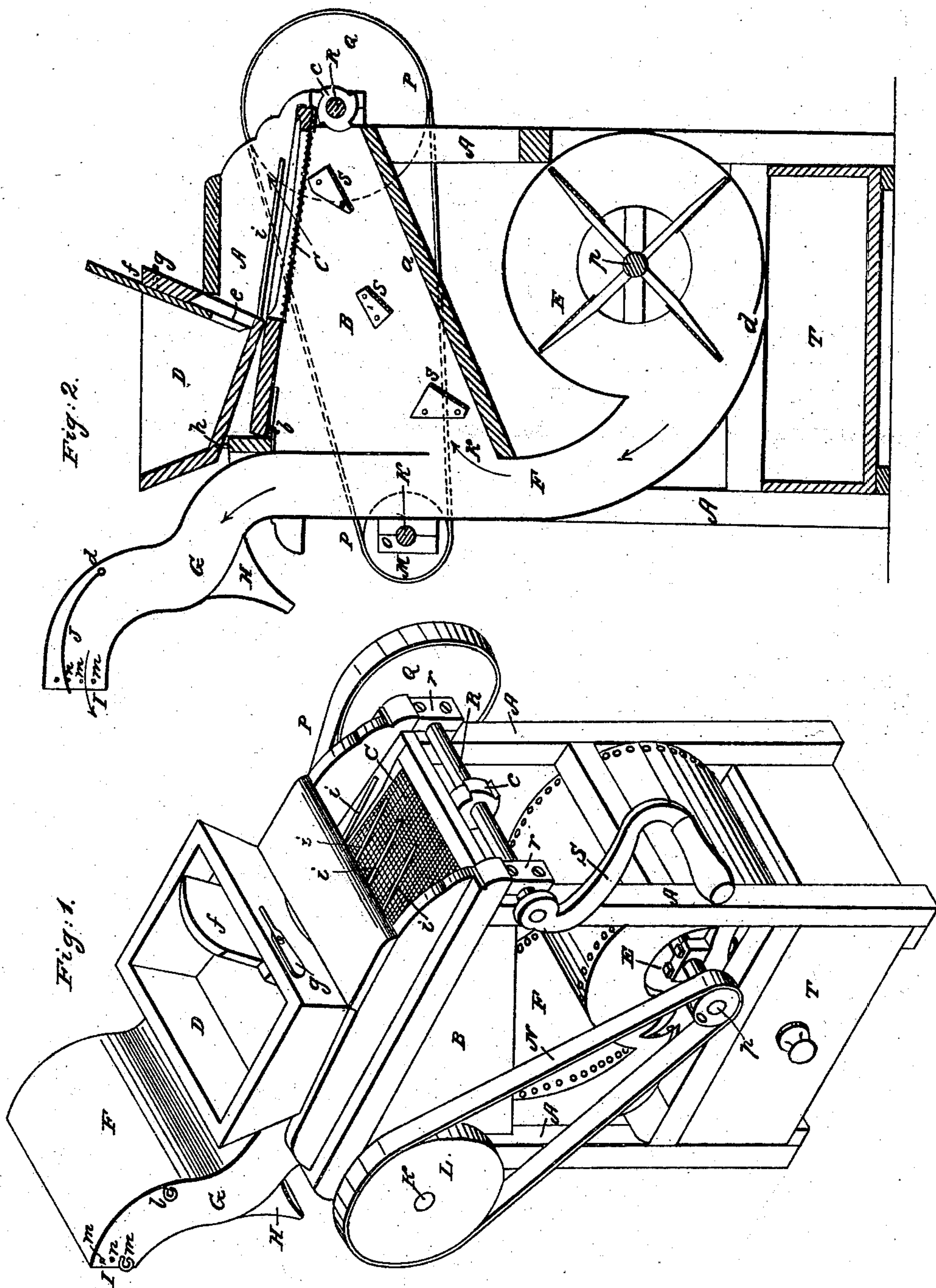


J. L. BOOTH.
Grain Separator.

No. 8,033.

Patented April 8, 1851.



UNITED STATES PATENT OFFICE.

JONATHAN L. BOOTH, OF CUYAHOGA FALLS, OHIO.

IMPROVEMENT IN WINNOWING-MACHINES.

Specification forming part of Letters Patent No. 8,033, dated April 8, 1851.

To all whom it may concern:

Be it known that I, JONATHAN L. BOOTH, of Cuyahoga Falls, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Fan-Blast Grain-Separators; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an isometrical view. Fig. 2 is a longitudinal vertical section taken at or near the center.

Similar letters refer to the same parts in both figures.

The nature of my invention consists in a box having an inclined bottom mounted near the upper part of a suitable frame and having a shaking chaffing-screen and hopper placed above it. Below the box is a fan, from which a trunk proceeds upward past the end of the box, the lower end of whose inclined bottom opens into the said trunk. The upper part of the trunk has one or more curves or bends, the bottom side or sides of which are provided with a spout or spouts opening downward, and its mouth is provided with a shutter for regulating its width. The grain is fed into the hopper and falls through the screen into the box, from whence it is passed into the trunk, where it is met by the blast and the lighter parts carried up, the best grain falling through an aperture at the bottom of the trunk and the lighter grain through the spouts in the bends of the trunks, the chaff and other light particles passing out at the mouth of the trunk. The blast also passes through the box and chaffing-screen, the relative proportion of its force through the chaffing-screen and through the trunk being governed by the shutter in the mouth of the trunk.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A A is the frame, consisting of vertical posts and cross-pieces.

B is a box, of the whole width of the frame, its bottom *a* inclining downward toward the trunk of the blower.

C is a screen placed at an inclination over

the top of the box B. It hangs on hinges or joints at *b* and is agitated or shaken by a cam *c* on the main shaft R, which hangs in bearings *r r* under it.

D is a hopper having an opening at *e*, which is closed entirely or partially for regulating its size by a sliding shutter *f*, secured in place by a bolt or catch *g*. The highest end of the bottom of the hopper rests on stationary pins at *h* on the frame A A and its lowest end on the frame of the screen, the hopper and screen being agitated or shaken together. A row of tines *i i* are placed in front of the hopper, reaching nearly across the screen. Narrow plates of metal *s s* are placed across the interior of the box.

E is a rotary fan or blower, from which a trunk F proceeds upward. One side of this trunk forms a side of the box B, and there is an opening *k* in it, communicating with the box at the lower part of its inclined bottom. There is also another opening *d* at the bottom of the trunk. The upper part of the trunk has a bend at G, which turns at nearly a right angle to the upright part, and at the bottom of this bend there is a spout H, converging toward its mouth, which is narrower than the part opening from the trunk. There may be more than one of these bends G, each provided with a similar spout. Above the bend the trunk again turns upward and its mouth I opens either upward or is again bent or curved, as shown in the drawings.

J is a shutter formed of light sheet metal of the whole width of the trunk. It is hung on a pin or hinge *l* a short distance within the mouth I of the trunk and is capable of lying close to the upper side of the mouth, so as to leave it quite open. There is a series of holes *m m* on each side of the mouth, through any pair of which a pin or rod *n* is placed across the mouth to support the edge of the shutter and keep it open to any desired width. If this pin *n* is removed, the shutter would close of its own weight.

K is a shaft hung in bearings *o*. At one end of the frame it carries a pulley L on one end and another pulley M at its other end. N is an endless band running from the pulley L to a small pulley O on the blower-shaft *p*. P is another endless band running from the

pulley M to a pulley Q on the main shaft R, which receives rotary motion through a winch-handle S or by any other means.

T is a box or drawer placed below the separator.

The operation is as follows: Rotary motion being given to the main shaft R agitates the screen C and the hopper D. The bands N and P communicate a very rapid rotary motion to the blower, sending a strong current or blast of air through the trunk F, part of the said blast going upward entirely through the trunk and part escaping through the opening *k* into the box B and out through the screen C, a small portion also escaping through the spout H. The blast through the box B and screen C can be regulated by the shutter J, which, if opened wide, will allow a small portion only to pass through the opening *k* to the box, but if nearly closed will cause the greater part to pass in that direction. The grain is fed into the hopper D and passes through the opening *e* to the screen C, where the chaff is separated and blown away, the grain falling through the screen into the box B, down the bottom of which it descends through the opening *k*. The plates *s s* conduct the blast upward away from the bottom *a* and prevent the blast collecting the grain in heaps upon it, which would be the

consequence if they were omitted. As the grain runs through the opening *k* into the trunk F, the heavier and better portions descend the trunk in a direction opposite to the blast and fall through the opening *d* into the box T, the lighter portions of the grain being carried by the blast up the trunk, where a further separation takes place at the bend G, where the blast is again divided and the heavier portion of that which has been carried up the trunk (which consists of the lighter portion of the good grain) falls out through the spout H, and the chaff and those parts of little value and any small chaff which might pass the screen are carried out at the mouth I. The shutter J will control the relative proportions of the blast which pass through the opening *k* and the upper part of the trunk G I, which may be regulated to suit the nature of the grain.

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

The blast-passages F, G, and *k*, arranged and controlled by the shutter J, in the manner and for the purposes substantially as herein set forth.

JONATHAN L. BOOTH.

Witnesses:

S. H. WALES,
O. D. MUNN.