W. P. ANTHONY.

Middlings-Separators.

No. 211,683. Patented Jan. 28, 1879.

Fig. 1.

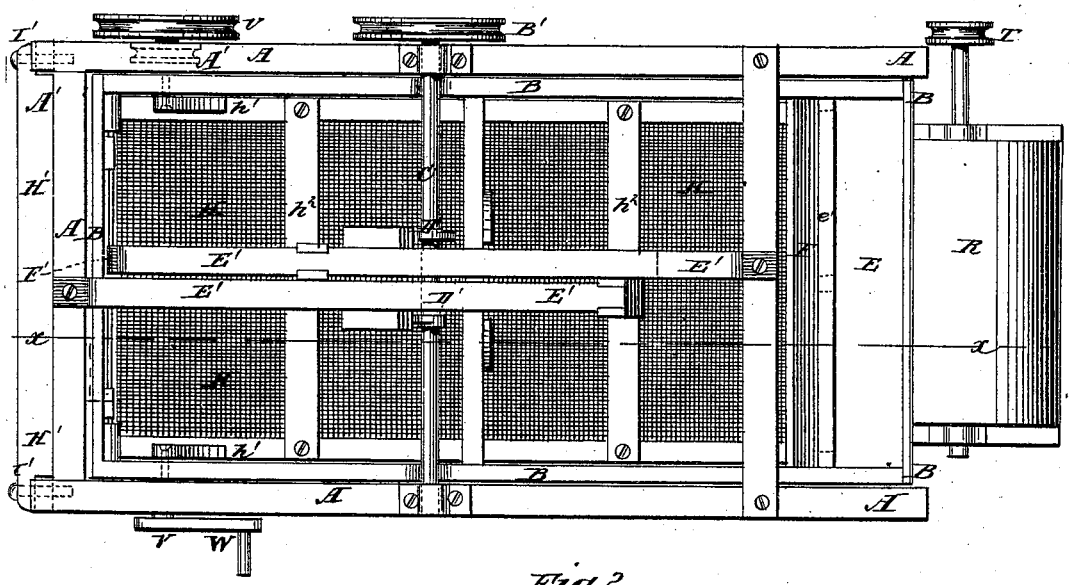

Fig. 2.

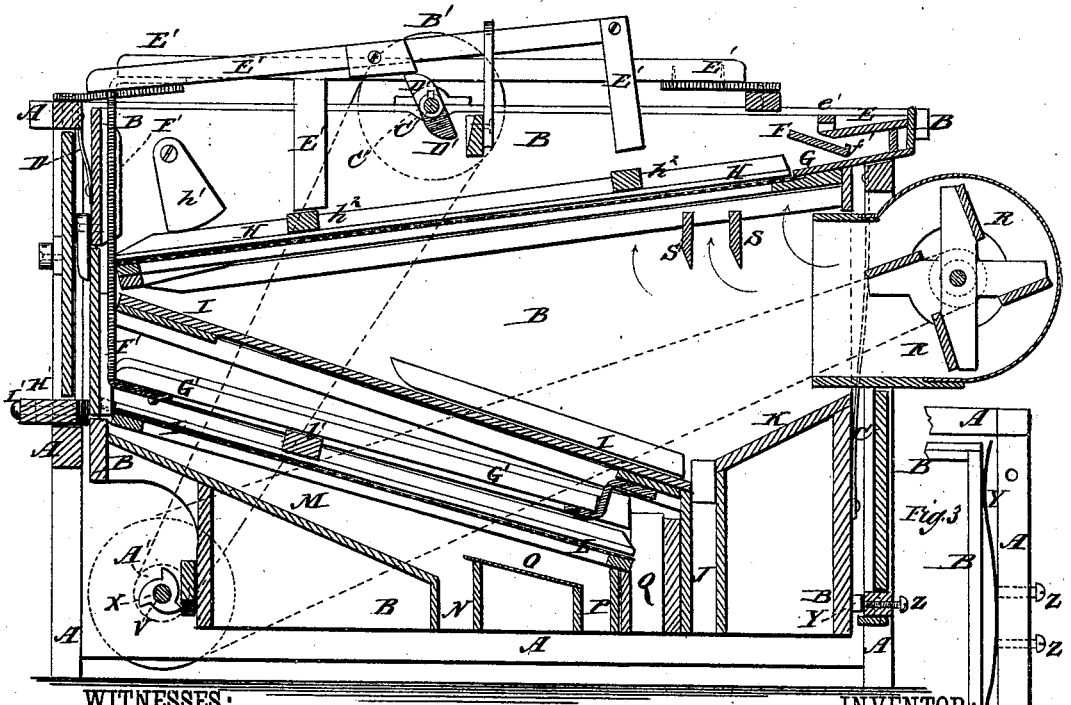

Fig. 3

WITNESSES:

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WILLIAM P. ANTHONY, OF CHAMBERSBURG, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND GEORGE A. WOOD, OF SAME PLACE.

IMPROVEMENT IN MIDDLINGS-SEPARATORS.

Specification forming part of Letters Patent No. **211,683**, dated January 28, 1879; application filed October 30, 1878.

To all whom it may concern:

Be it known that I, WILLIAM P. ANTHONY, of Chambersburg, in the county of Franklin and State of Pennsylvania, have invented a new and useful Improvement in Middlings-Separators, of which the following is a specification:

Figure 1 is a top view of my improved apparatus. Fig. 2 is a vertical longitudinal section of the same, taken through the line *x x*, Fig. 1. Fig. 3 is a detail top view of the shoe-spring.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved apparatus for purifying middlings, which shall be simple in construction, convenient in use, and effective in operation, driving off the dust and other light impurities, and separating the middlings into different grades.

A represents the frame of the machine, which is provided at its sides with a permanent and at its ends with a detachable casing. B is the shoe, to the lower part of the forward end of which are attached the lower ends of two elastic metal straps, C. The upper ends of the straps or hangers C are attached to the upper forward part of the frame A.

To the upper part of the rear end of the shoe B are attached the lower ends of two elastic metal straps or hangers, D, the upper ends of which are attached to the upper rear part of the frame A. The straps or hangers C D thus support the shoe B, and at the same time allow it to be vibrated longitudinally.

The meal or middlings are fed into the machine from one or more spouts upon an inclined feed-board, E, attached to the upper part of the forward end of the shoe B.

To the upper side of the lower part of the upper feed-board, E, is attached a strip or cleat, *e'*, the lower edge of which is cut away or has long notches formed in it, through which the middlings must pass in escaping from the said feed-board E, so as to be evenly distributed.

From the lower edge of the feed-board E the middlings fall upon the intermediate or reversed feed-board, F, which is inclined in the opposite direction from the feed-board E, and from the lower edge of which the middlings fall upon the feed-board G. The feed-board G inclines in the same direction as the feed-board E, and from its lower edge the middlings pass to the screen H.

To the lower edge of the intermediate board, F, or of two or of all of the feed-boards, is attached a narrow upwardly-projecting strip or rib, *f'*, over which the middlings must pass, and by which the said middlings are more evenly distributed, so that they will pass to the screen H in a thin sheet. The same effect may be produced in substantially the same way by forming a groove in the upper side of the lower part of the said distributing board or boards.

The screen H rests upon cleats attached to the sides of the shoe B, where it is locked in place by buttons *h'*, pivoted to the sides of the said shoe B. The screen H may be made in two parts, if desired, with their adjacent ends overlapping each other, so that the middlings may readily pass from the upper to the lower part.

The part of the middlings which passes through the screen H falls upon the inclined chute or guide-board I, and slides down it to the spout J, through which it passes out into some suitable receiver. The chute I is placed in grooves formed by attaching cleats to the sides of the shoe B.

Any middlings that may pass through the forward or upper part of the screen H fall upon the inclined board K, and slide down it to the spout J.

The part of the middlings which cannot pass through the screen H falls from the lower end of the said screen to the upper end of the screen L, which is placed in grooves formed by attaching cleats to the sides of the shoe B. The screen L, if desired, may be made in two parts with their adjacent ends overlapping one the other, so that the middlings may pass from one to the other of the said parts.

The part of the middlings which passes through the upper part of the screen L falls upon the inclined board or chute M, and slides down it into the discharge-spout N.

The part of the middlings that passes through the lower part of the screen L, falls upon the

inclined chute or board O, and slides down it into the discharge-spout P.

The part of the middlings that cannot pass through the screen L falls from its lower end into the discharge-spout Q.

By this construction the different grades of the middlings are all kept separate.

To the forward end of the frame A is attached a fan-blower, R, the discharge-spout of which terminates beneath the upper part of the upper screen, H.

To the opposite sides of the shoe B are attached the ends of cross-boards S to guide a portion of the blast against the upper part of the screen H. The guide-boards S, one or more of which may be used, may be adjustable or stationary.

The direction of the blast may be further controlled, if desired, by making the bottom of the blast discharge-spout adjustable, or by arranging an adjustable board upon the said bottom.

To one end of the fan-shaft is attached a small pulley, T, to receive the band by which it is driven, and which also passes around a larger pulley, U, attached to the end of the shaft V. The shaft V revolves in bearings in the lower rear part of the frame A, and to its other end is attached a crank, W, or pulley with which the driving power is connected.

To the middle part of the shaft V is attached a cam-wheel, X, which operates against a lower rear part of the shoe B, or against a block or plate attached to it, to move the said shoe B and its attachments forward.

The shoe B is thrown back as soon as released from each cam of the cam-wheel X by a spring, Y, attached to the forward end of the frame A, and the tension of which is regulated as required by two set-screws, Z, passing in through a bar of the frame A.

To the shaft V, or to the large pulley U, is attached a small pulley, A′, to receive a band, which also passes around a large pulley, B′, attached to the end of the shaft C′.

The shaft C′ revolves in bearings attached to the middle parts of the top side bars of the frame A, and to its middle part are attached two cams, D′, which, as the said shaft C′ is revolved, raise the hammer E′, and allow them to drop upon cross-bars h^2, attached to the screen H, to jar the said screen, and prevent the screen-cloth from becoming clogged.

The hammers E′ are hinged at their alternate ends to cross-bars of the frame A.

To the free rear end of one of the hammers E′ is attached the upper end of a strap, F′, which passes down through the space between the rear end of the shoe B and the rear ends of the upper screen, H, and the upper chute, I.

The lower end of the strap F′ is attached to the free rear end of the hammer G′, placed above the lower screen, L, and the forward end of which is hinged to the forward part of the upper chute, I, so that the hammer G′ may be operated to strike a cross-bar, l', of the screen L and jar the said screen by the movements of the upper hammer E′.

The rearward movement of the shoe B is limited by a stop-bar, H′, secured to the rear end of the frame A by screws I′, so that the said movement of the said shoe B may be regulated by adjusting the said screws I′.

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

1. The combination, in a middlings-separator, of the closed chest B I, the inclined bolt, the knockers, the blast-fan, and the blast-boards, the latter arranged beneath the head or feed end of the bolt, as shown and described.

2. The combination of the closed chest, the inclined bolt having the finest cloth at the feed end, the knockers, the blast-fan, and the blast-boards arranged beneath the fine cloth at the feed end, for the purpose specified.

3. The combination of the hammer E′, strap F′, hammer G′, and screen L, as and for the purpose specified.

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Witnesses:
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W. L. HEYSER.