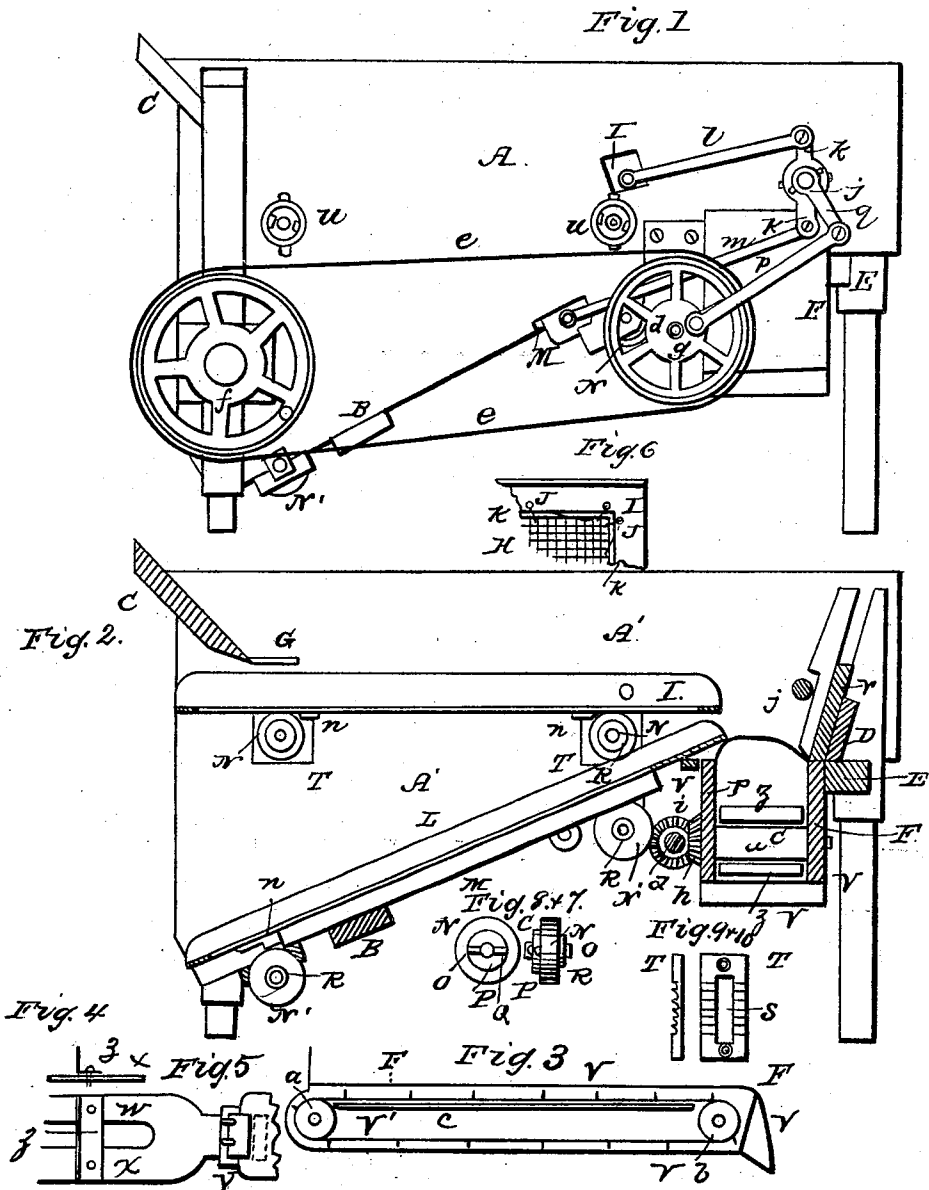


J. W. DONALDSON.

Grain Winnower.

No. 110,445.

Patented Dec. 27, 1870.



witnesses  
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# United States Patent Office.

JAMES W. DONALDSON, OF FAIRFIELD, CALIFORNIA.

Letters Patent No. 110,445, dated December 27, 1870.

## IMPROVEMENT IN GRAIN-SEPARATORS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JAMES W. DONALDSON, of Fairfield, county of Solano, State of California, have invented certain new and useful "Improvements in Grain-Separators for Thrashing-Machines;" and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing and to the letters marked thereon.

My invention relates to improvements in that class of machines for cleaning or separating grain employed in connection with thrashers, and consists in certain details of construction.

In the accompanying drawing—

Figure 1 is a side elevation; and

Figure 2, a longitudinal section of a machine embodying my invention;

Figure 3 is a longitudinal section of the conveyer;

Figure 4, a view of the edge of conveyer-belt, showing the end of the metallic angle-plate, forming a bucket;

Figure 5 is a plan of the ends of conveyer-belts, and one bucket. The end of the belts, being united, form a tongue that works in a common belt-buckle, for tightening or loosening the belt.

Figure 6 is a plan of one corner of the upper screen and screen-frame, showing the manner of securing the sieves to the frame.

Figure 7 is an end view; and

Figure 8, an edge or face view of one of the friction-rollers upon which the screens rest, showing the projections for engaging the corrugated plate.

Figure 9 is an edge-view; and

Figure 10, a face view of corrugated plate.

Like letters refer to like parts in all of the figures.

A and A' are the vertical sides of the frame of the machine, held firmly together by the cross-bar B, apron C, cross-bar D and E, and conveyer-frame F.

The apron C is for receiving the grain, and is provided with projecting rods G for distributing it upon the upper sieve or riddle H.

I is the upper sieve-frame, and is made of metal of a rectangular form, having vertical sides, constructed by turning up the metal to provide a right angle.

The sieve-frame I is provided with numerous holes J, by which the screen H is secured with a flexible wire, K, passing through the holes, and through the outer meshes of the screen.

The lower screen-frame L I construct similar to frame I, but the holes J are made larger, and the screen laps over the holes, and is secured with broad-headed rivets, the pan M making it inconvenient to secure the lower screen in exactly the same manner as the upper one.

The pan M is of sheet metal, and extends across the whole width of the lower screen and from the top to near the bottom of the lower side of the same, and is provided with a rib or partition up and down the center to prevent the sagging of the screen, or to cause the screen and pan to sag alike, keeping the passage open. This pan, by being secured to and moving with the lower screen, can be set at a much less angle without fear of clogging than if it was simply a stationary inclined plane.

N are the friction-rollers, upon which the screen-frame I moves and rests.

O is the roller-shaft, provided with a broad collar, P, and having a projection, Q.

The rollers N revolve freely on the shaft between the collars P and R.

The shaft O passes through vertical slots S in the corrugated plates T, and through similar slots in the sides A and A', secured by nuts U.

The plates T are secured to the inside of the frame, and, when the nuts U are screwed up, the projections Q will engage one or the other of the corrugations of the plate T, and effectually prevent the roller-shaft from slipping up or down.

N' are the rollers upon which the lower sieve-frame rests.

The rollers N' are not made adjustable.

The conveyer V consists essentially of the straps or belts W and X, united at their ends, and tightened or loosened by a common belt-buckle, Y.

The metallic buckets Z are formed of plates of thin sheet metal, bent to a right angle, and secured to the belts by rivets, rollers *a* and *b*, frame F, and the board *c*.

*d* is the driving-shaft, operated by a belt, *e*, from the pulley *f* to the pulley *g*.

The shaft of roller *a* of the conveyer is provided with a beveled or miter-wheel, *h*, for receiving motion from the wheel *i* on the shaft *d*.

*j* is a rock-shaft that extends across the tail-end of the machine, and has at each end cross-arms *k*, to the extremities of which are attached connecting-rods *l* and *m*, that connect to pins on each side of the sieve-frames.

To the lower side of the sieve-frames are attached lugs or riding-pieces *n*, so arranged that the reciprocating motion of the rods *l* and *m* will cause these lugs *n* to mount the rollers N and N', and thus impart a sudden undulatory jarring motion to the screens, and greatly facilitate the rapid separation required.

The rock-shaft *j* receives a vibratory motion from the cranks of the driving-shaft by means of the connecting-rod *p* and arm *q*.

*r* is an adjustable tail-board, that may be slid up

and down, and set, when the machine is at work, at a suitable height, in such a manner as to intercept any valuable substance that would be blown away if the board was removed or set too low, and to allow chaff and dirt to escape that would be intercepted if the board was too high.

In attaching this machine to a thrasher it must be so placed as to conform to the direction and force of the blast from the pan of the thrasher, and all the grain, with headings, seeds, chaff, &c., as it comes from the cylinder of the thrasher in the direction of the arrows, will be distributed along the upper screen, or carried along over the tail-board by the force of the blast, the wheat, and everything smaller than its grain, finding its way through the meshes of the upper sieve, the chaff and dirt being blown away, and the headings and any grain that may be carried along finding its way into the conveyer.

The wheat, separated from everything smaller than itself by the lower screen, finds its way down that screen to some suitable receptacle, and the finer seeds,

such as mustard-seed, &c., sliding down the pan and dropping from its lower edge, in a similar manner.

The meshes or holes in the screens must, of course, correspond in size or fineness to the kind of grain and character of the work.

The angle of inclination of the upper screen must be adjusted to suit the moist or dry condition of the grain and the force of the blast.

Having thus described my invention,

What I claim, and desire to secure by Letters Patent, is

The combination of the plate T with the projection Q, shaft O, and nut U, as described, for the purpose set forth.

In testimony whereof I have hereunto set my hand and seal.

JAMES W. DONALDSON. [L. s.]

Witnesses:

C. W. M. SMITH,

JOHN SROUFE.