(Model.) 2 Sheets—Sheet 1.

R. KERSEY.

Middlings Purifier.

No. 239,172. **Patented March 22, 1881.**

Fig: 1.

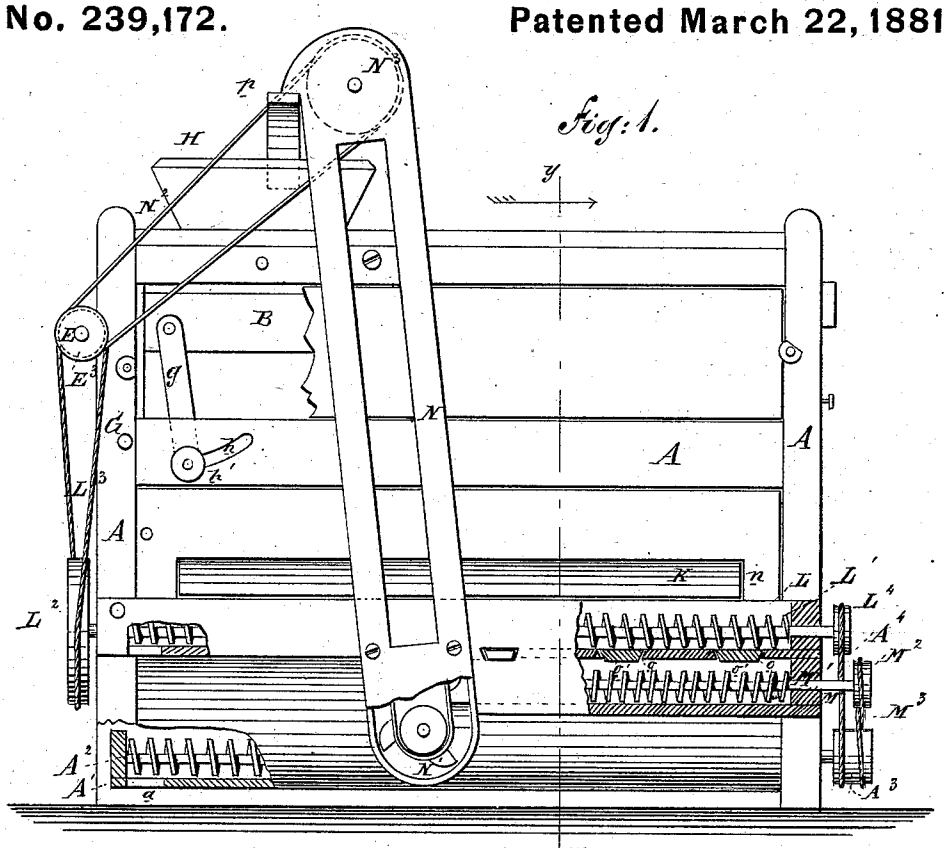
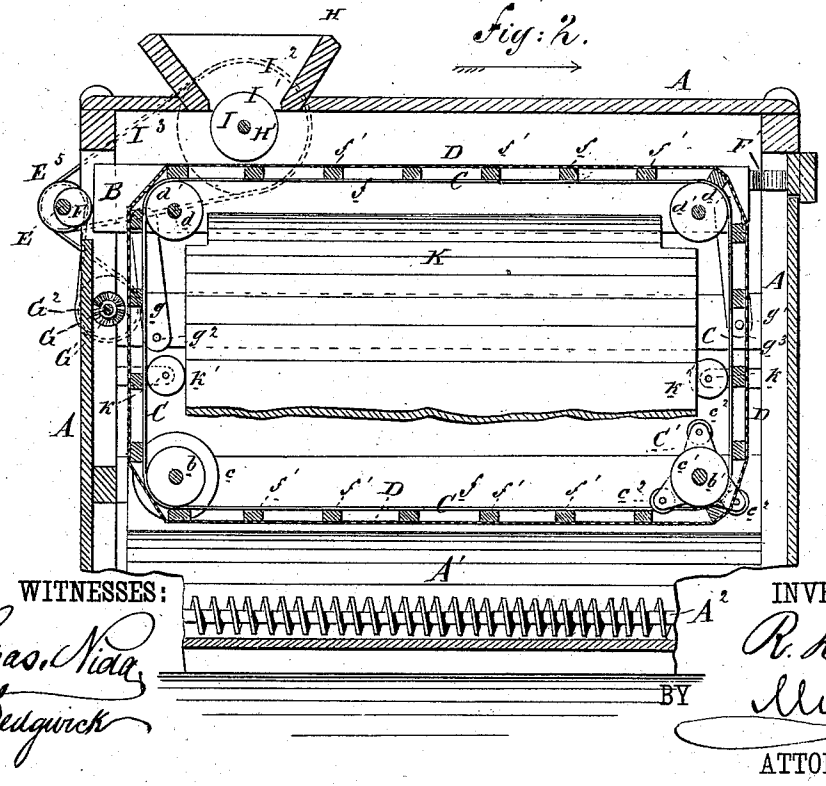


Fig: 2.



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C. Bedgwick

INVENTOR:

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(Model.) 2 Sheets—Sheet 2.

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Fig. 3.

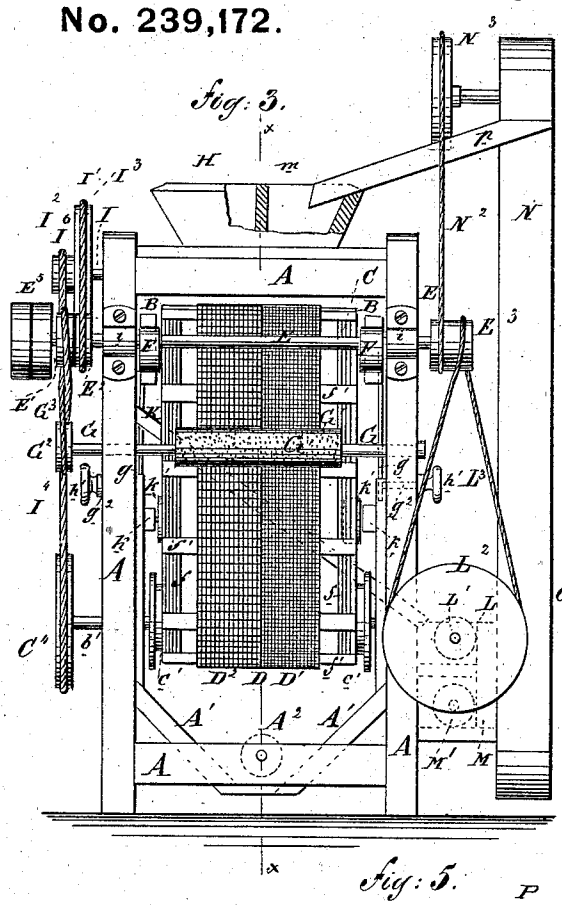


Fig. 4.

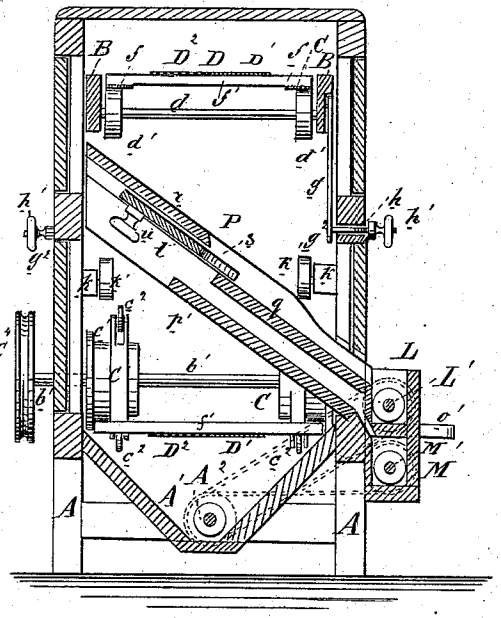


Fig. 5.

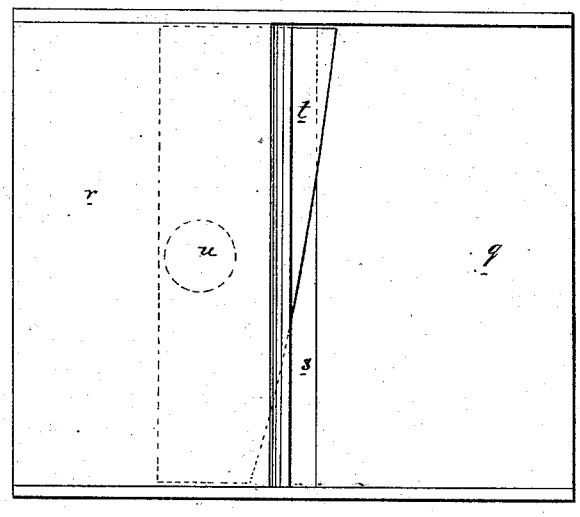
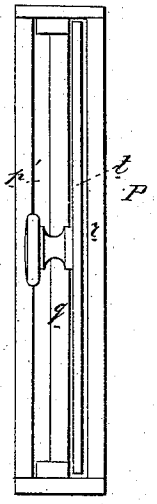


Fig. 6.



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UNITED STATES PATENT OFFICE.

RICHARD KERSEY, OF LEXINGTON, KENTUCKY.

MIDDLINGS-PURIFIER.

SPECIFICATION forming part of Letters Patent No. 239,172, dated March 22, 1881.

Application filed September 23, 1880. (Model.)

To all whom it may concern:

Be it known that I, RICHARD KERSEY, of Lexington, in the county of Fayette and State of Kentucky, have invented a new and Improved Middlings-Purifier, of which the following is a specification.

The object of this invention is to provide a simple and compact middlings-purifier that shall thoroughly separate the flour and bran from the middlings without creating dust in the mill, and that will enable the operator to grade the middlings at will.

Figure 1 is a side elevation of the device with parts broken away to exhibit other parts. Fig. 2 is a sectional side elevation on line *x x*, Fig. 3. Fig. 3 is an end elevation with the rear end removed and with parts broken away to exhibit other parts. Fig. 4 is a transverse sectional elevation on line *y y*, Fig. 1. Fig. 5 is a plan of the double apron. Fig. 6 is an end elevation of the same.

Similar letters of reference indicate corresponding parts.

In the drawings, A represents a suitable rectangular frame having a bottom, A′, sloping from both sides toward the center, so as to form a trough, in which revolves a screw-conveyer, A^2, for discharging the bran through a suitable opening, *a*.

At either end of the device, near the bottom and in the side thereof, are journaled the transverse shafts *b b′*, that have keyed on them, respectively, pairs of flanged rollers *c c′*; and in the upper part of the device, inside the frame A, is a horizontal rectangular frame, B, in each end of which are journaled the transverse shafts *d d*, that have keyed upon them the rollers *d′ d′*. Around these four pairs of rollers *c c′ d d* is stretched an endless belt, C, composed of two parallel flat belts or bands, *f f*, forming the sides of said belt C, and connected with each other by numberless transverse slats, *f′ f′*. On the outer face of this endless belt C is the bolt D, secured to the slats *f f* by some suitable device. The moving belt C is made to move by means of the spiders C′ C′, that are keyed on the shaft *b′* inside of the flanged rollers *c′*, said spiders C′ C′ being provided with three arms, in the end of each of which revolves an anti-friction roller, c^2. As the shaft *b′* is revolved the arms of these spiders C′ engage against the slats *f′ f′*, and thereby cause the endless belt C to move, the rollers c^2 enabling the said spider-arms to readily disengage themselves from the slats *f′ f′*, and said belt C is kept straight by the contact of its edges with the inner faces of the flanges on the rollers *c c′* and with the inner faces of the sides of the frame B. The frame B is nearly as long and wide as the frame A, and is supported at its sides, near its ends, by being pivoted on the upper ends of the four uprights *g g′*, whose lower ends are pivoted on pins or screws g^2 g^3, that extend through the sides of the frame A. The screws g^2 are projected outward through curved slots *h* on opposite sides of the frame A, and have on their ends thumb-nuts *h′ h′*, whereby they and their respective uprights *g* may be held in any desired position. By moving these uprights *g* to the rear ends of the slots *h*, as shown in Fig. 1, the frame B is elevated, and the belt and bolt C D are thereby drawn to their utmost tension, and this tension may be relieved to any desired extent by slackening the nut *h′* and moving the lower ends of the uprights *g* forward. On this end of the frame A, in suitable boxes *i*, the driving-shaft E is journaled, having on either end pulleys E′ E^2 E^3, from which motion is transmitted by suitable belts to other parts of the device. On this shaft E, in contact with the ends of each side timber of the frame B, are fixed the eccentrics F that, as the said shaft E revolves, force the said frame B forward against a spring, F′, in the opposite end of the frame A, which spring F′ forces the said frame B rearward again, and thus at each revolution of the shaft E the frame B is reciprocated, and imparts its shaking motion to the belt and bolt C D, thereby causing the latter to operate properly in bolting the middlings.

On the inside of the frame A, about halfway between the shafts *b b′* and frame B, a lug, *k*, is secured in each corner, and carries on a transverse pin a roller, *k′*, that bears against the inner face of the perpendicular end of the endless belt C, thereby preventing undue vibration of said belt C when running. Below the driving-shaft E, and parallel with it, the shaft G, encircled by a brush, G′, is journaled in the sides of the frame A, and is provided with a pulley, G^2, on one end, which is con-

nected, by a crossed belt, G^3, with the pulley E′ of the shaft E, so that when the shaft E is turned by pulley E^5, or by any other means, the said brush G′ is revolved in contact with the bolt D, and the bran and fluff thereby brushed from the bolt D into the sloping bottom A′, to be removed by the conveyer A^2. This bolt D is made of two strips of cloth, D′ D^2, of different grades or numbers, united at their edges, so that the middlings may be purified to a greater or less degree, as may be desired, according to whether they be fed on the coarser or finer side of said bolt D.

On the top of the device is a hopper, H, divided into two sections lengthwise of the device by a partition, *m*, and in the bottom of said hopper H a revolving distributing-cylinder, H′, is firmly keyed on the shaft I, that extends across the top of the frame A, and is journaled in the sides thereof, and has on its outer end two pulleys, I′ and I^2, the former of which is connected, by belt I^3, with the pulley E^2 of the driving-shaft G, while the pulley I^2 is connected, by crossed belt I^4, with the pulley C^4 of the shaft *b*′.

In Figs. 1, 2, and 3 is shown a sloping single apron, K, for receiving and guiding the bolted middlings, extending the whole length of the device between the vertical ends of the belt C, which apron K has its upper edge secured within one side of the frame A, just beneath the upper horizontal portion of said belt C, and its lower edge projected through an opening, *n*, in the side of the frame A, above the lower horizontal portion of the said belt C, immediately over a trough, L, in which is a screw-conveyer, L′, having on one end a driving-pulley, L^2, which is driven by a half-turn belt, L^3, from the pulley E^3 of the shaft G, and on the other end a pulley, L^4, which is connected, by a straight belt, A^4, with the driving-pulley A^3 on the end of the conveyer A^2. In the bottom of this trough L are openings *o o*, regulated by slides *o*′, that open into a lower parallel trough, M, which in this instance extends about half the length of trough L, and is secured to the bottom thereof. In this trough M is a screw-conveyer, M′, on the end of which is a pulley, M^2, that is driven by a crossed belt, M^3, from the pulley A^3 on the end of the conveyer A^2. Secured to the outside of the frame A, and communicating at the bottom with the trough M, is an elevator, N, which extends upward and has its delivery-spout *p* resting on the edge of the hopper H. The elevator-buckets N′ are operated by means of the straight belt N^2 that connects the elevator driving-pulley N^3 with the pulley E^3 on the shaft E.

In Figs. 4 5 6 is seen a double apron, P, designed to be placed within the frame A, as shown in Fig. 4, with its double end downward, so that the undermost apron-board, *p*′, shall enter the lower conveying-trough, M, through a suitable opening made for that purpose, and so that the upper apron-board, *q*, shall rest on the conveyer-trough L, to convey thereto the purified middlings from the machine. At the upper part of the apron P is but one board, *r*, on a higher plane than the boards *p q*, of such a depth that an open space, *s*, is left between the lower edge of said board *r* and the upper edge of the board *q*, through which opening or space *s*, when open, all the middlings from the bolt D will fall on the board *p*, and thence into the trough M, to be conveyed to the elevator N and thence back to the bolt D. A sliding cut-off, *t*, provided with handle *u*, forms part of the apron P, and by it the opening *s* may be opened or closed and the middlings, or any desired portion of them, thereby directed into the troughs L or M, as desired.

In operating this machine the parts are put in motion by power applied to the driving-shaft G. The middlings to be purified are then introduced through the hopper H on the coarser part of the bolt D when two strips of cloth are used. The fluff, bran, and coarser particles that do not pass through the said bolt D are deposited in the trough A′ by the movement of the bolt D and the brush G′, and are thence conveyed from the machine through the opening *a* by the conveyer A^2. That part of the middlings which passes through the bolt D falls on the single apron K and thence into the trough L, whence it, or any desired portion of it, is discharged by conveyer L′, or is permitted to flow into the trough M through the openings *o o*, to be conveyed by conveyer M′ to the elevator N, whence it is discharged upon the finer section B″ of the bolt B for closer purification.

When the double apron P is used in place of the apron K the cut-off *t* gives the operator the full control of the purifier for grading the middlings, as set forth.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A mechanism for revolving the endless belt C, which consists of the spiders C′, keyed on a shaft, *b*, within the belt, and having arms provided with end rolls, c^2, as shown and described.

2. In a middlings-purifier, the combination of the pivoted frame B, the eccentric F on shaft E, and the spring F′ on frame A, for the purpose of shaking the bolt-belt, as set forth.

3. The combination, with the endless belt C, having the two upper rolls, *d*, in a shaking-frame, of the lugs *k*, arranged on frame A, and carrying rollers *k*′, as and for the purpose specified.

RICHARD KERSEY.

Witnesses:
JOHN T. GILBERT,
J. A. PROCTOR.