

(No Model.)

F. F. LANDIS.  
GRAIN CLEANING DEVICE.

No. 544,045.

Patented Aug. 6, 1895.

FIG. 1.

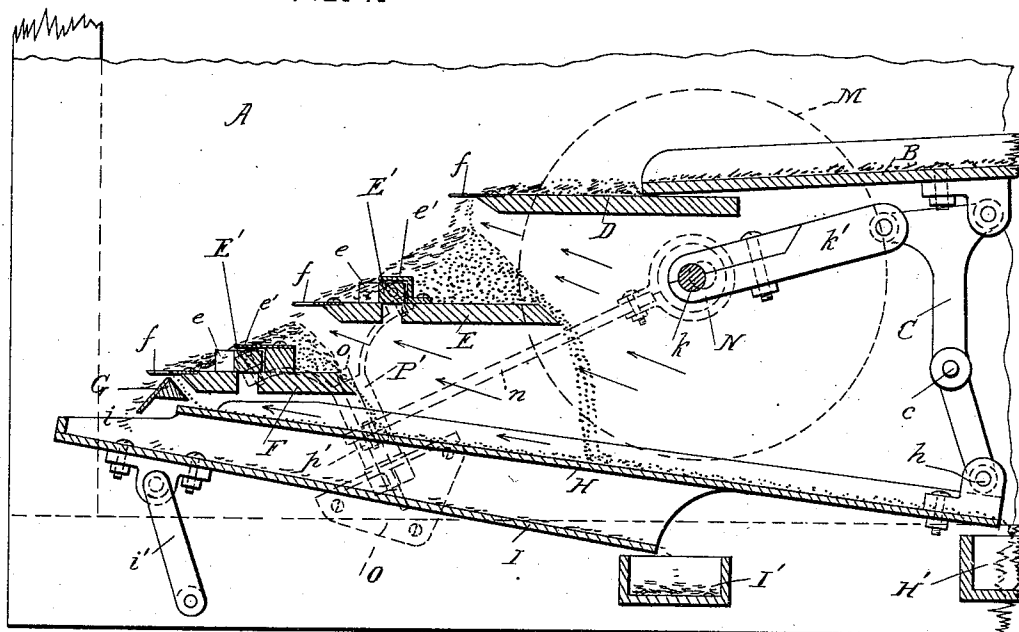
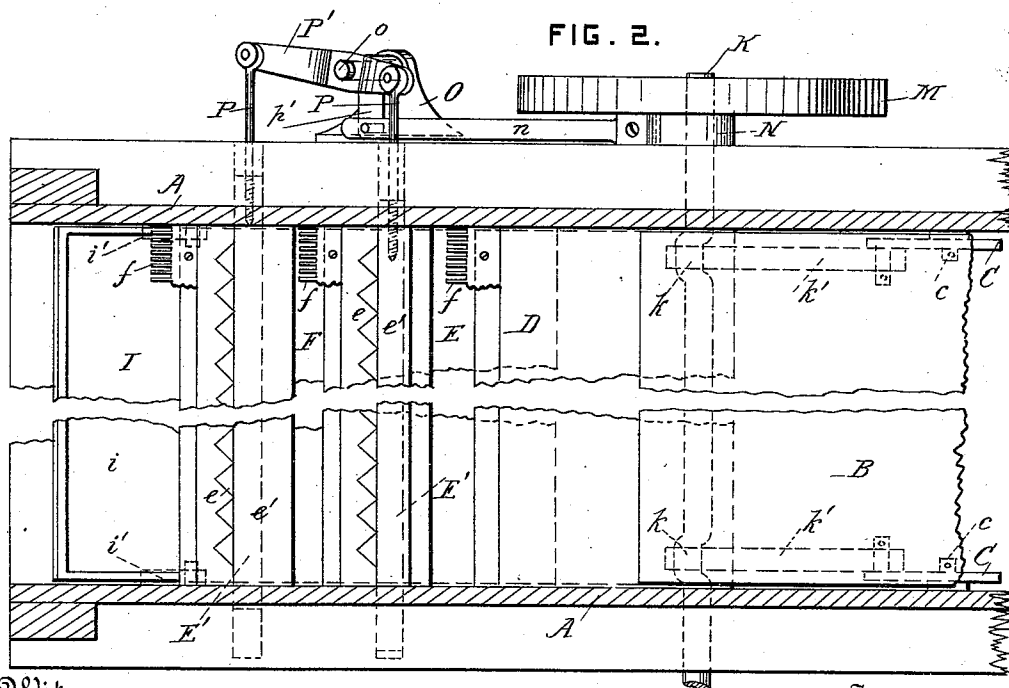


FIG. 2.



Witnesses

Arthur C. Brown.  
C. W. A. Brown.

Inventor

Frank F. Landis.  
By Attorney Robert W. Jenner.

# UNITED STATES PATENT OFFICE.

FRANK F. LANDIS, OF WAYNESBOROUGH, PENNSYLVANIA.

## GRAIN-CLEANING DEVICE.

SPECIFICATION forming part of Letters Patent No. 544,045, dated August 6, 1895.

Application filed May 10, 1895. Serial No. 548,861. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK F. LANDIS, a citizen of the United States, residing at Waynesborough, in the county of Franklin and State of Pennsylvania, have invented certain new and useful Improvements in Grain-Cleaning Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to grain-cleaning devices for use in connection with thrashing-machines; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed.

In the drawings, Figure 1 is a longitudinal section through the grain-cleaning devices. Fig. 2 is a plan view of the same.

A are portions of the casing of a thrashing-machine or grain-separator of approved construction.

B is a shoe or the end of a gather-board. The front end of the shoe is pivotally supported by the rocker-arms C, which are pivoted on the pins c projecting from the machine-casing. The rear end of the shoe B rests upon the first grain-plate D, which is carried by the machine-casing. E and F are the second and third grain-plates, respectively, and the three said grain-plates are arranged in the form of steps, so that the grain may fall from one to the other by gravity.

E' is a push-piece arranged near the rear edge of the grain-plate E and provided with serrations e on its rear face. The serrations are preferably V-shaped notches spaced at a little greater distance apart than the length of the reciprocations communicated to the push-piece, as hereinafter fully described. A guard-plate e' is secured to the grain-plate and extends over the top part of the push-piece E'. This guard-plate may be attached to the grain-plate by a flange and extend upwardly and rearwardly over the push-piece, or it may be a plain flat plate secured to the grain-plate by a distance-piece, or it may be made in any other approved manner, or in some instances dispensed with altogether.

The third grain-plate F is provided with a push-piece E' and a guard-plate in a similar manner.

The grain-plates D, E, and F are provided with removable toothed combs f of approved construction at their rear edges, but any or all of these combs may be dispensed with if desired.

G is a prism-shaped divider-bar secured to the casing below the rear edge of the grain-plate F.

H is a downwardly and forwardly inclined gather-board for the grain, arranged under the three grain-plates, and I is a chute for the tailings, secured to the under side of the said gather-board and having an opening i at its upper end beyond the rear end of the gather-board.

H' is the grain-spout at the lower end of the gather-board H, and I' is the tailings-spout under the lower end of the tailings-chute. According to this construction the tailings-spout is removed from its usual position at the extreme rear of the machine to a point forward of the rear axle of the machine. This construction permits a much shorter tailings-elevator to be used and otherwise greatly simplifies the construction of the rear part of the machine and makes it more compact.

The front end of the gather-board H is pivoted to the rocker-arms C by the pins h, and its rear end is pivotally supported by the links i'. The front ends of the gather-board H and the tailings-chute I receive a tossing motion, as well as a reciprocating motion, which assists the material in sliding down them.

The shoe B has short and quick longitudinal reciprocations imparted to it by any approved driving mechanism. The push-pieces E' likewise receive short and quick longitudinal reciprocations, but in a direction crosswise of the machine-casing, by any approved driving devices.

The driving mechanism preferably used consists of a crank-shaft K provided with short cranks k and connecting-rods k', which connect the said cranks with the upper parts of the rocker-arms C. M is a belt-pulley on the said crank-shaft, which is journaled in bearings secured to the casing. An eccentric N is secured on the crank-shaft K, preferably outside the casing, and n is the eccentric-rod for working the push-pieces E'.

O is a bracket secured to the casing and provided with a projecting pin o. The push-pieces slide loosely in holes in the casing and have rods P secured to their ends.

5 P' is a Y-shaped lever pivoted on the pin o and having the rods P pivoted to the ends of its arms. The end of the eccentric-rod n is pivoted to a laterally-projecting arm p' on the said lever P'.

10 The mixed grain, chaff, and tailings from the straw-separating devices slide down the shoe B onto the first grain-plate. The rear end of the said shoe serves as a push-piece, which, owing to the short and quick reciprocations imparted to it, produces a quivering motion in the material on the grain-plate, causing the grain to work to the bottom and the lighter material to the top and moving the material slowly and step by step across 20 the said grain-plate. The material falls from the rear edge of the first grain-plate onto the pile of material on the second grain-plate. A blast of air is forced upwardly and rearwardly between the grain-plates, as indicated 25 by the arrows, by any approved form of blower or fan. The lighter material is deposited on the rear side of the pile of material on the second grain-plate and the grain falls on the front side of the pile and slides down it onto 30 the gather-board, and thence into the grain-spout. The chaff is blown to the rear and the light rubbish and tailings slide down the rear side of the pile and fall between the serrations of the push-piece.

35 The rapidly-reciprocating push-piece E' produces a quivering motion in the material, which works the light portions to the top and the grain to the bottom. The material is moved across the grain-plate and falls onto 40 the third grain-plate, being again separated by the action of the blast. The tailings slide over the rear end of the divider-bar into the tailings-chute and any few remaining grains slide off the front of the divider-bar onto the 45 grain gather-board.

The toothed combs are chiefly intended for use when fine seeds, such as timothy, are being cleaned. The motion of the serrated push-pieces being crosswise of the teeth of the 50 combs, any short straws or other similar rubbish longer than the grains are moved by the

serrations into positions crosswise of the teeth of the combs, so that they slide over the points of the said teeth and fall onto the rear sides of the piles.

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What I claim is—

1. In a grain separator, the combination, with a plate for the grain to rest on, of a serrated push piece above the said plate, and driving mechanism operating to impart short 60 and quick reciprocations to the said push piece in a direction longitudinal of the said plate, whereby the said serrations impart a quivering motion to the grain, separate it into layers and move it step by step across 65 the said plate, substantially as set forth.

2. In a grain separator, the combination, with a plate for the grain to rest on, of a push piece having serrations on its rear side and arranged above the said plate, a guard cover- 70 ing the front side and top of the said push piece, and driving mechanism operating to impart short and quick reciprocations to the said push piece in a direction longitudinal of the said plate, whereby the grain is separated 75 into layers and moved across the plate, substantially as set forth.

3. The combination, with two grain plates arranged in the form of steps, and serrated push pieces on the said plates; of a pivoted 80 Y-shaped lever having its arms operatively connected with the ends of the said push pieces, and an eccentric and an eccentric rod, said rod being operatively connected to an arm projecting laterally from the said lever, 85 substantially as set forth.

4. The combination, with three grain plates arranged in the form of steps, a shoe resting on the first grain plate, and serrated push pieces on the second and third grain plates; 90 of driving mechanism operating to impart short and quick reciprocations to the said shoe crosswise of the first grain plate, and to the said serrated push pieces longitudinally of the second and third grain plates, substan- 95 tially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK F. LANDIS.

Witnesses:

ALF. N. RUSSELL,  
JNO. B. RUSSELL.