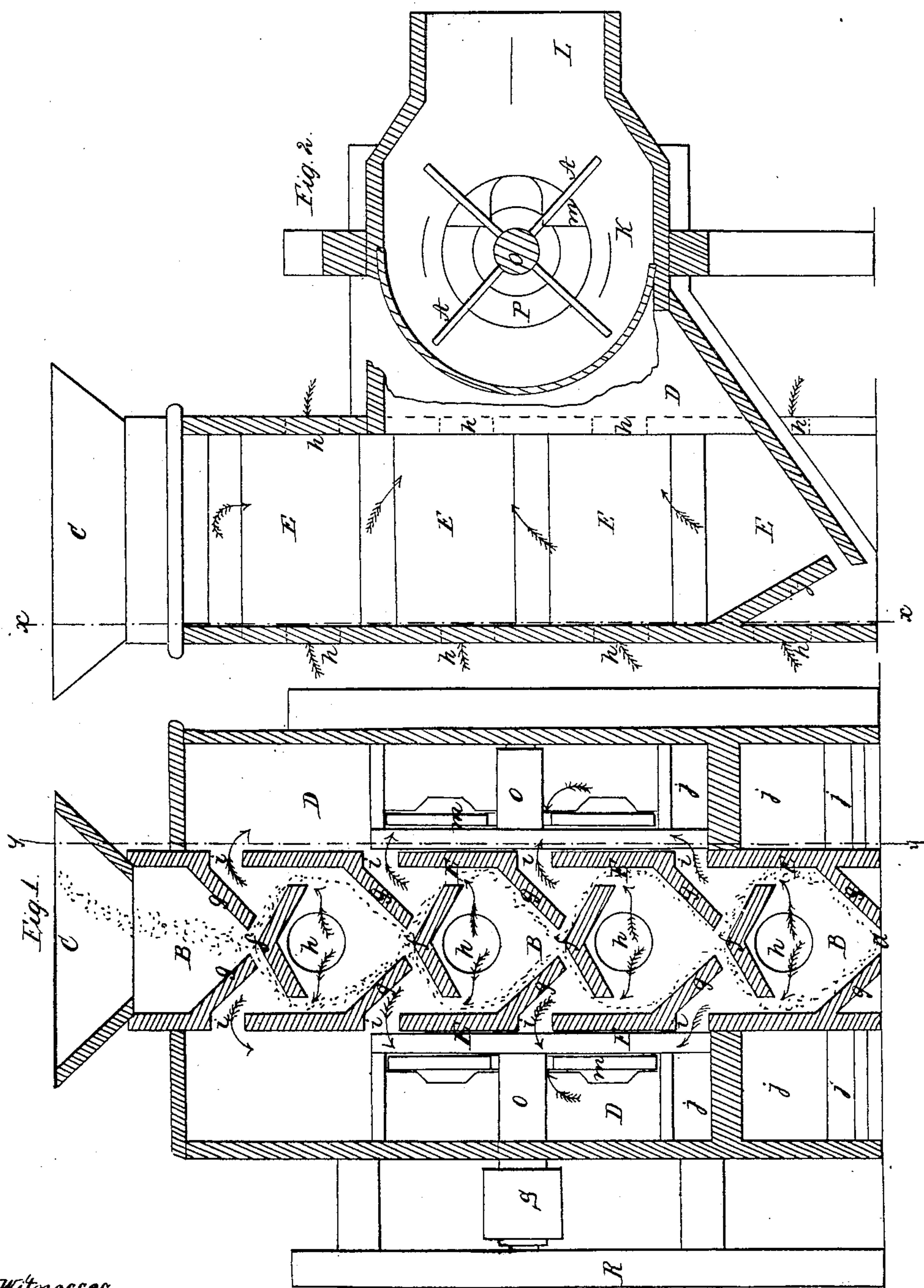


G. ARROWSMITH.
GRAIN SEPARATOR.

No. 29,045.

Patented July 10, 1860.



Witnesses,
S. Gallie
James Jones

Geo. Arrowsmith Inventor,
By his attorney, J. Fraser.

UNITED STATES PATENT OFFICE.

GEORGE ARROWSMITH, OF LOCKPORT, NEW YORK.

GRAIN-SEPARATOR.

Specification of Letters Patent No. 29,045, dated July 10, 1860.

To all whom it may concern:

Be it known that I, GEORGE ARROWSMITH, of Lockport, in the county of Niagara, in the State of New York, have invented a new and Improved Grain-Separator; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a vertical section on the line *x x* of Fig. 2. Fig. 2, is a vertical section on the line *y y* of Fig. 1.

Similar letters refer to corresponding parts in both the figures.

As represented in the drawings my improved machine consists of an arrangement of three chambers or apartments, provided with the appropriate means of separation, and combined with a suction fan or blower A.

B is the principal chamber of separation, into which the grain enters at the top, C, through a spout or other conductor, and falls by its weight to the bottom, where it emerges at *d*. In its descent it is forced to pursue a very tortuous course, and is repeatedly divided into thin columns or sheets, each of which is subjected to a blast to deprive it of its impurities. These results are produced chiefly by the series of angular partitions *f f*, and inclined boards *g g*, the former of which, being arranged at intervals in the center, divide the grain by presenting a ridge or obtuse angle to its descent, and it diverges to either side of the center, striking the side walls E E, whence it is conducted again to the center by the inclined planes, *g g*, to be again separated as before. Immediately under each of the angular partitions is an orifice *h*, through the wall or case communicating with the external air, through which a blast enters, and is divided as shown by the arrows, and after passing through the descending grain, emerges at either side through openings *i i*, directly under the inclined boards *g*. By the operation of these numerous blasts upon the grain all the dust, chaff and refuse, as well as the light and imperfect grain, are taken up and carried into the side chambers, D D, where another separation is effected,—that of the dust and chaff from the light grain. The force of the blasts while passing the narrow courses assigned it in chamber B, is strong enough to remove all but the sound

and perfect kernels of grain, but when they emerge into chambers D D, that force is considerably diminished from the increased space, so that the imperfect grain is allowed to fall while the impurities are carried with the current through side openings in the fan-chamber, K, and thence are driven off through the blast-spout, L, to any desired place of deposit. The light grain is received by the inclined boards, *j j*, which convey it to suitable receptacles.

It will be borne in mind that the fan A, acts by suction, and that the separation is wholly effected during the induction of the blasts. These blasts enter apertures in both sides of chamber B, the position of those in front corresponding with those shown in Fig. 1, as indicated by the arrows and dotted lines in Fig. 2.

The number of dividing partitions *f* and their adjuncts, *g g*, and *h, i*, is not necessarily specific, and may be increased by reduplication, the effect of every additional one being a re-subjection of the grain to the blast. A series of four is found sufficient for all ordinary kinds of grain.

The force of the blast is regulated by slides *m* which regulate the amount of the openings *p* which surround the shaft of the fan, connecting its chamber with chambers D D. Shaft O of the fan, extends through the walls which inclose the separating chambers and has its bearings in the exterior frame R R.

S is a pulley to which the driving power is applied from any convenient shaft.

The machine is very simple and inexpensive, and its operation thorough and efficient.

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

The construction and arrangement of the separating chamber B, consisting of the alternate series of angular dividing partitions *f*, and opposing inclined planes *g g*, with the blast orifices *h h* and *i i* operating in connection with the fan A, and secondary chamber of separation, D D, substantially as and for the purposes set forth.

GEO. ARROWSMITH.

Witnesses:

GEO. W. CATHSAN,
A. T. PRENTISS.