L. GATHMANN.
Middlings-Separator.

No. 201,234. Patented March 12, 1878.

Fig. 1

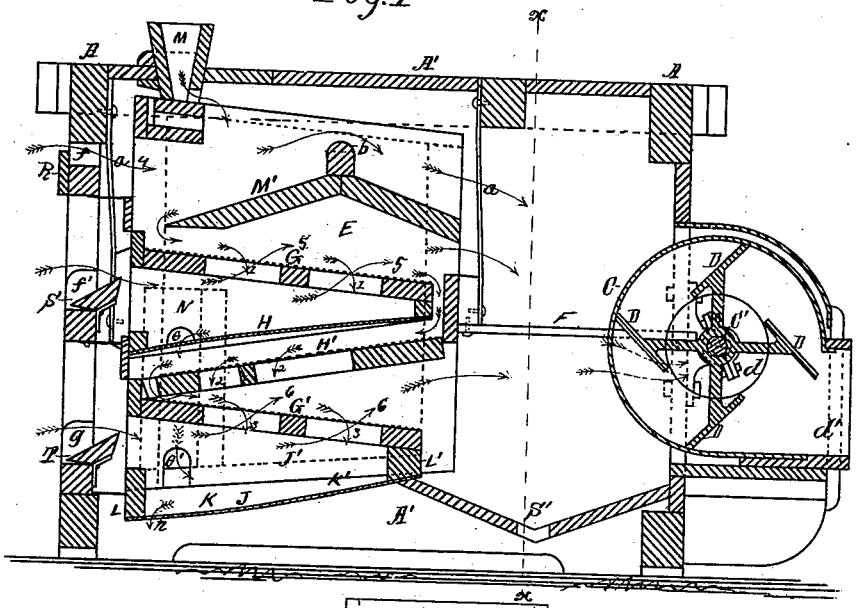
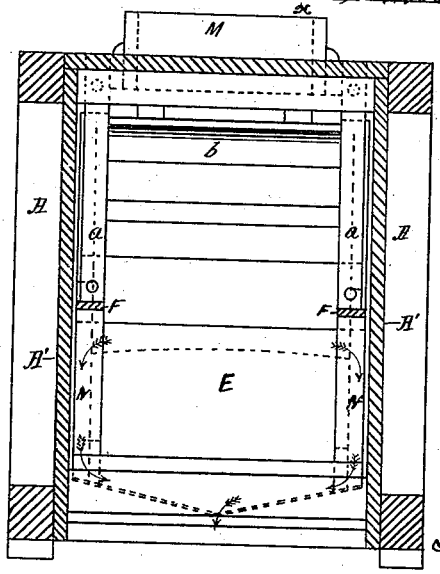


Fig. 2



Witnesses
N. H. Sherburne
G. P. Hoffman

Inventor
Louis Gathmann
By Dudley & Sherburne
Attys

UNITED STATES PATENT OFFICE.

LOUIS GATHMANN, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN MIDDLINGS-SEPARATORS.

Specification forming part of Letters Patent No. **201,234**, dated March 12, 1878; application filed August 9, 1877.

To all whom it may concern:

Be it known that I, LOUIS GATHMANN, of Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Middlings-Purifiers; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a vertical central longitudinal section of a middlings-purifier embodying my invention; and Fig. 2 represents a vertical transverse section of the same, taken on the line *x x* in Fig. 1.

Like letters of reference indicate like parts.

The object of my invention is to improve the construction and operation of middlings-purifiers; and my invention consists in the construction and arrangement of the screens and carriers, as hereinafter more fully described and claimed.

In the drawing, A represents the frame, and A′ the external or main case, which incloses the operating parts of the machine. C represents the fan-case, which is located at the rear end of the main case, as shown in Fig. 1, and at the center thereof. C′ represents the main shaft journaled to the frame A, and so as to extend transversely across the machine and centrally through the fan-case. D represents the fans, which are mounted upon the shaft C′ within the fan-case, and are so arranged as to freely revolve therein. E represents the shoe, which is suspended within the front end of the main case A′ by means of a series of springs, *a*, one of which is attached to each corner of the shoe and to the case or frame, so as to allow the shoe to freely oscillate. F F represent connecting-rods, which are attached at one end to the sides of the shoe, and are eccentrically connected at the opposite end to the shaft C′, by which means an oscillating movement is imparted to the shoe by the rotation of the shaft.

The fan-case is provided at each end with an inlet-opening, *d*, which communicates with the interior of the case, and through which opening the air is drawn into the case by the rotation of the fans, and upon one side with an exit-opening, *d′*, through which the air escapes from the fan-case.

G and G′ represent two separating-screens, which are arranged within the shoe, and so as to incline downward toward the rear end of the machine. H′ represents a separating and distributing screen, which is arranged within the shoe, so as to incline in the opposite direction from screens G G′, and having its head toward the rear end of the machine. The screens G G′ are covered with cloth of different degrees of fineness, the cloth upon the upper screen G being finer than the cloth upon the lower screen G′, and the cloth upon the front end of the screen G′ at *c* being finer than the cloth at the rear end at *c′*. The screen H′ is also covered with cloth which may be of different degrees of fineness, the finer being toward the head and the coarser toward the tail of the screen.

H represents a carrier-board, which is located immediately under the screen G, and is so arranged as to incline downward toward the front end of the machine. J is the bottom board of the shoe.

M represents the hopper, which is arranged on top of and near the front end of the machine. M′ is a distributing-apron, which is located within the shoe above the screen G. This apron is provided with an upward-projecting rib, *b*, as shown in Fig. 1, the object of which is to retard and prevent good middlings from being carried off by the air-current, while the light particles will pass over.

N N are conducting-spouts, located on opposite sides of the shoe, and are so arranged that each communicates at its upper end with the space between the screen G and carrier H through the opening *c*, and at its lower end with compartment K through an opening, *e′*, as shown in Fig. 1.

The main case at the front end of the machine is provided with openings *f f′* and *g*, extending transversely across the machine, and through which the air passes into the machine. The said openings are so arranged that the current of air passing through the openings *f* will pass over the apron M and across the path of the middlings falling from the hopper, and the air-current passing through the

opening f' will pass through the screen G, and the air-current passing through the opening g will pass through the screen G′ and across the path of the material falling through the meshes of the screen H′.

R, S, and T represent valves, which are located over the respective openings f, f', and g, and so arranged as to admit of being opened or closed to regulate the amount and force of the air-current passing through the said openings.

S′ is a discharging-hopper, which is located below the plane of the shoe, between the shoe and the fan-case, and into which the offal is discharged from the screen G′, and from which it may be drawn off at will.

The operation of said middlings-purifier is as follows: Motion is first imparted to the moving parts of the machine by means of any suitable motor, (not shown,) when the draft produced by the rotary motion of the fans causes a current of air to pass through the respective openings f, f', and g into and through the screens, as previously described. The unpurified middlings are then fed into the hopper M, and from thence fall upon the apron M′ across the current of air which passes through the opening f, as indicated by arrows 4, which air-current carries off the lighter impurities. The middlings then fall from the apron M′ to and upon the head of the screen G, the finer middlings falling through in the direction indicated by arrows 1, and against the current of air which is passing in the direction indicated by arrows 5, and which prevents the impurities from passing through with the middlings. These middlings, which pass through the screen G, fall upon the carrier-board H, and are discharged into the spouts N N through the openings c, and fall into compartment K, from whence they may be drawn off at will through the opening n. The coarser middlings and offal discharged upon the screen H′ pass over and off the same, and fall upon the head of the screen G′, while the finer middlings pass through said screen H′, as indicated by arrows 2, and fall across the air-current which passes through the screen G′, as indicated by arrows 6, and which current of air carries off the remaining light impurities, and the middlings and offal upon the screen G′ pass over the same, the finer middlings passing through the meshes thereof at c, and fall into compartment K, while the next coarser grade passes through the meshes at c', as indicated by arrows 3, and fall into said compartment K, from whence they may be drawn off with the finer middlings through the opening n, and the offal passes off the screen G′ and falls into the hopper S′.

The object of the screen H′ is to allow the fine impurities to pass through the same, so as to be carried off by the air-current passing through the screen G′, and so as to prevent such particles from coming in contact with the said screen.

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

In a middlings-purifier, the combination, with the screens G G′ and carrier-board H, of the screen H′, interposed between the carrier-board and screen G′, and delivering upon the latter, substantially as and for the purpose specified.

LOUIS GATHMANN.

Witnesses:
N. C. GRIDLEY,
N. H. SHERBURNE.