A. MORLEY.

Middlings-Separator.

No. 209,182. Patented Oct. 22, 1878.

Fig. 1.

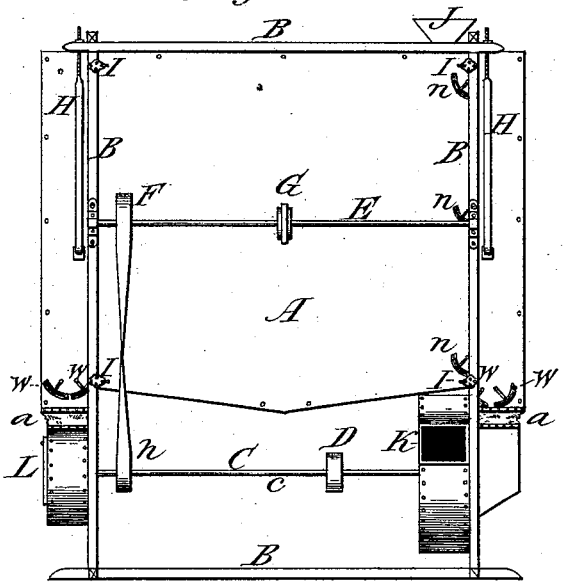


Fig. 3.

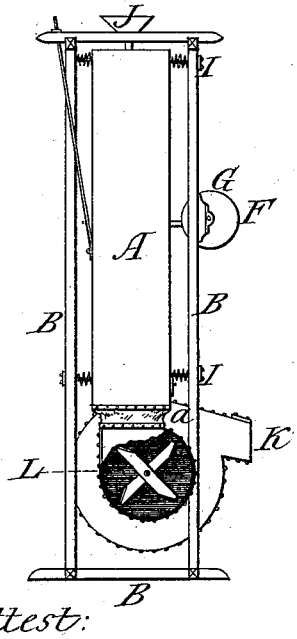
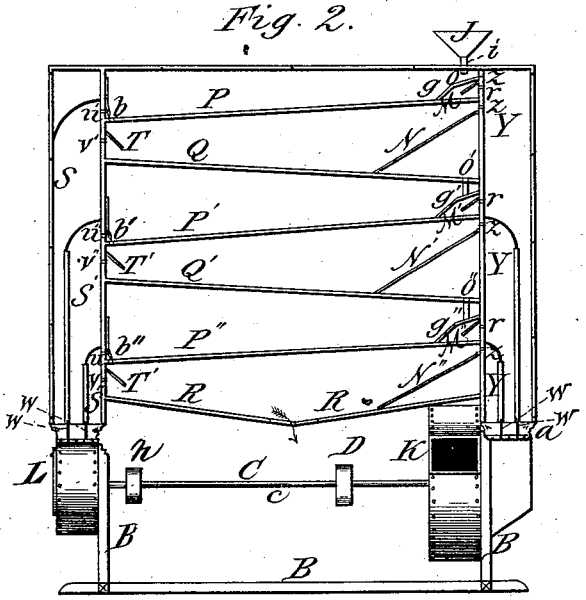


Fig. 2.



Attest:

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UNITED STATES PATENT OFFICE.

ABRAHAM MORLEY, OF CHEROKEE, KANSAS.

IMPROVEMENT IN MIDDLINGS-SEPARATORS.

Specification forming part of Letters Patent No. **209,182,** dated October 22, 1878; application filed January 29, 1878.

To all whom it may concern:

Be it known that I, ABRAHAM MORLEY, of the town of Cherokee, in the county of Crawford and State of Kansas, have invented a new and useful Improvement in Middlings Purifiers and Separators, of which the following is a specification, reference being had to the annexed drawing, which is made a part hereof.

Figure 1 is a side view of my improved machine, showing the vibrator and the machine as it appears when in use. Fig. 2 is also a side view, with the casing of the vibrator removed and parts broken away so as to show the construction. Fig. 3 is an end view.

Similar letters of reference indicate corresponding parts.

The object of this invention is to separate the branny and fuzzy particles from and to purify the middlings by subjecting them to a vibratory motion, and at the same time to the action of currents of air while they are passing through the machine, which machines shall be simple in construction and effective in use.

This invention consists in the combination of a vibrator, with a series of air-passages, provided with gates at their lower ends and gates or orifices at their upper ends, with a blast-fan, conveying-boards, chute-boards, stationary dusting-boards, receiving-boards, adjustable dusting-boards, middlings-pipes, returning-boards, delivery-boards, dust-passages, exhaust-chambers, and exhaust or suction fan, as hereinafter more fully described.

A represents the vibrator; B, the frame of the machine; C, the main shaft, resting in bearings on the lower part of frame B. The shaft C is driven by a belt passing around pulley D. E is the upper or vibrator shaft. The shaft Ei s driven by a crossed belt passing around pulley F and pulley *h* on main shaft; G, an eccentric, which works a rod passing through vibrator A, and giving motion thereto; H H, suspension-springs; I I I I, spiral springs, four or more on each side of the machine, connecting frame B with vibrator A by means of a screw passing through each of the spiral springs I, terminating with a nut, by means of which the vibrator is also kept in a proper position. On the upper end of suspension-springs H a thread is cut, upon which a nut is placed, by means of which either corner of the vibrator A may be raised or lowered. The vibrator A is suspended from frame B by suspension-springs H. J is a hopper; K, exhaust or suction fan upon main shaft C. M M′ M″ are receiving-boards.

With the discharge-opening of blast-fan L are connected three or more air-passages, S S′ S″. These are provided with gates W, so as to regulate the amount of air passing into each of the air-passages S S′ S″.

The middlings are placed in the hopper J, and pass into the vibrator A by means of a flexible pipe, *i*, and are discharged therefrom onto receiving-board M, whence they slide onto conveying-board P. The motion of vibrator A causes the fuzzy and branny particles to rise to the top of the middlings, from whence the said fuzzy and branny particles are blown by the current of air coming from blast-fan L through air-passage S and gate or orifice *w′*, covered with chamois-skin, onto stationary dusting-board *g*. The middlings, having reached the lower end of conveying-board P, pass through orifice *b*, extending nearly across the lower end of said conveying-board P onto chute-board T, falling thence onto returning-board Q. As the middlings fall from chute-board T a current of air from air-passage S, passing through orifice or gate V′, strikes them, blowing more of the fuzzy and branny particles onto adjustable dusting-board N. The middlings pass down returning-board Q into and through middlings-pipe O′ onto receiving-board M′, from whence they slide onto conveying-board P′. Their being constantly agitated by vibrator A brings more of the fuzzy and branny particles to the surface as the middlings pass down conveping-board P′ and are met by a current of air from blast-fan L through air-passage S′ and gate or orifice *w″*, which blows the fuzzy and branny particles onto stationary dusting-board *g′*. The middlings pass down conveying-board P′ through orifice *b′* onto chute-board T′, thence onto returning-board Q′, meeting, as they fall, a current of air from air-passage S′ coming through orifice V′, which blows the fuzzy and branny particles that become separated by falling onto adjustable dusting-board N′. The middlings continue down returning-board Q′

and pass through middlings-pipe O″ onto receiving-board M″, thence sliding onto conveying-board P″, where the agitation from vibrator A, as the middlings pass down said conveying-board P″, causes more of the branny and fuzzy particles to rise to the surface, whence they are blown by a current of air from blast-fan L coming through air-passage S″ and gate or orifice *u* onto stationary dusting-board *g″*. The middings pass down conveying-board P″ through orifice *b″* onto chute-board T″, whence they fall onto delivery-board R, down which they descend to the orifice at the bottom, and are discharged from the machine. The middlings, while falling from chute-board T″ to delivery-board R, are met by another current of air from air-passage S″ through orifice V, and such of the branny and fuzzy particles as may have remained in the middlings are blown onto adjustable dusting-board N″. The adjustable dusting-boards N N′ N″ are regulated by a lever, *n*, passing through the casing of vibrator A. Immediately above the stationary dusting-boards *g g′ g″* and adjustable dusting-boards N N′ N″ are dust-passages *z*, to permit the fuzzy and branny particles to be drawn through exhaust-chambers Y Y Y by a suction or exhaust fan, K, into said exhaust or suction fan K, and expelled therefrom through its outer opening. Immediately below each receiving-board M M′ M″ are also dust-passages *r r r*, to permit such fuzzy and branny particles as are separated from the middlings by their descent from the receiving-boards M M′ M″ to conveying-boards P P′ P″ to be drawn through into exhaust-chambers Y Y Y by suction or exhaust fan K, and thence, through the inner opening, into said exhaust-fan K, from which they are by it expelled through its outer opening.

The conveying-boards P P′ P″ are fastened securely to the sides of vibrator A, are three (more or less) in number, and are made with two or more grooves, extending lengthwise from the upper end to the orifice, for the discharge of the middlings near the lower end upon the chute-boards T T′ T″.

The returning-boards Q Q′ Q″ are fastened securely to the sides of the vibrator A, are two or more in number, and are made with one groove, extending lengthwise partially or entirely through the length of the board.

The adjustable dusting-boards N N′ N″ are fastened to the end of vibrator A by pivots.

Vibrator A is connected with suction-fan K and blast-fan L by flexible pipes *a a*.

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

1. The combination of vibrator A, with the series of air-passages S S′ S″, provided with gates W at their lower ends, and gates or orifices *u w′ w″* and orifices V V′ V″ at their upper ends, with the blast-fan L, exhaust-chambers Y Y Y, and exhaust or suction fan K, substantially as herein shown and described.

2. The combination of vibrator A with conveying-boards P P′ P″, stationary dusting-boards *g g′ g″*, receiving-boards M M′ M″, middlings-pipes O O′ O″, returning-boards Q Q′, chute-boards T T′ T″, adjustable dusting-boards N N′ N″, delivery-boards R R, dust-passages *z* and *r r r*, substantially as herein shown and described.

ABRAHAM MORLEY.

Witnesses:
M. H. ALBERTY,
L. W. FOLSOM.