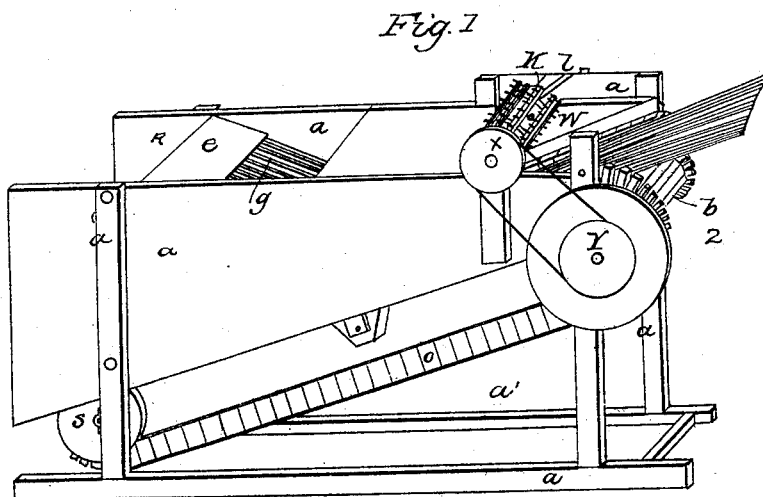
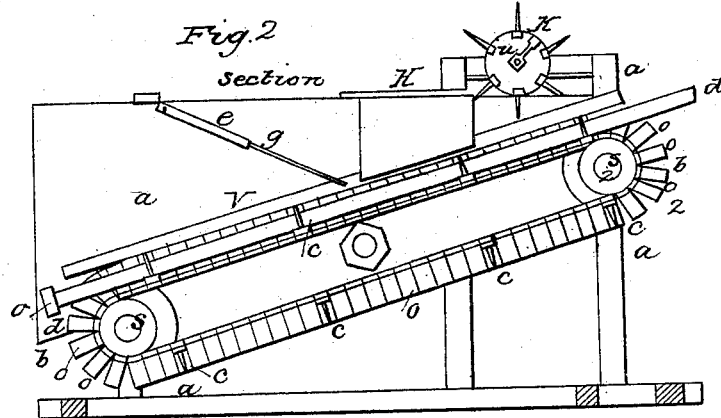
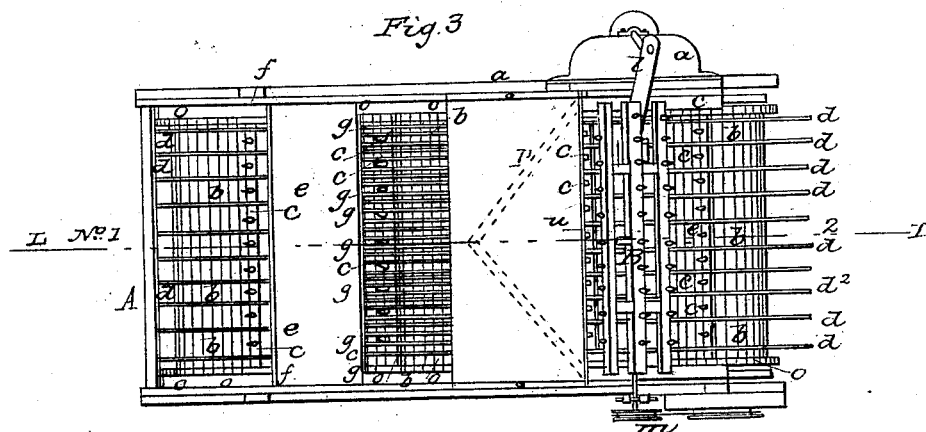


D. WOODBURY.
Thrashing Machine.

No. 6,235.

Patented March 27, 1849.



UNITED STATES PATENT OFFICE.

DANIEL WOODBURY, OF PERKINSVILLE, VERMONT.

IMPROVEMENT IN GRAIN-SEPARATORS.

SPECIFICATION forming part of Letters Patent No. 6,235, dated March 27, 1849.

To all whom it may concern:

Be it known that I, DANIEL WOODBURY, of Perkinsville, in the township of Weathersfield, in the county of Windsor and State of Vermont, have invented a new and useful Improvement on a Machine named a "Grain-Separator;" and I hereby do declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a perspective view; Fig. 2, a longitudinal section taken at the line L L of Fig. 3, which is a vertical view.

The nature of my invention consists in providing a rack which receives the straw as it is thrown from the thrasher, (the machine of that name,) while the grain, by its velocity mostly, passes through and lodges in shallow chambers of a revolving web or elevator situated directly below said rack, the elevator having projections or pins corresponding to the rods of the rack and of sufficient length to carry the straw forward above the rack to be operated upon by an eccentric revolving toothed roller in such a manner as to shake out all the grain that may be in the straw in a more rapid and thorough manner than is done by any other machine, while the grain is carried in the shallow chambers of the elevator and delivered thus to the fanning-mill, thereby requiring less wind to clean or separate the wheat from the chaff, and thus evading an evil common to those separators now in use—namely, light grain blown over with the chaff.

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

On all the figures like parts are indicated by the same letters and figures.

I construct my machine after any of the known forms.

a represents the frame and sides of the separator.

b is an endless web or elevator which passes over two rollers. *s* is the lower one, and *y* is a pulley on the upper one.

d is a rack or slat frame which is attached to *a*, the frame, by a cross-piece. This rack has the same inclination as the elevator, and the slats rest lightly upon the cross-pieces

placed upon the elevator, which cross-pieces divide the endless web or elevator into shallow chambers. The rack *d* extends from end 1 to end 2 of the separator, and the slats project at one end over *b*, the endless web, so as to prevent the straw from being carried down toward the shoe of the fanning-mill by the pins on the web.

e g is a wire frame composed of a number of strong wires affixed in a board extending across the separator inside of the frame. This wire frame dips in an angular direction, so as to turn down upon the rack the upper part of the current of straw as it is thrown from the thrasher, while the grain which strikes the wire frame dashes between the wires *g*, through the said frame, and then strikes the slanting sides of *H*, an angular board, and then glances to the sides of the rack, where the straw is in a thinner strata than in the middle of the rack, and thereby more readily drops into the shallow chambers of the elevator or endless web. The grain is discharged from the thrasher on the elevator at *R*, and the straw and chaff and grain are carried forward by the elevator, where and when the straw is subjected to the action of a toothed roller *k*, which is revolved by a belt and pulley *x*. This roller *k* has also a side-to-side shaking motion given to it by *l*, a crank, also driven by a belt and pulley or by bevel cog-wheels placed on an upright shaft attached to the side of the machine. The double motion of this toothed roller is for the purpose of shaking the grain entirely out of the straw before the straw passes from the elevator or rack *d*.

w is an arm fixed on the shaft of *k* for revolving the vane-arms and teeth part of the roller as the shaft revolves. Without this it or they would not revolve, as the interior of *k* is bushed to the slide upon the shaft from side to side by the action of the crank.

v is a board nailed or screwed across the frame to keep the wire frame from being lifted out and also to prevent grain or straw from passing over the sides of the separator.

o is the rim of the endless web *b*. It is made of a number of pieces of wood or other material fixed upon the web so as to accommodate themselves to the turning of the curves as the web or elevator is passing over

the rollers and to form a compact rim, so as to prevent the escape of grain over the sides of the web.

s s are rollers over which the endless web *b* passes.

c are teeth or projections fixed on cross-pieces on the web. The cross-pieces divide the web or elevator into shallow chambers.

o are the pieces of which the web-rim is composed.

d is the rack or slat frame; *e g*, wire frame.

H is an angle-shaped board fastened to the frame. There is a slanting board nailed on the inside of the separator to prevent grain or straw from escaping over the sides or between the sides of the separator and the rim of the elevator.

L L is the line of the longitudinal section view Fig. 2.

a is the frame.

b is the endless web or elevator. It is for the purpose of receiving and carrying forward the stuff discharged from the thresher.

c are projections or pins fixed on the cross-pieces of the elevator, and as the elevator revolves the pins *c* move between the slats *d* of the rack. The pins *c* are made of stout timber or any other material most suitable. The rack is made of a series of wooden slats or stout wires and are not fastened to the frame, but by the cross-piece at end 1. These slats rest lightly upon the cross-pieces of the elevator between *c*, the pins, and are not rigid, but can spring gently to accommodate themselves to the action of the elevator.

f is an axle or rod by which *e g*, the wire board, is attached to the frame. The wires *g* rest lightly upon the cross-pieces of the elevator or endless web, dipping angularly from *f*, the axle or rod. When the elevator with the straw upon it is passing under the wire frame *e g*, it is made so as to spring gently to accommodate itself to the action of the stuff on the web, yet to turn down the upper current of the straw upon the elevator as it is discharged from the thresher, as before described.

H is an angle-board made of light boards and fastened to the frame in such a manner as to allow the endless web or elevator *b* and such stuff as may be on it to pass under it as *b*, the web, is revolving. This angle-board *H* is principally for throwing the grain that comes through the wires to the sides of the elevator, while *e g* is principally for turning down the straw discharged from the thresher by bad feeding over the web, scattering said stuff more equally on the web, so as to allow the straw to be operated upon more effectually by the pins and projections of the web and roller for the purpose of a more effectual separation of the straw from the grain.

k is a revolving eccentric roller or winch which has two motions, one motion from side to side crosswise of the elevator and the other

a revolving or circular motion. The shaking side-to-side motion is given by a crank *l*, made on an upright shaft driven by a belt and pulley. The crank *l* is fastened or attached to the axle of the winch *k* by a shackle-bar after any of the known methods. The winch is therefore not so wide as the breadth of the separator by about the length of the crank, so as to allow a perfect traverse or side-to-side action of the winch.

The winch *k* is formed exactly like those used in winching pieces of cloth, with the exception that it has teeth or projections inserted at regular distances in the arms or vanes. The axle on which the winch is fixed is propelled or driven by a belt and a pulley *m*. The inside or interior of *k*, the winch, is bushed, so as to allow the winch to slide from side to side on the axle. The axle runs in gudgeons on the frame. On the axle is firmly attached an arm *w*, which extends between two arms of the winch, so that when the crank is propelled and the axle is propelled or driven the winch will slide from side to side by the motion of the crank on the axle and the pulley by the effect of *w* will give *k* a revolving or circular motion, so that by these two motions of the winch *k* and the action of the projections on the straw brought forward on the endless web the straw is more effectually separated than by any other known plan.

o, the rim of the web *b*, is made of pieces of wood glued or fastened by other proper means to the selvage of the web. As these could not adhere to the web without a proper basis, I glue slats of boards the exact width of the pieces of the rim across or on the web, as represented in the crossings of Fig. 3, and to these I fasten the rim or pieces that compose the rim, and thus make a rigid and yet flexible endless or revolving web.

Operation: The stuff is discharged from the thresher upon the endless web nearly above the lower roller *p*, and by the operation or action of belts and pulleys the endless broad web *b* is made to revolve when the straw and stuff are carried forward up the incline under *e g*, the comb wire board, which turns the current of straw downward as it comes from the thresher and spreads the stuff equally over the web, when it is carried up by the pins *c* and submitted to the action of projections on the roller or winch, by which the straw is completely separated from the grain and carried forward out at the end of the slat frame, while the grain drops or falls down over the end of roller *s*² and guided into the shoe of the fanning-mill by any known method.

The advantages of my improvement in the separator are, first, the dividing of the endless or carrying web *b* into a series of chambers, whereby the grain falls into them and is kept separate from the straw from the moment it is discharged on the web from the

thresher; second, the complete action to which the straw is subject to separate it from the grain by the action of the projections of web and winch on minute particles of straw, thereby preventing any from escaping without being thoroughly separated from the grain.

Having explained the nature of my invention and its mode of construction and operation, I do not claim the endless web or elevator *b* in itself as a new invention; but

I claim—

1. The projections or pins *c* on the said elevator, in combination with the rack or slat frame *d*.

2. The combination of the crank with the toothed roller *k* to give the latter a traverse or side-to-side motion, all for the purpose herein described.

DANIEL WOODBURY.

Witnesses:

I. CUTLER,

THOMAS MORAN, Jr.