2 Sheets—Sheet 1.

C. B. HILL.

Middlings-Separators.

No. 214,388. Patented April 15, 1879.

Fig. 1.

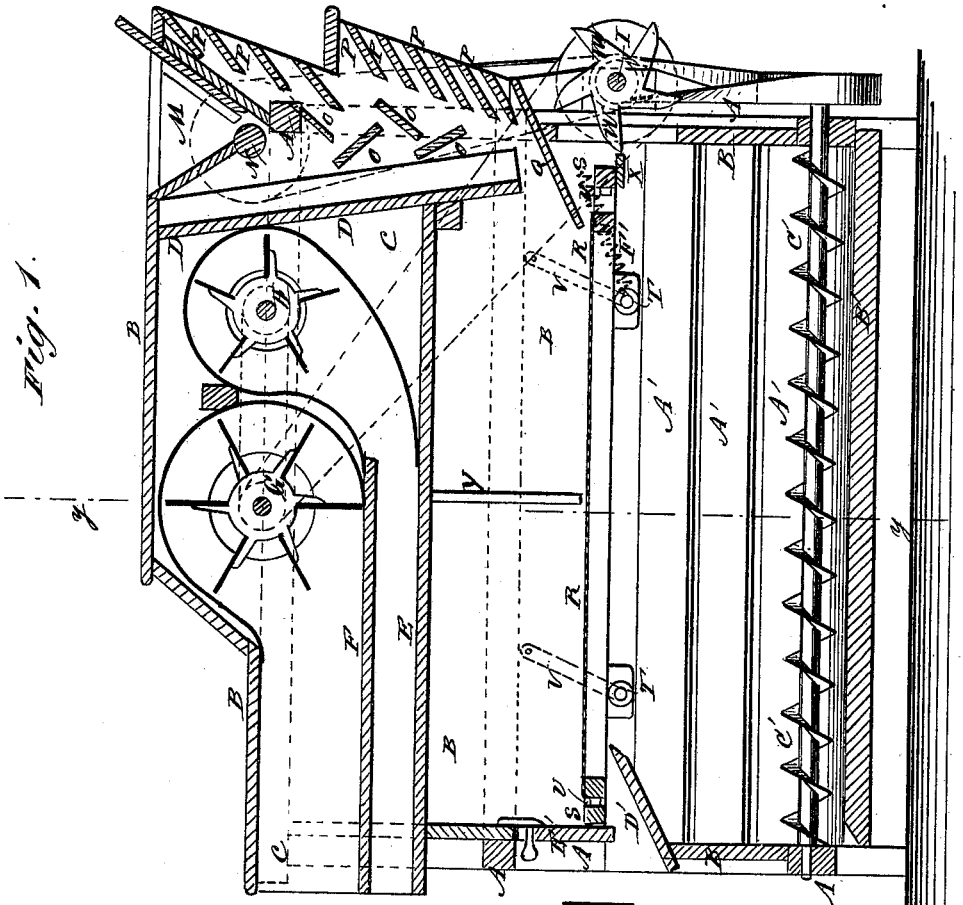
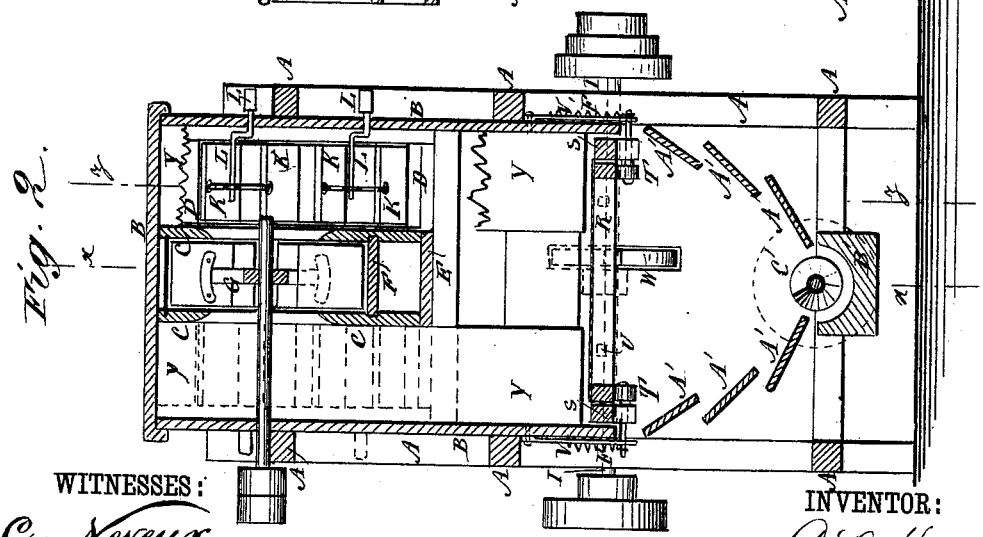


Fig. 2.



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2 Sheets—Sheet 2.

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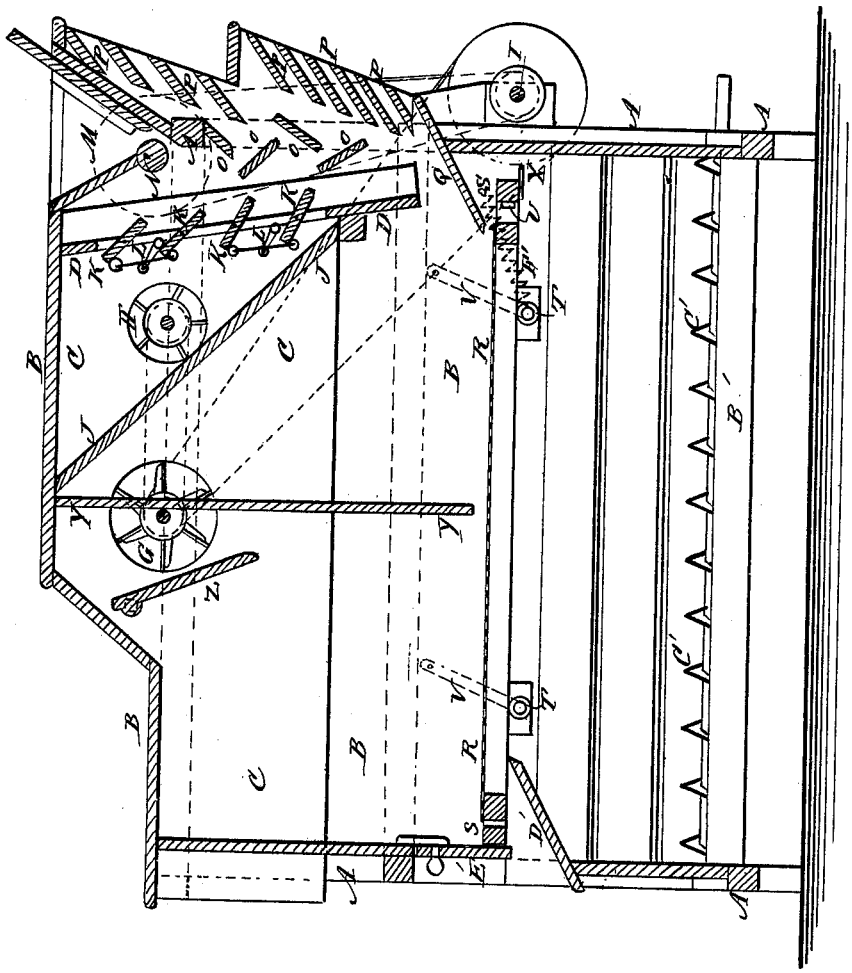
Fig. 3



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UNITED STATES PATENT OFFICE.

CHARLES B. HILL, OF NASHVILLE, TENNESSEE.

IMPROVEMENT IN MIDDLINGS-SEPARATORS.

Specification forming part of Letters Patent No. **214,388**, dated April 15, 1879; application filed July 31, 1878.

To all whom it may concern:

Be it known that I, CHARLES B. HILL, of Nashville, in the county of Davidson and State of Tennessee, have invented a new and useful Improvement in Middlings-Purifiers, of which the following is a specification.

Figure 1, Sheet 1, is a vertical longitudinal section of my improved machine, taken through the line *x x*, Fig. 2. Fig. 2, Sheet 1, is a vertical cross-section of the same, taken through the line *y y*, Fig. 1, and part being broken away to show the construction. Fig. 3, Sheet 2, is a vertical longitudinal section of the same, taken through the line *z z*, Fig. 2.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved machine for purifying middlings, which shall be simple in construction and reliable and effective in operation.

The invention will first be described in connection with the drawings, and then pointed out in the claims.

A represents the frame-work of the machine, the upper and middle parts of which are inclosed with a casing, B.

The upper part of the machine is divided into three compartments by two vertical partitions, C. The front ends of the three compartments are closed by a slightly-inclined partition, D. The rearward ends of the side compartments are closed by the casing B, and the rearward end of the middle compartment is left open. The lower side of the central compartment is closed by a board, E, and the said compartment is subdivided by a horizontal partition, F, forming two discharge-spouts for the two fan-blowers G H, which are placed in the front part of the said central compartment, and are separated from each other by their casings, as shown in Fig. 1.

The fan-shafts revolve in bearings in the frame A, and are driven by belts and pulleys from the driving-shaft I, which revolves in bearings in the lower part of the front end of the frame A.

The air and dust enter the fan-blowers G H through holes or openings in the partitions C around the fan-shafts.

The front parts of the side compartments are subdivided by inclined partitions J, which pass up between the openings leading to the fan-blowers G H. The air and dust enter the front subdivision of the side compartments to pass to the front fan-blower, H, through openings in the side parts of the partition D, which openings are provided with dampers K, operated by cranks or rods L, passing in through the side casing B of the machine.

The middlings are placed in a hopper, M, in the upper part of the front end of the machine, and are fed out through a long narrow opening in its bottom by a roller, N, pivoted to the frame A, and driven by band and pulleys from the driving-shaft I. As the middlings fall from the hopper M they pass down over the outer and inner sides alternately of the zigzag slats or boards O, placed in the front part of the machine, between its end and the partition D. As the middlings are passing over the slats O they are exposed to a draft of air entering through the spaces between the inclined slats P, placed in the front end of the machine, so that the fine light particles and the fuzz that would stick to and clog the screen may be removed from the middlings before they reach the screen. The zigzag boards retard the middlings in their descent, and thus cause them to be longer exposed to the draft of air. The middlings fall from the last slat O to an inclined apron, Q, from which they pass to the screen R.

The frame of the screen R is placed within a frame, S, and rests upon four or more small friction-wheels, T, journaled to blocks attached to the lower sides of the side bars of the said frame S. The screen R is made shorter than the frame S, so that it may have a longitudinal movement within it. To the inner sides of the end bars are attached rubber blocks U, to diminish the jar and noise when the two frames come together. The frame S is supported by four bars or straps, V, the lower ends of which are pivoted to the journals of the friction-wheels T, and their upper ends are pivoted to the casing B.

The bars or straps V are inclined, as shown in Figs. 1 and 3, so that the weight of the frame S and of the screen R may carry them forward when released from the mechanism that carried them rearward; or spiral springs

F′ may be attached to the frame S and to the frame or casing of the machine to carry them forward when released from the mechanism that carried them rearward.

The frame S is pushed rearward by a cam-wheel, W, attached to the driving-shaft I.

The frame S may be protected from being worn by the action of the cam-wheel W by having a metal plate, X, attached to it.

With this construction the screen R will move in each direction farther than the frame S, and at the end of each movement will strike against the said frame with a jar.

The cam-wheel W is placed at one side of the central line of the machine, so as to give the screen R and frame S a slight lateral movement at the same time that it forces them rearward.

The space above the screen R and the frame S and the side compartments of the upper part of the machine are subdivided by a partition, Y, which crosses the openings in the partitions C, through which the air and dust enter the rear fan-blower, G. The air to the rear fan-blower passes up through the screen R, taking the light dust and other light impurities with it, and also, in connection with the jar, keeping the screen clear.

The partition Y divides the blast, the air through the front part of the screen passing up at the front side of the said partition, and the air through the rear part of the said screen passing up at its rear side.

The amount of air passing up through the rear subdivision is regulated by dampers Z, hung in the upper parts of the side compartments, and adjusted by means of knobs or cranks attached to the ends of their rod or shaft.

The air to the rear fan-blower, G, enters below the screen R through the spaces between the side boards A′, attached to the lower part of the machine.

The side boards A′ are inclined, overlap each other, and each lower one is set farther inward than the next upper one, so that they may serve as aprons to guide the middlings into the spout B′, from which they are removed by a screw, C′, swiveled to the frame A, and driven from the driving-shaft I by a band and pulleys.

The coarser middlings that cannot pass through the screen R pass out from the rear end of the said screen R through the discharge-spout D′.

In the rear end of the casing B is formed a door, E′, to give access to the screen R, or to enable the said screen to be changed when desired.

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

1. The combination of the feed-roller N and the inclined zigzag boards or slats O with the hopper M, the inclined slats P in the front end of the machine, and the front fan-blower, H, substantially as herein shown and described.

2. The combination of the valves or dampers K with the partition D, the zigzag boards O, and the front fan-blower, H, for retarding the descent of the middlings, and thus exposing them longer to the draft of air, substantially as herein shown and described.

3. The combination of the rollers T, the frame S, the inclined pivoted supporting-bars V, and the cam-wheel W with the screen R and the driving-shaft I, substantially as herein shown and described.

4. The combination of the vertical partitions C C, the horizontal partitions E F, the inclined partitions J J, the upright partitions Y, and the dampers K and Z with the frame and casing A B, the feed-hopper M, the zigzag boards O, the screen R, and the two fan-blowers G H for regulating and controlling the passage of the middlings and the draft of air, substantially as herein shown and described.

CHARLES BROWN HILL.

Witnesses:
GUSTAVUS WERIN,
WILLIAM L. HORN.