C. E. McNEAL.

Middlings Purifiers.

No. 135,571. Patented Feb. 4, 1873.

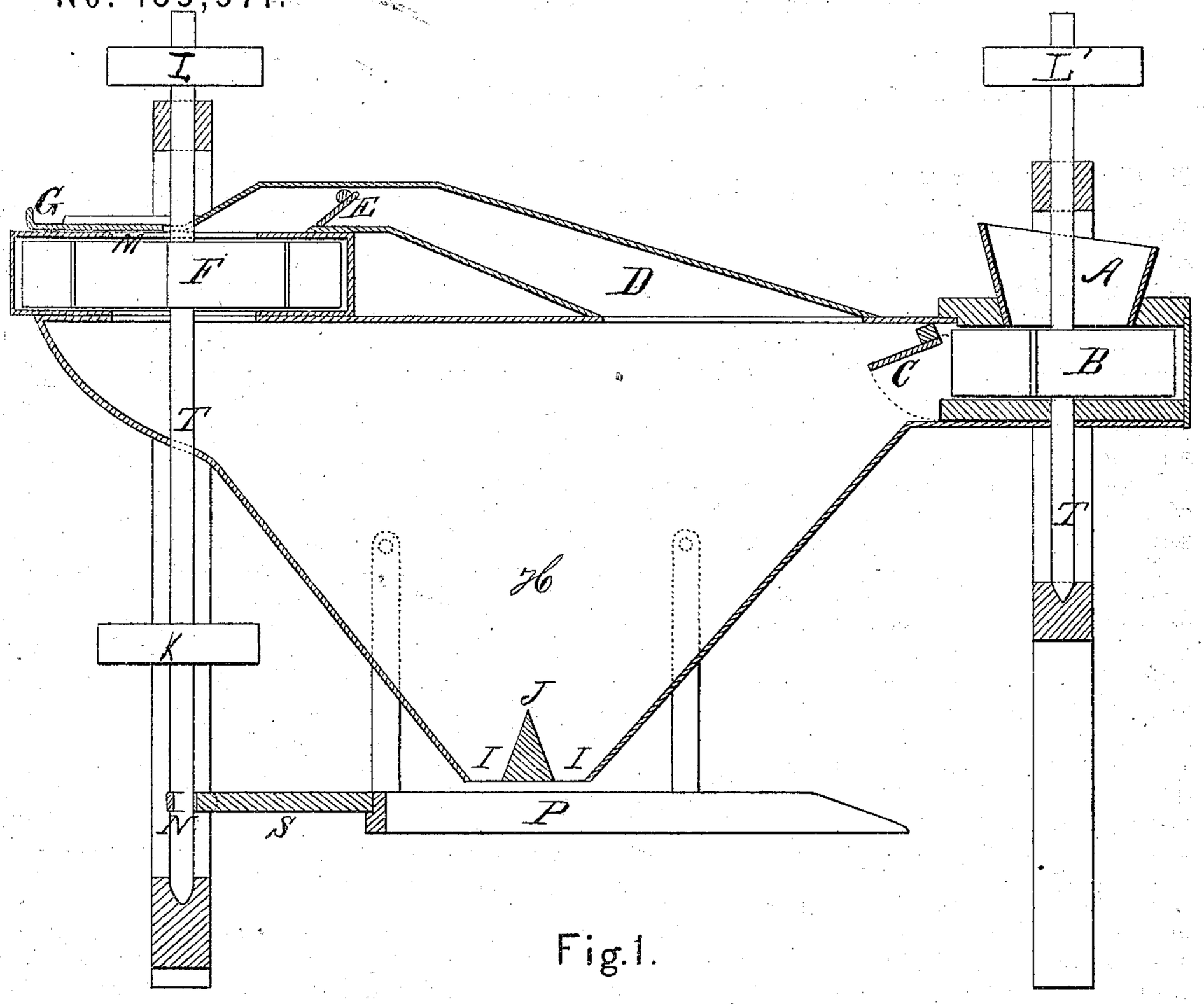

Fig. 1.

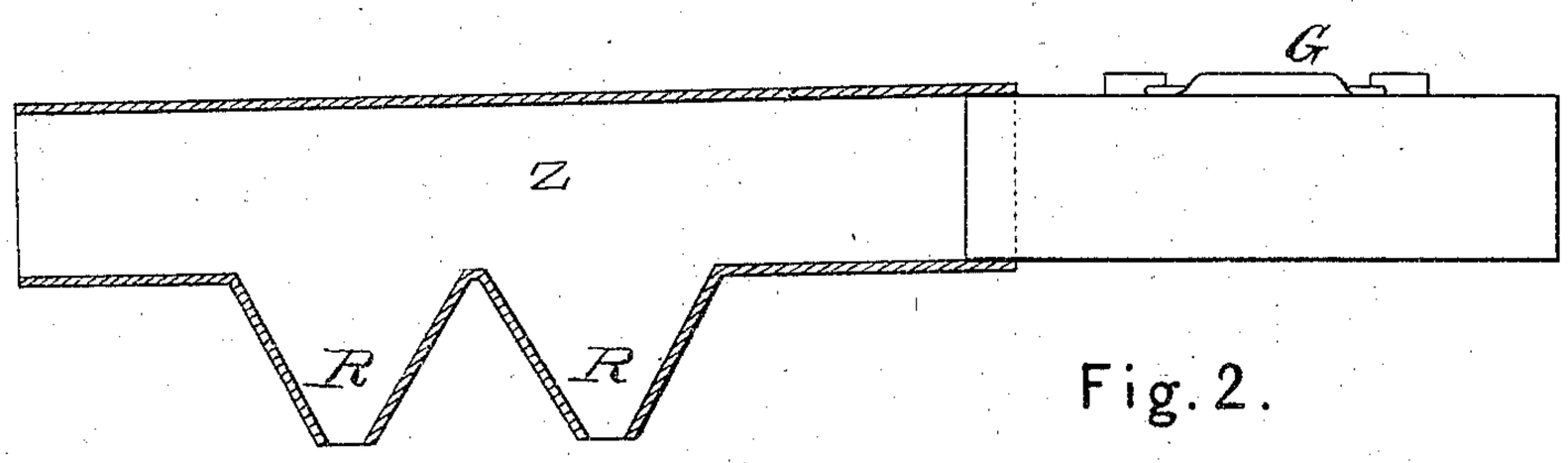

Fig. 2.

WITNESSES.

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UNITED STATES PATENT OFFICE.

CHARLES E. McNEAL, OF SILVER CREEK, NEW YORK.

IMPROVEMENT IN MIDDLINGS-PURIFIERS.

Specification forming part of Letters Patent No. **135,571**, dated February 4, 1873

To all whom it may concern:

Be it known that I, CHAS. E. McNEAL, of Silver Creek, in the county of Chautauqua and State of New York, have invented a new and valuable Improvement in Middlings-Separators; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a section view of my machine. Fig. 2 is a sectional view of my discharge-spout.

This invention has relation to certain improvements in middlings-separators; and it consists in the employment, in connection with an air-chamber, wherein the currents are created among the particles of middlings, bran, and dust, of the force and suction fans acting in conjunction with each other; in the construction of the angular air-chamber and its double air-inlets or discharging-openings separated from each other by a prismatic partition; in the arrangement of the upper dust-flue in connection with the fans and air-chamber; and, finally, in the general construction and novel arrangement of the middlings-separating machine, including all those parts which are essential to its successful operation, as hereinafter more fully described.

In the accompanying drawing, the letter A indicates the hopper, into which the middlings are fed, passing into the small fan B, which operates to thoroughly whip and disintegrate the particles, and to throw them out into the large air-chamber H. By this means an air-current is created from the fan B out into the chamber H, and the heavier particles of the middlings are thrown ahead of the light dust and bran outward and somewhat downward into this air-chamber. For the purpose of directing the middlings to any part of the chamber H an adjustable cant-board, C, is usually employed. D indicates an air-tube or leg above the main air-chamber, having a large entrance opening just in front of the small fan B through the upper wall of the chamber H, and connected at its other end with the case of the large suction-fan. Into this leg or tube the lighter particles are drawn as they eddy under its entrance in the large chamber H directly after being thrown from the small fan B, and are conducted directly to the large fan entering the case at its top. A valve, E, may be employed for the purpose of regulating the draft through this leg. F represents the large suction-fan situated at the opposite end of the air-chamber H, and operating to draw air into this chamber through the discharge-openings I I, thus effecting two distinct separations as the middlings fall through said openings. It also serves to draw through the chamber H the air thrown into it by the fan B, giving an upward tendency to this current, and favoring the rise of the dust and light particles. It creates a draft through the leg D, and, finally, it draws all the air entering the chamber H, together with all the dust and lighter particles, into itself, and discharges the same through the spout Z. G indicates a slide-valve for the purpose of letting air into the top of the fan F, and thereby regulating the draft through the air-chamber H. The large air-chamber H is preferably constructed in triangular form, its apex being downward. At this point the discharge-openings I I are made, said openings being separated from each other by a prismatic partition, J, having an angular edge upward and its lower side horizontal. This air-chamber receives the currents from these openings and from the hopper-fan B, and serves to keep the middlings confined in space while being acted upon by said currents.

It is observed that the widest portion of this chamber is near its top, or in the direction of the current from the small fan B. Space is thus given for the heavy particles of the middlings to be thrown as far forward as is consistent with the power of the small fan, thereby spreading said particles widely in the horizontal direction, and enabling the currents, through the leg D and toward the opening M of the suction-fan, to separate more effectually the lighter particles.

The partition J between the openings I I serves to separate the two currents of air entering through said openings, keeping them for a certain space at a distance apart, thereby distributing the upward currents more widely through the chamber, so as to lift or buoy the dust and lighter particles as much as possible.

K represents the driving-pulley. L L′ indicate the pulleys, by means of which the con-

nection is made between the shafts T T. N is the eccentric for operating the sieve P through the pitman S. Z represents the discharging-spout of the suction-fan, through which the dust and light particles are conveyed away. This spout is provided with angular receptacles R R, open at the bottom, into which the heavier particles of the separation will fall, indicating the strength or character of the separation.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with the air-chamber H, of the force-fan B arranged at one end thereof to throw the middlings into said chamber, and of the suction-fan F arranged at the opposite end of the chamber, substantially as specified.

2. The triangular air-chamber H having its apex downward and open for the admission of air, and having the fans B F at opposite ends of its base, which is turned upward, substantially as specified.

3. The combination, with the fans B F and air-chamber H having double air-inlets I I at its lower end, of the air-leg D leading from the top of said chamber near the fan B into the top of the fan F.

4. The chamber H having the double air-openings I I separated by the prismatic partition J having its horizontal side downward, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

CHARLES E. McNEAL.

Witnesses:

ROYAL P. WARD,

HENRY McNEAL.