J. SCHOONOVER.
Middlings-Separators.

No. 212,406. Patented Feb. 18, 1879.

Fig. 1

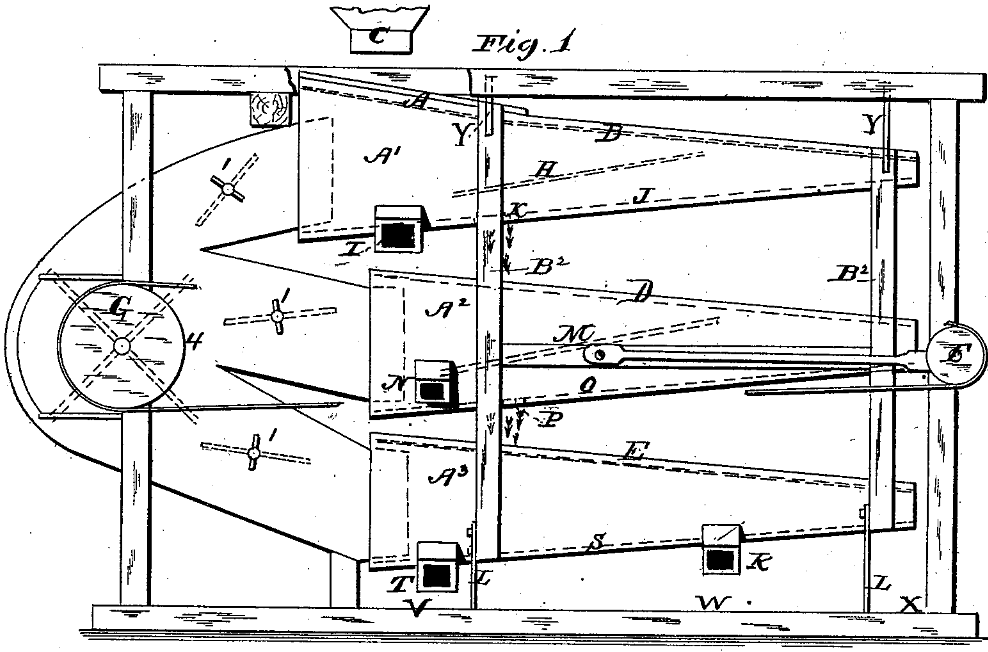
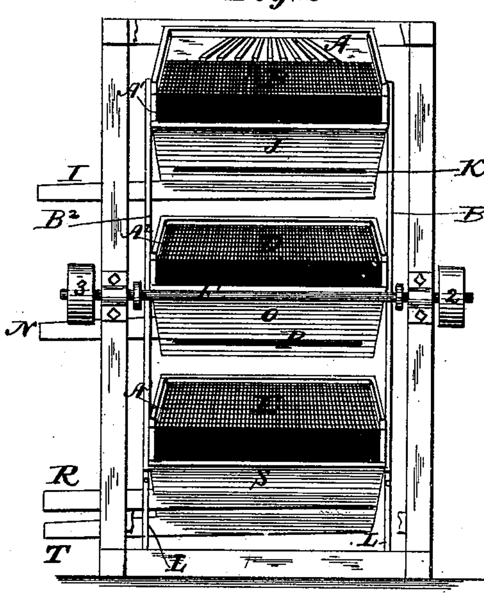


Fig. 2



Witnesses;
M. Church
Wm. Blackstock

Inventor
Jas. Schoonover.

UNITED STATES PATENT OFFICE.

JAMES SCHOONOVER, OF JACKSONVILLE, ILLINOIS.

IMPROVEMENT IN MIDDLINGS-SEPARATORS.

Specification forming part of Letters Patent No. **212,406**, dated February 18, 1879; application filed May 22, 1878.

To all whom it may concern:

Be it known that I, JAMES SCHOONOVER, of Jacksonville, in the county of Morgan and State of Illinois, have invented a new and useful Improvement in Middlings-Purifiers, of which the following is a specification:

My invention consists of a series of independent tapering or funnel-shaped shoes or boxes, capable of separate attachment to or removal from their vibratory supports, each containing a top sieve and bottom board, inclined in opposite directions, with an intermediate short board, inclined in the same general direction as the bottom, and provided with separate discharge-openings for the materials falling from said two boards, and with an end discharge for the air-currents and offal, in combination with a blast-fan and a series of air-passages, controlled by valves, to direct the air-currents into the large ends of the shoes or boxes, substantially as I will now proceed to describe.

Figure 1 is a side elevation of my middlings-purifier. Fig. 2 is an elevation, as seen standing at the foot.

Similar letters and figures of reference indicate corresponding parts.

A represents the spreading-board, which is placed at the head of sieve B of the upper shoe, A^1, and has a greater inclination than said sieve. It receives the middlings from the hopper or spout C; and the shaking motion in a longitudinal direction given to the combined sieves B, D, and E by the crank-shaft F, assisted by the air forced in the same direction by the blowing-fan G, causes the middlings, in their passage toward the foot of the machine, over the sieve B, to become separated, a portion of the finer and heavier middlings dropping through the sieve B onto the cant-board H, and so on and into and out of the spout I. The remainder continues toward the foot of the machine. A portion drops through the sieve B, beyond the cant-board H, on to the inclined bottom J, and out of the outlet K and onto the sieve D of the second shoe, A^2, and the part left on the sieve B, being the coarsest and lightest, is thrown over the foot of the machine. The portion which passes onto the sieve D continues toward the foot of the machine. The finer and heavier parts drop through the sieve D onto the cant-board M, and into and out of the spout N. The remainder continues toward the foot of the machine. A portion drops through the sieve D onto the inclined bottom O, and so on and out of the outlet P onto the sieve E of the lower shoe, A^3. The part left on sieve D, being the coarsest and lightest, is thrown over the foot of the machine. The portion which passes onto the sieve E continues toward the foot of the machine. The finer and heavier parts drop through the sieve E onto the inclined bottom S before reaching the spout R, and so on and out of the spout T. The balance continues toward the foot of the machine. The next lightest and coarsest drops through the sieve E onto the inclined bottom S, and so on and out of the spout R. The part left on sieve E, being the coarsest and lightest, is thrown over the foot of the machine.

The air blown from the fan G, acting at one and the same time with the combined shaking sieves, cant-boards, and inclined bottoms of the several shoes, causes all dust and light particles to be forced toward the foot of the machine, and thrown into the same body with the lighter and coarser portion of the middlings. The combined action of the shaking sieves, cant-boards, and inclined bottoms of the several shoes, and the blowing-fan thereby causes the middlings passing into and through the machine to be deposited in three separate and distinct bodies, the finest and heaviest at V, the next at W, and the coarsest and lightest at X.

The shoes are held in position by connecting-pieces B^2 B^2, and are supported by springs L L, which allow the shoes to be reciprocated longitudinally by means of the crank-shaft F. Stay-rods V assist in holding the shoes in place, and in preventing any transverse lateral movement thereof.

Through the space between the sieves, cant-boards, and inclined bottoms the blowing-fan G impels drafts of air, (said drafts being independently regulated by valves 1 in each inlet,) which take up and conduct all light particles and all dust to the foot of the machine.

The shaft F is driven by a belt from the mill-shaft to pulley 2, and the fan by a belt from pulley 3 to pulley 4.

The space between the sieves and the inclined bottom being constructed wedge-shape, (being largest next the inlet for air,) the air is more confined and contracted as it is impelled toward the foot of the machine, and exerts more force as it moves toward the foot of the machine. The air-ducts from the fan G are arranged so as to admit of being telescoped into shoes or boxes, and to allow an unobstructed longitudinal motion of said shoes.

The shoes are arranged so as to leave open spaces between them for free circulation of air, and they are adapted to be separately removed from or attached to their supports when desired.

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

In a middlings separator and purifier, a series of independent tapering or funnel-shaped shoes or boxes capable of separate attachment to or removal from their vibratory supports, each containing a top sieve and bottom board, inclined in opposite directions, with an intermediate short board, inclined in the same general direction as the bottom, and provided with separate discharge-openings for the materials falling from said two boards, and with an end discharge for the air-currents and offal, in combination with a blast-fan and a series of air-passages controlled by valves to direct the air-currents into the large ends of the shoes or boxes, substantially as described.

JAS. SCHOONOVER.

Attest:

EDWARD P. KIRBY,
JOHN M. RAGAN.