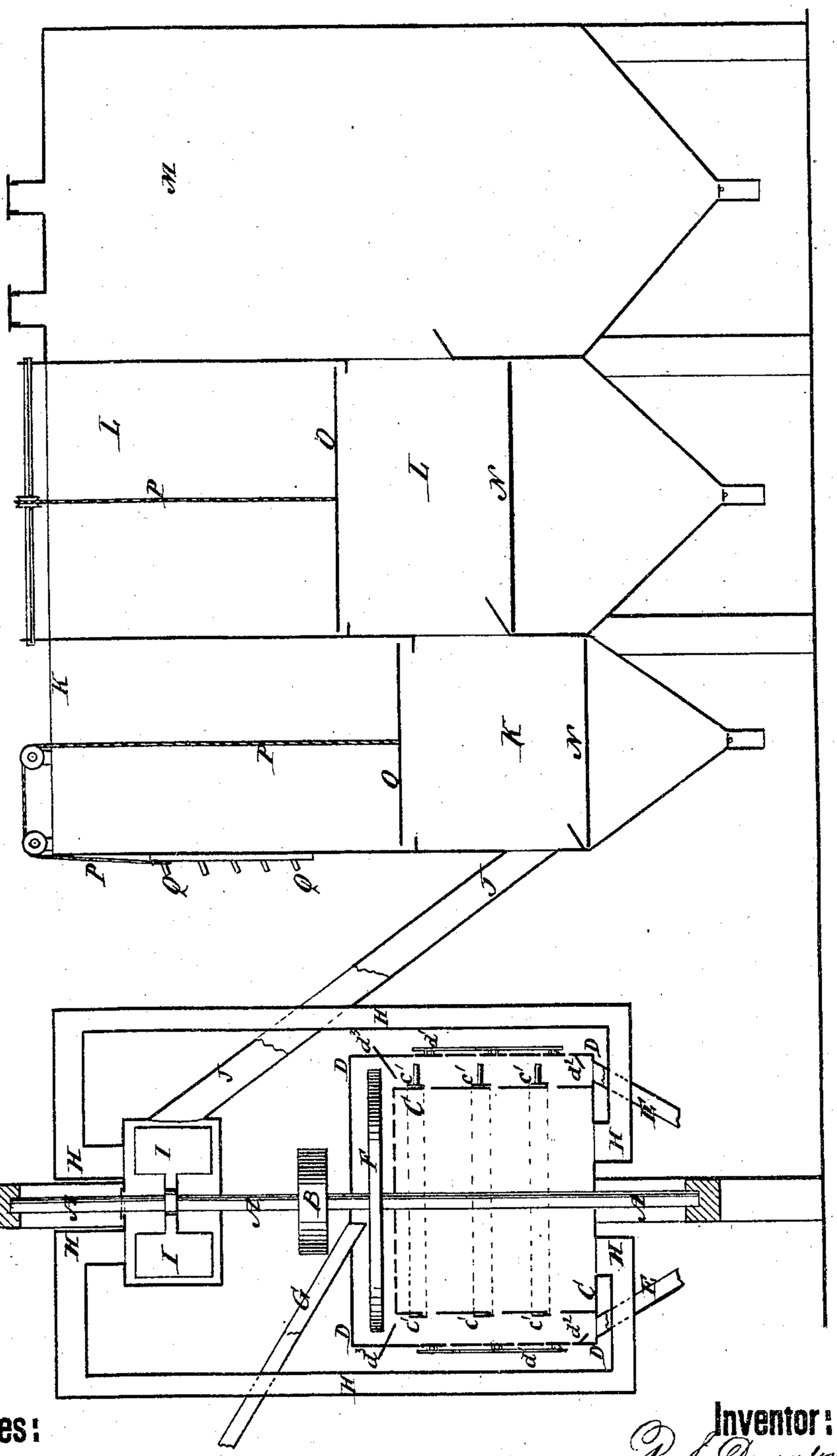
R. L. DOWNTON.

Middlings Separators.

No. 143,442. Patented Oct. 7, 1873.

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ROBERT L. DOWNTON, OF COLLINSVILLE, ILLINOIS.

## IMPROVEMENT IN MIDDLINGS-SEPARATORS.

Specification forming part of Letters Patent No. **143,442**, dated October 7, 1873; application filed May 24, 1873.

*To all whom it may concern:*

Be it known that I, ROBERT L. DOWNTON, of Collinsville, in the county of Madison and State of Illinois, have invented a new and useful Improvement in Middlings-Separator, of which the following is a specification:

The figure is a detail vertical section of my improved middlings-separator.

My invention has for its object to furnish an improved apparatus for separating middlings into grades, so as to enable a larger per cent. of first-grade flour to be made from the wheat by mixing with it the first grade or grades of the middlings, which contain a greater proportion of the wholesome and nourishing parts of the wheat, and which are thus returned to the flour without affecting its color or lowering its grade. The invention consists in the drum, provided with openings and with slotted bands, in combination with the casing provided with adjustable openings, the distributing-disk, and the fan-blower, and in the series of chambers provided with inlet and outlet openings at a different level, with slides and adjustable partitions, except the last chamber, in combination with the fan-blower, the outer case, the drum, and the distributing-disk, as hereinafter fully described.

A is a vertical shaft, which is provided with a pulley, B, to which the power is applied. The shaft A revolves in a stationary drum, C, in the top and sides of which are formed openings. The openings in the sides of the drum C should be long and narrow, and the said drum has bands $c'$ passed around it, having similar openings formed in them, so that by adjusting the said bands the said openings may be made larger or smaller, as required. The drum C is surrounded by an outer case, D, in the sides of which are formed openings, which are regulated by slots $d^1$, something in the manner of venetian blinds. In the lower part of the space between the casing D and drum C is secured an inclined apron, $d^2$, upon which the first grade of middlings falls, and passes thence through the spouts E to a receiver. In the upper part of the space between the casing D and drum C is secured an inclined apron, $d^3$, which may be moved out and in, as may be required, to cause the middlings to pass down close to the drum C. To the shaft A, in the space between the tops of the drum C and casing D, is secured a wheel or disk, F, which receives the middlings from a spout, G, and distributes them by centrifugal force upon the inclined apron $d^3$. H are pipes leading out through the bottom of the drum C, and passing to the fan-blower I, which is attached to the shaft A or to some other shaft, as may be most convenient.

From the fan-blower I a pipe, J, leads into the first of a series of chambers, K L M, and the blast passes thence through the other chambers of the series, and escapes from the last one through suitable openings in its top. The ingress-opening in each chamber is made at a lower level than its egress-opening, so that the air will have a chance to expand, and thus allow the heavier particles to fall in the successive chambers, thus grading the middlings. The chambers, except the last, are provided with slides N to regulate the amount deposited of each grade, and with horizontal partitions O in their upper parts, which may be raised and lowered to regulate the expansion of the air, and, consequently, the amount of middlings deposited of any particular grade. The partitions O are raised and lowered by cords P attached to them, and which pass out through the tops of the chambers over guide-pulleys, and are secured to one or another of a series of pins, Q, attached to the sides of the said chambers, the particular pin to which the cord P is attached indicating the height to which the partition has been raised.

The operation is as follows: The unsorted middlings pass through spout S against the disk F, which distributes them centrifugally upon the inclined aprons $d^3$, whence they pass down the heavier to incline $d^2$, and the lighter into the cylinder C. The latter are drawn by the suction-fan I through one pipe, H, and discharged through another into a chamber, K. Here the air-blast is regulated to cause a deposit of a second grade, while the lighter passes on to another chamber. This operation is continued until as many grades are obtained as may be desired.

The adjustable openings in drum C and case D, together with pipes H, allow the air to be

drawn therethrough by the suction-fan and forced through the other pipes, the blast carrying the middlings therewith.

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

1. The drum C, provided with openings and with slotted bands, in combination with the casing D provided with adjustable openings, the distributing-disk F, and fan-blower I, substantially as herein shown and described.

2. The series of chambers K L M, provided with inlet and outlet openings at a different level, with slides N and adjustable partitions O, except the last chamber, in combination with the fan-blower I, the outer case D, the drum C, and the distributing-disk F, substantially as herein shown and described.

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