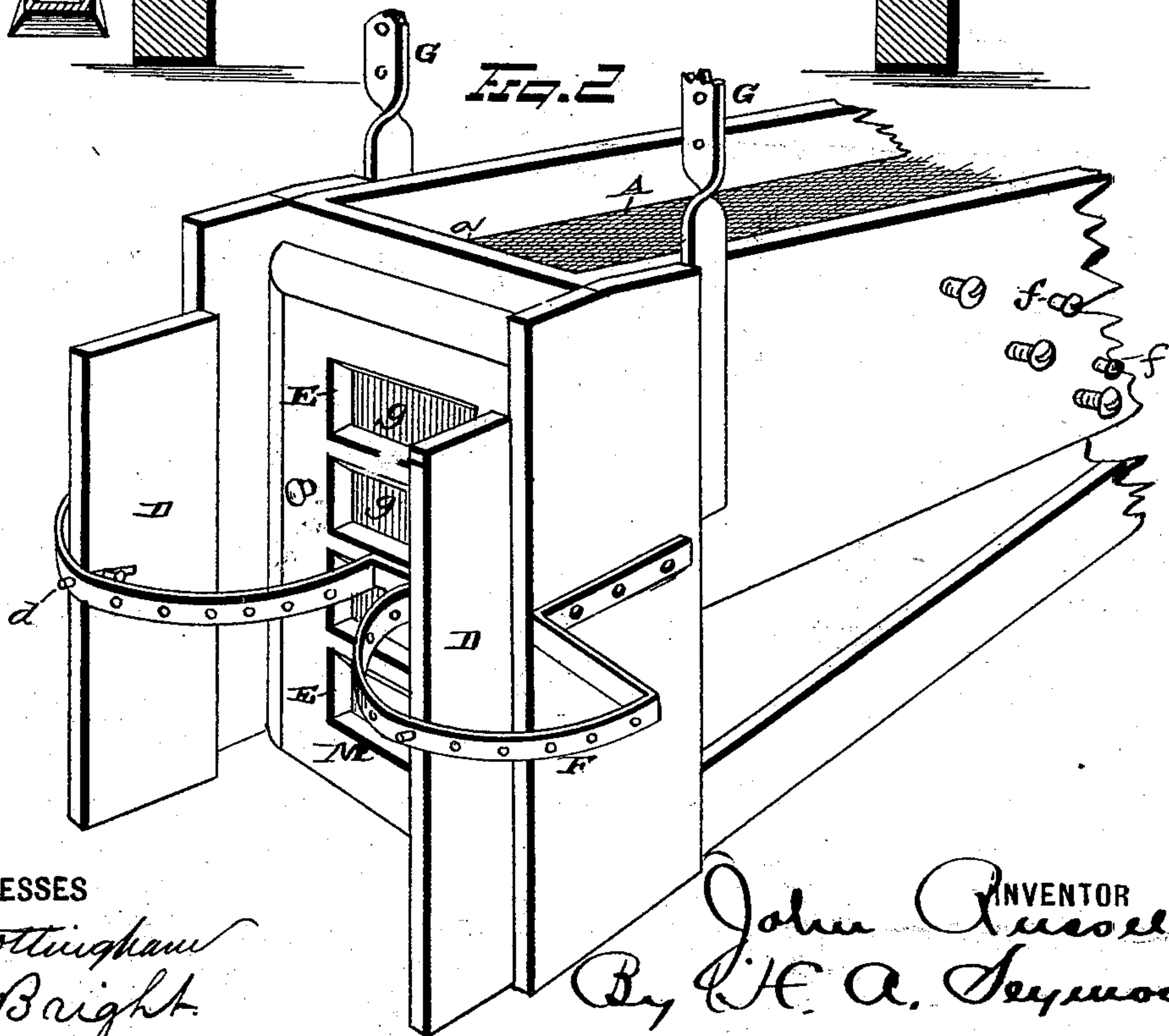
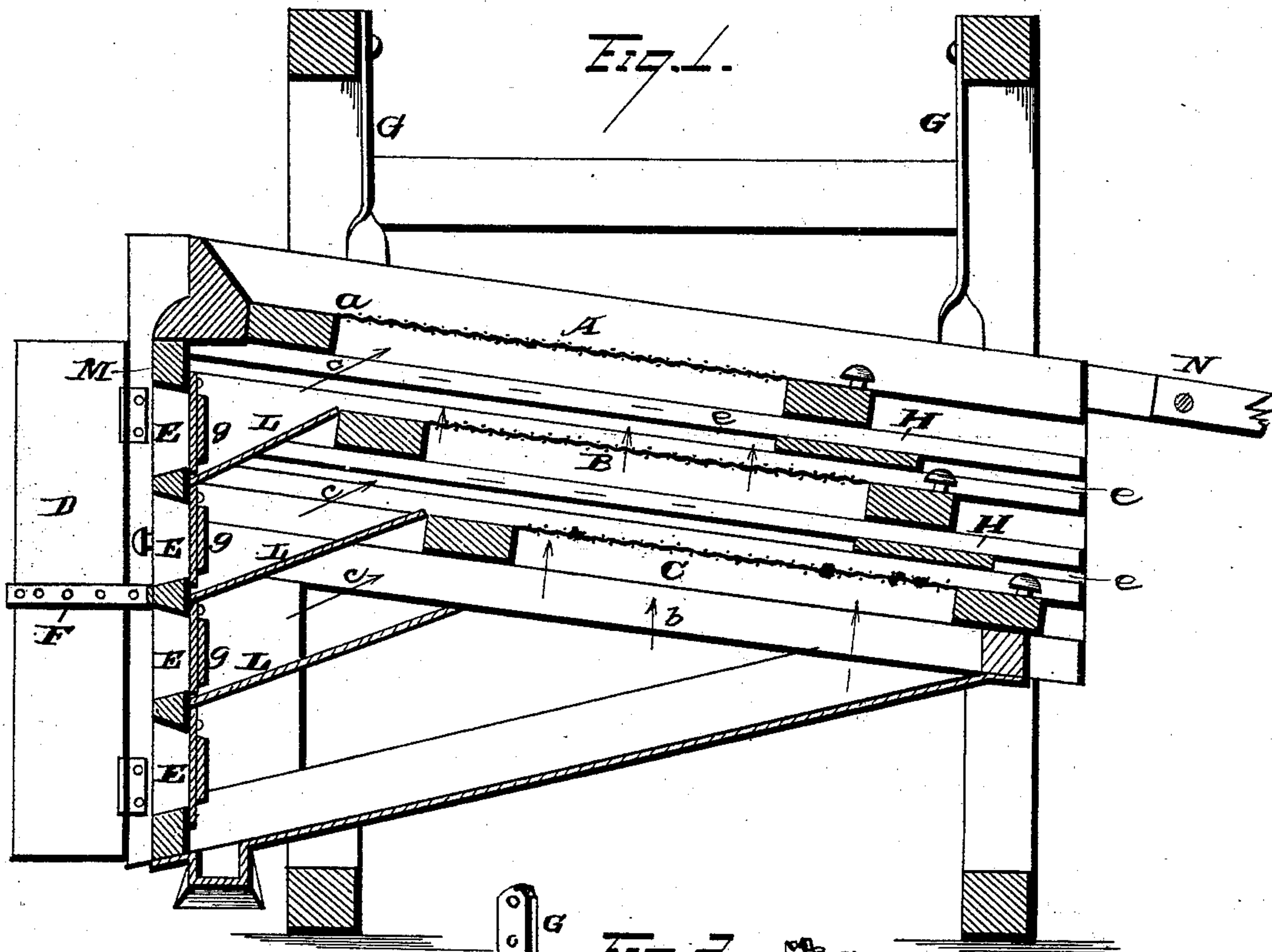


J. RUSSELL.
Middlings Purifiers.

No. 223,818.

Patented Jan. 27, 1880.



WITNESSES
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JOHN RUSSELL, OF PLATTSBURG, MO., ASSIGNOR TO HIMSELF, GEORGE P. FUNKHOUSER, AND WILLIAM W. SCUTT, OF SAME PLACE.

MIDDLINGS-PURIFIER.

SPECIFICATION forming part of Letters Patent No. 223,818, dated January 27, 1880.

Application filed August 15, 1879.

To all whom it may concern :

Be it known that I, JOHN RUSSELL, of Plattsburg, in the county of Clinton and State of Missouri, have invented certain new and useful Improvements in Middlings-Purifiers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to middlings-purifiers, and is designed to provide a construction which is simple and can be operated with the expenditure of comparatively little power. I dispense with any kind of fan, and also with a dust-room, thereby obviating expense, dust, and danger attendant upon the use of a fan and dust-room.

The machine is connected to a crank or other actuating means, which shakes the sieves and produces the necessary air-currents.

The purifier has but one motion. This motion, together with the construction of the machine, shakes the sieves and forms and directs the currents of air. The sieves can be leveled, or given more or less fall, while the machine is operating. There is also a cut-off under each sieve, under the control of the miller, adapted to be regulated while the machine is running. The currents of air are also under control, so that there is no greater air-current generated than is necessary, and as much as is required for the different kinds of middlings.

In the drawings, Figure 1 is a longitudinal central section of my invention. Fig. 2 is a view of the valve end of the same.

The middlings enter the machine on sieve A at *a*. There are two positive currents of air between each two sieves, passing in the direction the arrows *b c* indicate, the first and strongest current, *b*, passing up through the three sieves A, B, and C. This current under sieve A keeps the light particles afloat, while the motion of the sieve carries them off. The middlings passing through said sieve are evenly distributed in the same current, passing up through the second sieve, B. This even distribution enables this current to weigh every

particle, keeping the light particles afloat, while the heavier fall on said second sieve.

There is, in addition to the above-described air-current, a second current of air, striking under the first sieve in the direction indicated by arrow *c*. At the point of contact of this second air-current with the sieve the latter is most heavily loaded, and the consequent resistance of the load changes the current downward between the first and second sieves, carrying with it the particles held in suspension by the upward current *b*. Precisely the same operation with similar currents of air takes place between sieves B and C. The purified middlings pass from the machine in a small spout, ready to be conveyed to the burrs. The offal passes over the lower end of the machine into a spout, and can be run into a sack, box, or other receptacle.

It will thus be seen that there are three distinct operations, which enables me to use coarser sieves, making a more perfect separation, and consequently a greater percentage of pure middlings, than can be accomplished if one sieve had to make the separation.

The currents of air are regulated by the two doors D, located at the valve end of the machine, and which are maintained in any desired position, whereby the valve-openings E may be practically rendered more or less closed.

Guards F are provided with a series of perforations, with which latter spring-bolts *d*, secured to said doors, engage. By retracting said bolts the doors may be swung in or out, and the valve-openings be correspondingly permitted to pass full or partial air-currents therethrough.

The upper extremities of the springs G, which suspend the machine, are adapted, by a series of holes and suitable fastening devices, to vertically adjust the machine, and thereby regulate the fall of the sieves.

Cut-offs H, located respectively under the tail of each sieve, have sliding movement in grooved ways *e*, and are maintained in adjustment by set-screws *f*.

Below the upper or receiving end of each sieve an incline, L, is located, said incline be-

ing of different lengths, to correspond with the different distances at which the respective sieves are located from the valve end of the machine. The air-passages thus formed register with the valve-openings E, which latter are severally provided with automatic inwardly-opening valves *g*, hinged at their upper portions to the inner side of the door M.

A pitman, N, connects the machine to a crank having a certain throw and making the necessary number of revolutions, thereby shaking the sieves, and at the same time, by their means, forming an air-pump to produce the necessary air-current.

It will be observed that specks will not pass through the sieves during the intervals when the valves are closed, and the currents of air thereby shut off, the reason being twofold: First, specks or fluff once afloat in a current of air fall very slowly, and before they can reach the cloth they are met successively by the second and third currents from the valve-openings; secondly, the constant irregularity of the air-currents, while keeping the impurities afloat, prevents the cloths from clogging by reason of the motion imparted thereto by said air-currents acting conjointly with the movement of the machine. This second reason brings into view a most important feature and distinctive characteristic of my invention.

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

1. A middlings-purifier adapted to be operated without a fan, the same consisting in the combination, with a frame provided with sieves placed one above the other and devices

which support the frame in the open atmosphere, of means which vibrate said sieve-frame longitudinally and automatic valve mechanism which controls the currents of air passing lengthwise through said sieve-frame, substantially as set forth.

2. A middlings-purifier adapted to be operated without a fan, the same consisting, essentially, in the combination, with a series of sieves and springs which support them in the open atmosphere, of actuating mechanism which shakes the sieves longitudinally and valve mechanism which regulates the air-current thus produced through the machine, substantially as set forth.

3. In a middlings-purifier constructed to be operated without a fan, the combination, with the sieves and the inclines located beneath their head ends, of the valve-openings provided with automatic inwardly-opening valves, and respectively registering with the air-passages formed by said inclines, substantially as set forth.

4. In a middlings-purifier constructed to be operated without a fan, the combination, with the sieves, inclines, and valve-openings provided with valves, of the doors, which permit more or less air to enter said valve-openings, and adjusting mechanism which maintains said doors in desired position, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 7th day of August, 1879.

JOHN RUSSELL.

Witnesses:

A. W. FREDERICK,
GEORGE R. RILEY.