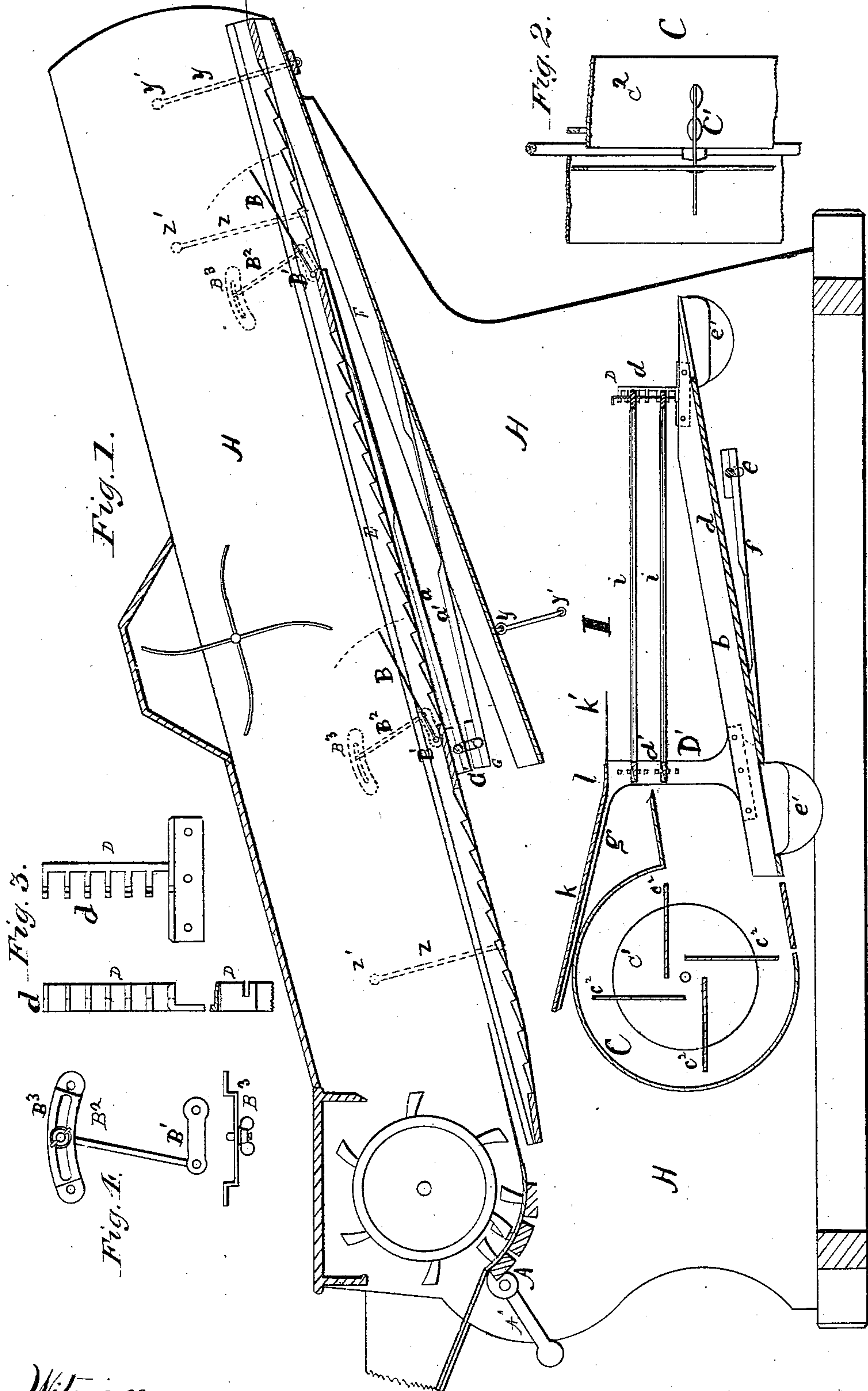


# A. B. FARQUHAR. Grain-Separators.

No. 166,354.

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Witnesses  
W. F. Eichar  
F. Jessop

Inventor  
Arthur B. Farquhar  
R. S. & A. P. Lacey, Attys



# UNITED STATES PATENT OFFICE.

ARTHUR B. FARQUHAR, OF YORK, PENNSYLVANIA.

## IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. 166,354, dated August 3, 1875; application filed May 13, 1875.

*To all whom it may concern:*

Be it known that I, ARTHUR B. FARQUHAR, of York, in the county of York and State of Pennsylvania, have invented certain new and useful Improvements in Grain-Separators; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawing and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in grain-separators; and consists in the construction and arrangement of the several parts hereinafter described, and then pointed out in the claim.

In the drawings, Figure 1 is a longitudinal vertical section of my separator; and Figs. 2, 3, and 4 are detail views of parts of the same.

H is the casing or frame, to which are secured the several parts of the separator. E is the upper conveyer. Its bottom is covered with corrugated metal suitably perforated to permit the grain to pass through. It is suitably supported on swinging arms or rods *z*, pivoted to the frame *z'*, so that it will move freely back and forth in the operation of the machine. F is the lower or return conveyer, having a close bottom, which conveys forward and deposits the grain in the shoe, hereinafter described, and it is secured to the frame H by means of arms *y*, turning on axis *y'*, so as to have a free longitudinal movement. G is an axle bearing in the frame H, and placed between the two conveyers, and opposite the inner or forward end of the lower. It is provided, at or near its center, with the two cranks *G'*, which are arranged thereon diametrically opposite to each other. *a a'* are two operating-rods, having their outer ends rigidly secured, the one to the upper, the other to the under, conveyer, and having their inner ends attached by suitable boxing to the crank *G'*. They are, by preference, made of tough, flexible wood, which readily adjusts itself to the revolutions of the cranks, and they prevent the rattling consequent to the use of iron rods.

It will be seen that in the operation of the machine the conveyers E and F will have an opposite movement, one to the other, and that

any shaking or swinging of the machine resulting from the vibrations of the one will be fully counterbalanced by the reverse movement of the other, and, as a result of this counterbalanced movement, a steadiness in the position of the separator is secured, not found in machines of ordinary construction.

B is a series of agitator-fingers, connected by a suitable rod or axle to the top of the conveyer E, and with the arm or crank *B<sup>1</sup>* on the outer side of the frame H. *B<sup>2</sup>* is an adjusting-rod, connecting with the crank *B<sup>1</sup>* and the slotted curved plate or quadrant *B<sup>3</sup>*, with capability of being set forward or back on the latter by means of a set-nut, and thereby regulate the height to which the agitator-fingers will be raised in the operation of the machine.

A is an eccentric cam, secured by a bolt, on which it turns, to the frame H. It is placed under the concave, so that the position of the latter with reference to the cylinder can be readily and quickly regulated. It has the arm or extension *A'*, having a weight sufficient to equalize or balance the weight of the concave on the cam, and thus prevent the latter from being turned downward by the former during the operation of the machine. It can, while the machine is in motion, be readily and quickly set in any position desired, and will remain where set, no screw, nut, or clamp being required to hold it, and the use of a wrench with which to turn it is obviated, the arm *A'* serving as a handle for this purpose. I is the shoe. It has the base or supporting frame *b* made to fit neatly and fill up the full width of the machine, and to it are attached the other parts of the shoe. It has the discharge-spouts *e'* attached to the front and rear ends of the frame *b*, and has its bottom closed by the board *d*, which conveys the winnowed grain to the discharge-spout. It is operated by the crank *e* and rod *f*, and its movements are longitudinal. D is an outer or rear standard, made of thin plate metal, and secured to and near the outer end of the side pieces of the frame *b*. It is provided with the series of inwardly-projecting points or rests, *d*, which support the front ends of the riddles. It stands close against the side, and so as to permit the riddles to fill out the entire width of the machine, so that no grain or other material can descend



between the former and the latter. The use of this standard enables me to employ riddles of much larger area, thereby utilizing the entire current of air from the fan, and greatly increases the separating capacity of the machine, and avoids the weight consequent when the sides of the shoe are made with boards, besides being far more economical than the latter construction. They can easily and readily be removed and replaced by others, as occasion may require. *D'* is an inner or forward standard, secured near the inner end of the frame *b*. It is provided with notches or projections *d'*, to receive and hold the inner ends of the riddles *i i*. Its construction and the construction of the standard *D* permit of any desired adjustment of the riddles. It has the inward or forward projecting and upwardly-inclined arm *g*, on which is secured the feed or conveyer board *k* of the shoe.

The board *k*, at its lower or outer end, is curved upward or made slightly concave, as shown at *l*, for the purpose of checking the too rapid descent of the grain on the riddles, and for better regulating the quantity of grain delivered. When the grain descends with too great velocity its momentum will carry it through the fingers *k'*, and, striking the upper riddle, many of the heavier particles of chaff will be driven through to the lower riddle, and to remove these particles a stronger current of air from the fan will be required—a current which often blows out many of the smaller grains, which could otherwise be saved. The curve *l* not only checks the velocity of the grain, but changes the direction of its descent, throwing it outward in a line with fingers *k'*,

and thereby gives more effect to the latter in holding the mass of grain and chaff till it can be gently dropped on the riddle, and till it becomes more filled and permeated by the current of air from the fan. Further, the curve *l* causes the grain and chaff to slightly accumulate on the end of the board, which accumulation insures a more regular and continuously even supply to the riddles. *C* is a fan, within which is arranged a disk, *C*<sup>1</sup>, secured to the center of the fan-axle, and to which the wings *C*<sup>2</sup> are secured. The object of this disk is to equalize the current and volume of air driven through the riddles. It gives to the two currents drawn from the opposite sides of the machine an outward parallel direction before coming together, thereby preventing eddies; and, further, it prevents weakening of the volume of air, or an increased current under one side of the riddles, by a cross-current of wind blowing on one side of the machine only.

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

The standards *D'*, formed with projections *d'*, to hold the forward ends of the riddles, and inclined forwardly-projecting arms *g*, for supporting the feed-board *k*, constructed and operating as shown and described.

In testimony that I claim the foregoing as my own, I affix my signature in presence of two witnesses.

A. B. FARQUHAR.

Witnesses:

JACOB WALLICH,  
GEO. A. HECKERT.