which slide-plate L passes. Said plate is provided with two openings, one above and one below the rod, to allow said belt and lug to pass through, and is held in position to the brush by springs *n n* and bolts or screws *c c*, and is allowed a reciprocating motion by the elongated opening at *e e* in its passage over the inclined planes.

Fig. 5 is a transverse section of brush and plate on the line X Z in Fig. 4, and in position as shown by dotted lines X Z in Fig. 1.

The motion of the belt and pulley J, as indicated by the arrow, moving the brush to the right in its passage over the inclined plane *m''*, will raise the plate L, and allow sufficient opening for the lug *d* and belt to pass through, after which the brush will remain at rest until said lug and belt pass over pulley J, and, coming in contact with the opposite lower side of the lower opening in plate L, will move the brush back to the other end of screen B, where slide L is reversed by the opposite inclined plane *m'*, producing an intermittent reciprocating motion of the brush.

Belt I may be run by vertical shaft working slide horizontally instead of vertically with equally good results.

At G, or any convenient place, is an exhaust-fan, connecting with air-conductor F, having openings to the chamber over the screen where a constant draft of air is passing, keeping the lighter or bran portion of the middlings from passing through and floating the same over the tail end of the screen. P P are adjustable expansion-valves, placed transversely in the machine, the lower edges supported by extended trunnions *g g* in suitable bearings above, and quite near, the surface of the screen-cloth. These valves are constructed of four or more pieces, hinged at *t t* and *p*, and suspended by cord R, or any other suitable device that will elevate or depress said valves—preferably by the use of cord R passing over rod S to the outside of the machine. Located at the upper angle of the valve is an iron rod, serving as a weight to depress the valve when cord R is released. *f f* are flexible leathers or cloths, extending from the lower edge of the valves to the screen, to prevent the passage of air under and from valve to valve. Openings *u* are left between the hopper bottom boards for the admission of air under the sieve.

The operation of the machine is as follows: The middlings to be cleaned are deposited in hopper A, and fed on the upper end of the shaking-screen B by means of feed-roller, or any other suitable device. Motion of the screen or bolt is imparted by the eccentric C.

The finest of the middlings pass through the cloth first, the coarse gradually working to the lower end.

There being a constant upward current of air through the screen, it is desirable that it should not be as strong at the upper end, or it will draw off too much of the fine and valuable middlings and flour that may remain in the middlings. To prevent this the valves P are expanded, as before described, closing the openings between them, reducing the draft of air at the desired point. A greater amount of air being required toward the lower end, the valves are raised, as shown by the dotted lines in Fig. 3, allowing the passage of a greater amount of air at that location, operating more thoroughly on the middlings, the valves being under control at all times, thereby controlling the current of air on any part of the screen, whether it be by exhaust above or blast below.

The same system of expansion-valves may be used with good results by placing them below the sieve or bolt, in which case I would invert the position of the valves, operating them reversely.

At the bottom O is placed a suitable conveyer for distributing the purified middlings, as the operator may desire.

What I claim is—

1. In a middlings-purifier, the combination, with the screen, of the adjustable expansion-valves P, when constructed and arranged to operate substantially in the manner as and for the purpose specified.

2. The combination, with the screen or bolt of a middlings-purifier, of the brush H, provided with an abutment or bearing, substantially as described, and an endless band, provided with a projection for imparting an intermittent reciprocating motion to the brush, for the purpose specified.

3. The belt I, provided with lug *d*, passing over pulleys J J in one direction, in combination with inclined planes *m' m''*, plate L, and brush H placed vertically or horizontally, as fully set forth.

J. W. HOUGHTELIN.

Witnesses:
L. C. CHAMPLIN,
HENRY F. HOLE.