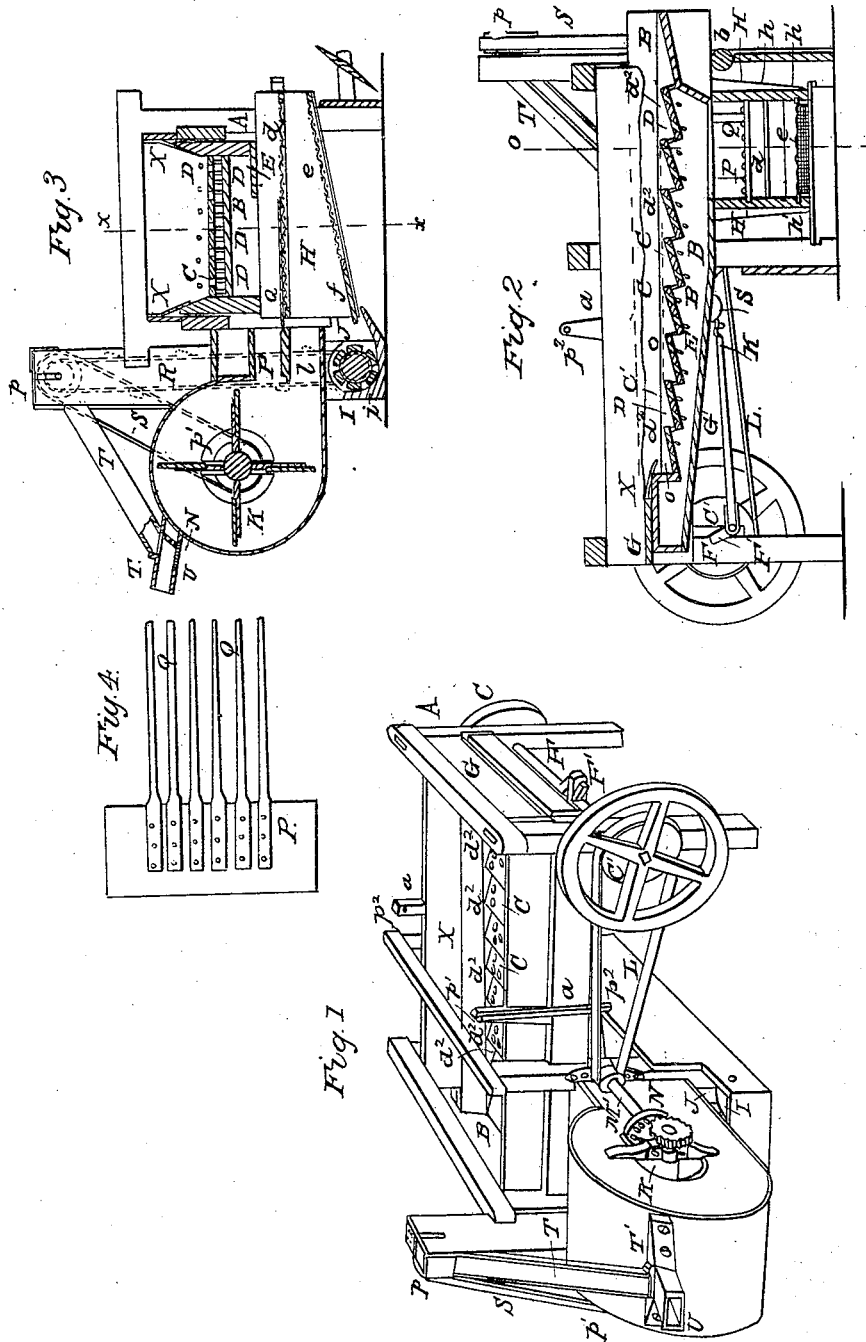


E. S. SNYDER.
Thrashing Machine.

No. 5,630.

Patented June 13, 1848.



UNITED STATES PATENT OFFICE.

ELISHA S. SNYDER, OF CHARLES-TOWN, VIRGINIA.

MACHINE FOR SEPARATING STRAW FROM GRAIN.

Specification of Letters Patent No. 5,630, dated June 13, 1848.

To all whom it may concern:

Be it known that I, ELISHA S. SNYDER, of Charles-Town, in the county of Jefferson and State of Virginia, have invented a new and useful improvement in machines for separating the straw and chaff and all impure stuff from wheat and other grain, called "the farmer's labor-saving machine," which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a perspective view of the machine. Fig. 2 is a longitudinal section of the same through the line *x x* of Fig. 3. Fig. 3 is a transverse section of ditto, through the line *o o* of Fig. 2. Fig. 4 is a top view of the partition P, and fingers Q detached from the machine.

Similar letters in the figures refer to corresponding parts.

A is the frame of the machine made of sufficient size and strength and suitable form to correspond with the arrangement of the several parts of the machine.

B is a horizontal conveyer for separating the grain from the straw, arranged between the sides of the frame and suspended to the same at one end by connecting rods *a*, and resting at its opposite end on a horizontal roller *b*.

C are transverse slats or boards, extending from one side of the conveyer to the other, arranged on the same horizontal line, and inclining edgewise at an angle of about 10 degrees and slightly overlapping each other or otherwise so as to leave a space between their edges sufficiently large to admit the passage of the grain, being also perforated with suitable openings *o* for the same purpose.

D are inclined rods or pins in the spaces between the edges of the slats or boards C, said pins being designed to arrest the straw and let the grain pass through.

E is the inclined bottom of the conveyer, which receives the grain after it is separated from the straw, and conducts and discharges it onto the screens, (hereafter described).

F is a horizontal axle turning in boxes in the forward part of the machine, having a crank F' near its center and band wheels *c c'* at either end.

G is a transverse timber or board secured between the sides of the frame, immediately above the forward end of the conveyer.

This timber, in connection with the vibratory motion of the conveyer causes the straw to be moved to the discharging end of the conveyer and discharged therefrom in the following manner. The straw being placed on the slats of the conveyer or separator it is prevented from moving with said conveyer in its forward movement by the inner edge of the transverse timber, against which it rests, but held stationary while the conveyer is drawn under it and when the movement of the conveyer is changed the upper edges of the inclined slats pressing against the straw next them, cause the whole body contained in the conveyer to move with the same, until its motion is again changed, when the straw is again held stationary by the transverse timber and the conveyer drawn under the same as before. In this manner a portion of the straw is discharged from the end of the conveyer, at every vibration it receives.

G' is a connecting rod attached to the crank F', and to a staple *s* in a cross timber, on the under part of the conveyer by a hook *h*.

H are transverse boards secured edgewise to the under part of the conveyer near its discharging end, inclined on their lower edges, and having inclined and horizontal grooves *h h'* formed on their inner sides, for the reception of a horizontal riddle *d*, and an inclined screen *e*, and slide *f*.

I is a horizontal trough, secured on the side of the frame, below the discharging end of the screen *e*, into which the grain is discharged from said screen.

J is a horizontal shaft or cylinder turning in boxes in the trough, having spirally set wings or cogs *i*, projecting from its periphery, for conveying the grain to the elevator (hereafter described) at the back end of the trough.

K is a revolving fan turning on a horizontal axle and enclosed within a case of the usual form, arranged on the side of the frame, immediately opposite the discharging ends of the screen, as represented in Fig. 2, in such manner as to direct the draft through the grain, &c., as it descends from the conveyer, through the riddle, to the inclined screen, and separate the impurities from the same.

L is a band, passing around the pulley *c'* on the main shaft, and around a smaller pulley on a horizontal shaft M, turning in

boxes in one of the uprights of the frame, and in a projection on the side of the fan case, having a cog or bevel wheel N, meshing in gear with a corresponding bevel wheel o, on the end of the fan shaft, for giving motion to the fan.

P is a horizontal board or partition, secured in the trunk of the fan case for dividing the blast of air from the fan into two currents, and directing one current above and the other below the riddle.

Q are fingers or bars, secured to the upper surface of the dividing board, and extending horizontally above the riddle, at right angles to the conveyer, for turning, or tripping any straw that may fall endwise on the riddle, and preventing it from passing through the meshes of the same.

R is an elevator of the usual construction, arranged over the end of the trough in a vertical flume or case, and operated by a band S, passing around a pulley *p* on its upper shaft, and around a pulley *p'*, on the end of the shaft of the fan, for elevating the grain as fast as it is drawn to the end of the trough by the conveyer J.

T is an inclined spout extending from near the upper end of the case containing the elevator, downward at an angle of about 45 degrees, and communicating at its lower end with a small trunk T', communicating with the upper part of the fan case, made tapering on its sides next to the case, so as to receive the full blast of air from the fan, and concentrate the same into the compass of the smaller part of the trunk.

U is an opening in the bottom of the trunk, through which the grain passes.

V is a wire gauze partition in the trunk, for preventing the grain from falling into the fan case.

X are strips of leather secured to the sides, and cross timber G of the frame, and hanging over the sides and front end of the conveyer for preventing the straw from getting between the insides of the frame, and the sides of the conveyer, and the cross timber G, and said conveyer, during its vibratory motion.

The operation is as follows: Motion being communicated to the machine by a band leading from the threshing machine (which may be arranged immediately in front of the same) or any convenient power, and passing around the pulley *c* on the end of the main horizontal shaft F, the straw and grain are conveyed from the threshing machine to the conveyer or separator B and deposited on the front end of the same. This end of the conveyer or separator being suspended to the frame by the bars, *a* and pins *p*², has an oscillating motion on the same by means of the crank F, and connecting rod G', causing the straw to be agitated on the conveyer or separator and the grain to be sepa-

rated therefrom, and to pass through the spaces between the inclined rods or pins D, between the slats, C, and the openings *o*, in the slats, and fall on the inclined board E of the conveyer or separator—the straw being at the same time gradually conveyed to the back part of the conveyer or separator, and discharged therefrom by the combined agency of the oscillating motion of the conveyer, and the cross timber G, as before described. After the grain is separated from the straw, and falls on the inclined bottom board of the conveyer, it is conducted by said inclined bottom board, to the back part of the machine and discharged on the horizontal vibrating riddle *d* through which it descends to the inclined vibrating screen *e*, immediately below, which screens and conducts it into the trough I, being subjected, in its descent, to the two currents of air from the fan, which blows the chaff and cockle and other impurities out at one side of the machine. After the grain is received in the trough I, it is conveyed under the elevator R, at one end of the trough, by the spirally set wings or coks *i*, on the periphery of the roller J, and is raised by said elevator, and discharged from the upper end of the same, into the inclined spout T, which conducts it to the trunk T', through the opening U, in the bottom of which, it descends into the bag or other receptacle arranged below for its reception—being subjected in its passage through said trunk, to the blast of air from the fan, which effectually clears it of the remaining chaff &c. and renders it fit for the grist mill or other use.

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

1. Reducing the spaces between the inclined perforated slats by means of pins D, reticulated wire, or other means for the purpose of preventing the straw passing through the same, along with the grain as described.

2. I claim making the separator with a transverse riddle *d* and screen *e*, for cleaning the grain of impurities, attached to, and moving with the conveyer or separator.

3. I claim as my invention, arranging horizontal bar or timber G and apron X across the front end of the trunk in which the separator moves, next the receiving end, for the purpose of arresting the back movement of the straw, when the separator moves toward the threshing machine; by which the accumulated mass of straw upon the separator is forced along, over the slats of the separator, to the discharging end thereof as described.

4. I claim placing the discharging end of the separator upon a horizontal roller *b*, or other similar equivalent, and suspending the receiving end of the separator, by means of oscillating straps or chains, or rods *a* or

other fixtures attached to uprights of the frame, and to the ends of a cross bar, secured to the separator near the middle thereof, so that while the discharging end is caused to receive a horizontal reciprocating movement, the receiving end is made to rise and fall as it moves to and fro in order to cast the straw toward the discharging end and the grain toward the riddles.

5. I claim making the tangential spout of the fan case, with a horizontal partition P, to which are fastened the ends of a number of parallel elastic fingers Q, for the purpose of catching and tripping whatever straw may chance to pass through the separator, and for feeding the riddle.

ELISHA S. SNYDER.

Witnesses:

EDMUND MAHER,
WM. P. ELLIOT.